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CONTENTS

Review and Prospect: Research on the Development of International Student Education in Colleges and Universities in Guangdong

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Abstract: International student education is an important part of the national strategy and an important part of China's opening to the outside world. Since the founding of the people's Republic of China, international student education has roughly experienced three stages: From the early days of the founding of the people's Republic of China to the reform and opening up, China's international student education has experienced a start and setbacks, the overall development is relatively slow, and the international students is mainly from socialist countries; After the reform and opening up, the education of international students has entered a transition period, the sources of international students are diversified, self funded students are also increasing, and the overall scale of international students is expanding; Since the 21st century, China's international student education has entered a period of rapid development, with continuous improvement in both scale and quality. Looking forward to the future, China will continue to open to the outside world, continuously improve the education quality of international students, attract more excellent students to study in China, and cultivate more international friends who "understand China, be friendly with China and safeguard China". China will also assume the international responsibility of a big country and cultivate more high-quality international talents for the international community.

Keywords: International students; Guangdong university; Opening to the outside world

1. INTRODUCTION

International student education is a foreign educational exchange rising with the development of the country after the founding of the people's Republic of China. With China's growing influence in the world and the continuous improvement of the quality of China's higher education, more and more international students come to China to study.

In this context, China's international student education has attracted the attention of domestic researchers in linguistics, history, politics, pedagogy, sociology, psychology and many other disciplines. However, at present, the academic research on China's international student education mostly focuses on the whole China, and the research on the specific situation of each province is not enough. Colleges and universities in Guangdong have always actively responded to the national policy call, received a large number of international students, and contributed to China's international student education. However, in different stages, the quantity accepted and the quality of training are also different. There are not only good experiences worth summarizing, but also lessons worth reflecting. Therefore, based on relevant data, this study will present and analyze the historical development process of international student education in Colleges and universities in Guangdong and the situation after the 21st century from the perspective of historical development, and look forward to the future development direction of international student education in Colleges and universities in Guangdong.

Chinese higher education circles have divided the historical development stages of national international student education from different perspectives and standards. Some are divided into two stages, some are divided into three stages, and others are divided into four or five stages. However, whether the history of China's international student education is divided into several stages, "reform and opening up" is an important watershed, because China's national development, foreign relations and the development of higher education have taken a turning point after "reform and opening up". on the whole, the international student education in Colleges and universities in Guangdong can also be roughly divided into three stages: the first stage was from the founding of the people's Republic of China to the reform and opening up (1949-1978), the second stage is the reform and opening up to the late 1990s (1979-1999), the third stage is since the 21st century.

2. START AND SETBACK PERIOD (1949-1978): GENERAL SITUATION AND CHARACTERISTICS OF INTERNATIONAL STUDENTS ACCEPTED BY COLLEGES AND UNIVERSITIES IN GUANGDONG

At this stage, the development of international student education in China and Guangdong Province is relatively slow. on November 30, 1950, the first batch of 35 exchange students from Poland, the Czech Republic, Hungary and Bulgaria entered the special Chinese language class for foreign students held by Tsinghua University, which opened the prelude to the education of international students after the founding of the people's Republic of China [1]. In the 15 years after the founding of the people's Republic of China (1950-1965), 7259 international students from 60 countries were accepted in 154 majors in 55 colleges and universities [2]. Among them, according to social ideology, the number of international students from 14 socialist countries is 6604, accounting for 91% of the total; the number of international students from 56 non socialist countries is

655, accounting for 9% of the total. By region, there are 6290 international students from Asian countries, accounting for 86.7%; 196 international students from African countries, accounting for 2.7%; There are 31 international students from Latin America, accounting for 0.4%; There are 742 international students from Europe and America, accounting for 10.2% [3]. It can be seen from the above data that at this stage, among the international students studying in China, the number from socialist countries is far more than that from non socialist countries, and the number from Asian countries is far more than that from other regions.

At this stage, the number of international students studying in Guangdong universities is small. Guangdong universities basically receive international students according to the indicators and arrange to study in various universities in accordance with the policies or instructions issued by the Ministry of education and other relevant departments. From 1950 to 1966, Guangdong universities that received international students included Sun Yat sen University, South China Institute of technology, South China Agricultural College, etc, in addition, there are some secondary technical colleges, such as Guangdong Zhongkai agricultural school, Guangzhou forestry school, etc. In 1960, 57 international students from Vietnam graduated, including 1 from Sun Yat sen University, 1 from Sun Yat Sen Medical College, 15 from South China Agricultural College, 3 from South China Forestry College, 19 from Zhongkai agricultural school and 18 from Guangzhou forestry school [4]. Generally speaking, before 1965, the number of international students accepted by colleges and universities in Guangdong was relatively small, mainly concentrated in several colleges and schools. South China Agricultural College has received 45 international students, Sun Yat sen Medical College has received 28 international students, and South China Institute of technology has received 20 international students. In comparison, 1966 was a year when Guangdong universities received more international students, Guangdong Province has received 224 international students from Vietnam, including 64 in Sun Yat sen University, 75 in South China Institute of technology, 66 in South China Agricultural College and 19 in Central South Forestry College [5]. Unfortunately, the Great Proletarian Cultural Revolution took place in China in 1966, which plunged the country's international student education into a trough, Colleges in Guangdong and other provinces have stopped recruiting international students. the group of Vietnamese international students in Guangzhou also suspended from colleges and returned home at the end of 1966. Under the influence of the Great Proletarian Cultural Revolution, the international student education in Colleges and universities in Guangdong was almost at a standstill in the decade from 1966 to 1976, and the international student education in the whole of China was in such a state.

3. TRANSITION AND RISING PERIOD (1979-1999): OVERVIEW AND CHARACTERISTICS OF INTERNATIONAL STUDENTS ACCEPTED BY COLLEGES IN GUANGDONG

From December 18 to 22, 1978, the Third Plenary Session of the Eleventh Central Committee of the (C_P) of China was held in Beijing. the focus of the work of the (C_P) of China shifted to socialist modernization. Since then, China has entered a new stage of historical development, and international student education has become an important part of opening to the outside world. At this stage, the recruitment of international students is no longer affected by ideology, the sources of international students are diversified, and the number of international students from western countries begins to increase.

After the Third Plenary Session of the Eleventh Central Committee, Guangdong higher education has entered a period of revitalization. In 1977, a symposium on Colleges and universities in Guangzhou was held, and in 1979, a provincial Conference on higher education was held. Guangdong's higher education has regained its vitality and gradually embarked on the track of healthy development. Guangzhou Normal University was reopened in 1977, and Jinan University was restored in 1978. By 1979, there were 29 colleges and universities in Guangdong Province, with 42160 students, including 784 postgraduates, 25984 undergraduates and 15392 junior college students. Compared with 1965, the number of colleges increased by 31.8%, the number of students increased by 45.2%. In the 1980s, some new universities were founded successively, such as Shantou University and Shenzhen University. With the increasing number of colleges and universities in Guangdong, the number of international students is also increasing. During this period, in addition to international students receiving government scholarships, international students at their own expense can also be accepted. In 1979, the State Council approved the request for instructions on the charging standards for accepting self funded foreign students, which provided a policy basis and charging standards for Guangdong universities to recruit self funded international students. In that year, there were more than 300 self funded international students in China, But by 1989, it had risen to 2500, and these self funded international students mainly came from developed countries such as Japan and the United States.

By 1989, the Ministry of Education officially issued the relevant provisions on recruiting foreign students at their own expense. Since then, colleges and universities can accept international students at their own expense. Moreover, colleges and universities independently determine the number of international students and do not occupy the planned enrollment indicators issued by the state, which greatly improves the enthusiasm of Guangdong colleges and universities to recruit self funded international students. Since then, the number of international students studying in Guangdong has increased rapidly. In 1990, there were 100 colleges and universities eligible to accept international students. This year, the number of self funded international students exceeded the number of scholarship students for the first time, reaching more than 3800 (more than 3600 scholarship students). It can be seen that at this stage, with the policy changes of China and Guangdong Province for international student education, the scale of international

students in Guangdong universities is gradually increasing, and the proportion of self funded students is increasing.

4. RAPID DEVELOPMENT PERIOD (AFTER 2000): ANALYSIS OF THE STRUCTURAL CHARACTERISTICS OF INTERNATIONAL STUDENT GROUPS IN COLLEGES AND UNIVERSITIES IN GUANGDONG

At this stage, the international student education in Colleges and universities in China and Guangdong has entered a period of rapid development. Based on the relevant statistical data from 2003 to 2018, this paper analyzes the structural characteristics of international students in Guangdong Universities from many aspects.

4.1 The Scale of International Students in Colleges and Universities in Guangdong Has Expanded Significantly

Since entering the new century, the number of international students in Colleges and universities in Guangdong has been rising (see Figure 1), More than 10000 in 2009, more than 20000 in 2012 and more than 30000 in 2017, reaching the peak, then falling slightly, but it has always been more than 20000. the development trend of the number of foreign students in Colleges and universities in Guangdong is basically balanced with the development of the overall number and scale of international students in China. However, we should also see that the number of international students in Guangdong Province ranks sixth after Beijing, Shanghai, Zhejiang, Jiangsu and Tianjin.

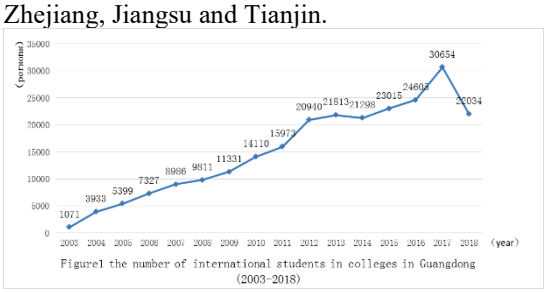

Fig. 1 The Number of International Students in Colleges in Guangdong (2003-2018)

Data source: concise statistics of foreign students in China, Ministry of Education

4.2 Start Dispersion and Diversification in Centralized Distribution

Colleges and universities in Guangdong Province are mainly concentrated in Guangzhou. the more famous ones are Sun Yat sen University, South China University of technology, South China Normal University and Jinan University. Early international students also study in these four colleges and universities. the total number of international students in these key universities accounts for a large proportion. In 2000, for example, Sun Yat sen University (including Sun Yat Sen Medical University) enrolled 410 international students, Jinan University enrolled 852 international students, South China University of technology enrolled 71 international students and South China Normal University enrolled 58 international students. However, the distribution of international students in Colleges and universities in Guangdong is gradually showing a diversified trend. In 2004, for example, Shenzhen university enrolled 801 international students and Guangdong University of foreign studies enrolled 312 international students, far more than South China University of Technology (52) and South China Normal University (192). and local colleges have begun to recruit international students, Taking 2006 as an example, Shantou University enrolled 26 international students, Zhaoqing University enrolled 19 international students and Zhanjiang Normal University enrolled 26 international students. In addition, some new colleges born in the early 21st century have also begun to recruit international students, Taking 2010 as an example, Beijing Normal University Zhuhai branch enrolled 25 international students and Jilin University Zhuhai College enrolled 43 international students. At the same time, vocational and technical colleges have also begun to recruit international students, but the overall scale is small, Taking Shenzhen Vocational and Technical College as an example, the college enrolled 67 international students in 2004, 40 in 2006 and 123 in 2010. However, other vocational and technical colleges recruit relatively few international students.

4.3 Academic Students Are Always Less Than Non Academic Students

Compared with the education of non academic students, the scale of academic students can better reflect the overall attraction of a country's higher education, Because studying for degree courses requires more time and energy, and international students will consider costs and benefits, they will pay more attention to each other's international reputation of higher education and talent training quality when choosing their destination. At the same time, receiving colleges have higher requirements for applicants. According to the data over the years, the number of academic and non academic students from Guangdong is increasing, But their respective proportions are constantly changing, the proportion of the former has increased slowly since 2008, After reaching the peak in 2011, it decreased slowly, and then developed in waves, It rebounded by nearly 45% again in 2018, but it has not been more than half, There are still more non academic students coming to China, the proportion of international students with national academic qualifications exceeded that of non academic international students for the first time in 2018, accounting for 52.4% (see Figure 2). This once again shows that Guangdong universities are not attractive enough to international students with academic qualifications, and have not formed the advantage of attracting international high-quality students.

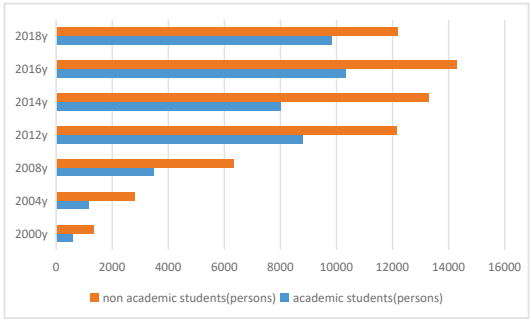

Fig. 2 Structure of International Students with Academic and Non Academic Degrees in Colleges and Universities in Guangdong (Data Source: Concise Statistics of Foreign

Students in China, Ministry of Education)

5. FUTURE PROSPECTS OF INTERNATIONAL STUDENT EDUCATION IN COLLEGES AND UNIVERSITIES IN GUANGDONG

5.1 Strategic Design within One Framework of the" B&r" and the Construction of the Gba.

The "B & R" is a long-term, gradual, complex and systematic overall and global project, involving the economy, energy, transportation, education and other fields of the whole country and even some Asian and European countries, which requires close cooperation and mutual support from all parties. As the foundation work of the "B & R" construction, international student education should change the situation that the international student education system was independent of national planning in the past, abandon the previous concept of "fragmentation" and independent development, and establish a systematic and holistic way of thinking and path. We should think and plan international student education from the grand level of international pattern, national construction and Guangdong's economic and social development. Similarly, the GBA construction is a national strategy. It will become one of the four major Bay areas in the world together with New York Bay area, San Francisco Bay area and Tokyo Bay Area in Japan.

No matter o "the B&R" or the GBA construction cannot do without talent. International student education is related to the cultivation and selection of international talents. Guangdong universities should combine the talent demand and professional demand of the GBA construction and the "B & R" construction, in combination with the talent and professional needs of the GBA construction and "B & R" construction, colleges and universities in Guangdong should promote the development of international student education by giving full play to policy advantages, strengthening publicity and increasing economic investment, so as to enhance the matching between international student education and the "B & R" construction and the GBA construction, Make the education of international students in Guangdong become the cradle of cultivating high-quality and innovative cross-cultural international talents.

5.2 Providing More Incentive and Supportive Scholarships and Employment Opportunities for International Students' Education

Guangdong is a famous hometown of overseas Chinese, with many overseas Chinese. Most of these overseas Chinese are very willing to send their children back to their hometown for education. Therefore, colleges and universities in Guangdong naturally have great potential to accept many overseas Chinese and international students. In addition, as the forefront of reform and opening up, Guangdong has close and frequent exchanges with countries all over the world in economy, culture, education, science and technology. Even Guangzhou's pleasant climate is a factor in attracting international students.

Of course, in addition to these attraction advantages, the scholarships provided by study destinations have a great impact on foreign students in developing countries. According to a survey conducted by researchers on international students in Guangdong, the primary determinants for international students to choose colleges and universities are the reputation and ranking of the University, the location and surrounding environment of the University, professional attraction, scholarships, tuition fees with competitive advantages, etc. International students are mainly Asian students, accounting for 64.1%, African students accounting for 17.4%, European students accounting for 11.9% and American students accounting for 8.5%[6]. However, the proportion of international students in Colleges and universities in Guangdong receiving Chinese government scholarships is low. Since 2011, it has been maintained at 2.5% - 3%. If only relying on government scholarships at the national level, it is obviously unable to meet the actual needs. As an economically strong province, Guangdong has certain advantages in terms of funds, and can try to establish a flexible and diverse scholarship system, Such as scholarships at all levels and enterprises at the provincial and municipal government levels, Enterprises attract outstanding students to study in Guangdong by issuing scholarships. At the same time, give full play to the opportunity of the GBA to provide more employment opportunities in the bay area for high-level international students.

5.3 Strengthening the Connotation Construction of Colleges and Universities in Guangdong and Improve the Training Quality of International Students

Guangdong should vigorously develop international student education. While innovating the concept of educational development and providing policy support, it should also improve the quality of international student education in Colleges and universities in Guangdong. the Brookings Institution, an American think tank, found that, From 2008 to 2012, the 10 metropolitan areas centered on New York, Los Angeles, Boston, Washington, San Francisco, Chicago, Dallas, Philadelphia, San Jose and Miami accepted 36.3% of international students. the first ranked New York region, relying on the agglomeration effect of high-quality higher education, especially the global competitiveness of world-class universities, attracts 48.8% more international students than Los Angeles, nearly twice as many as Boston [7]. It can be seen that only by stimulating the endogenous development power of international study abroad education in Colleges and universities in Guangdong and forming a high-quality international student education system, can more high-quality international students be attracted to Guangdong for study and employment. With the deepening of the construction of GBA, the layout of colleges and universities in Guangdong will gradually form, with Guangzhou and Shenzhen as the center and decentralized development to other Bay Area cities. Guangdong Bay area city and the other two central cities of GBA, Hong Kong and Macao, form a linkage effect and form a gathering place of famous schools and well-known disciplines and majors, so as to enhance the attraction of international students.

6. CONCLUSION

China's international student education has gone through more than 70 years. History shows that international student education is an important part of national strategy, an important content of China's opening to the outside world, an important way of international diplomacy, an important starting point of people to people and cultural exchanges, and an important way of talent training in the “B & R” construction. the development of international student education will help to establish a good international image of China, spread Chinese culture and tell Chinese stories. As the forefront of China's reform and opening up, international student education in Guangdong is not only an important part of national international student education, but also an important embodiment of the quality of Chinese international student education. We have reason to believe that with the increasing improvement of China's comprehensive national strength and its greater contribution to the world, more international students will choose to study in China. With the continuous improvement of the quality of colleges and universities in Guangdong and the continuous expansion of the influence of the GBA, more international students will choose to study in Colleges and universities in Guangdong and find employment in the GBA.

7. ACKNOWLEDGMENT

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Research on Influencing Factors and Countermeasures of Construction Engineering Management Based on Capability Architecture

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Abstract: With the advancement of urbanization, the construction industry has ushered in new development opportunities. Many companies have begun to gradually shift their focus to construction. In order to take the lead in market competition, companies not only need to master skilled construction skills and technologies, but also to carry out strict control and management to ensure that the construction can be carried out smoothly. However, in the process of construction project management, due to the low quality of construction personnel, weak supervision, and lax on-site management, some bean curd residue the emergence of engineering, and the frequency of accidents due to management negligence is also very high. Therefore, this paper focuses on construction management, and focuses on the factors affecting construction management and solutions.

Keywords: Architectural engineering; Project management; Influencing factors; Countermeasure

1. INTRODUCTION

The construction industry has a very long development history in China, and it also plays a key role in promoting China's national economy. Therefore, it is necessary to focus on the management quality of construction projects, strictly control and manage a series of related aspects such as construction progress, engineering quality, construction period, economic investment, etc., and focus on various influencing factors, so as to make the overall management work achieve due results, and then promote the overall construction projects to achieve greater economic and social benefits [1

In the construction of architectural engineering, in order to realize the orderly progress of all construction work and ensure the construction quality and efficiency, it is necessary to implement the management of architectural engineering into the actual construction [2]. Through the orderly development of management work, managers can find out the problems existing during the construction at the first time, and give adjustment measures for the deficiencies. In actual management, various factors restrict the improvement of management level [3]. Based on this, it is necessary to analyze the main factors that affect the development of management work, and give targeted adjustment measures to ensure the sustainable development of China's construction industry [4]. Engineering management is the demand of the development of the times, and new requirements give birth to new engineering management technologies and measures. the renewal of ideas and the implementation of measures are very important improvement aspects of construction project management, which is of great significance for clarifying the development direction of project management and promoting the improvement of the overall benefits of construction projects [5]. As the construction industry continues to extend new features and fields in the new era, the government's reform focus is gradually on the construction industry, especially its construction management [6]. This is a very important and meaningful breakthrough, and good construction management can be achieved through various measures [7]. This paper will elaborate on the influencing factors and countermeasures of construction project management.

2. THE IMPORTANCE AND MAIN INFLUENCING FACTORS OF CONSTRUCTION PROJECT MANAGEMENT

2.1 The Importance of Construction Project Management

In the process of construction, construction engineering is very complicated and involves a wide range. It includes the construction of various houses, the construction of auxiliary facilities of houses, the installation of equipment, etc. In this process, it is necessary to survey, design and then construct the houses. Such a construction process needs a perfect system to control the whole construction project. In the process of construction, we should avoid potential safety hazards, so as to improve the construction quality and bring better construction effect. Construction project management should effectively reform the management loopholes of construction enterprises and improve them in time [8]. Effectively correct the unreasonable system in the construction process, so as to improve the market competitiveness of construction enterprises [9].

It can provide the basis for the construction departments to jointly complete the construction process, so as to improve the quality and efficiency of the construction work, so as to provide the basis for the construction departments to effectively complete the construction process. In construction engineering, construction supervision should be carried out step by step, which can lay a good foundation for the successful completion of subsequent construction and promote the improvement of economic benefits of enterprises [10]. the implementation of high-quality management can often effectively improve the construction quality of construction engineering, supervise each process as a whole, timely find the problems existing in the construction design and

construction, and adjust and optimize the original design in the follow-up work, so as to provide normative guidance for the subsequent project engineering. From the overall point of view, if the project construction management is used efficiently, it can essentially prevent the occurrence of illegal operation and avoid the increase of construction cost due to the lack of effective management of funds and resources.

2.2 Influencing Factors of Construction Project Management

As a labor-intensive industry with meticulous division of labor, construction management has the characteristics of large number of construction workers, complex processes, strong dispersion and mobility, which to some extent increases the management difficulty. In order to ensure the smooth progress of construction project management, it is necessary to analyze the related influencing factors. At present, the main factors affecting the construction project management are human factors, material quality factors, mechanical equipment factors and environmental safety factors. the construction project risk management model is shown in Figure 1.

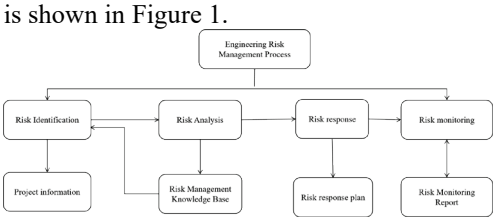

Fig. 1 Construction Project Risk Management Model

(1) Influenced by human factors. In the construction of construction projects, people, as the main body throughout the whole project, have the greatest impact on the quality of construction projects. In engineering construction, people are required to make decisions, organize, operate and command. Whether direct participation or indirect participation, people will have an impact on the quality of engineering construction. Survey, design, construction, owner, supervision and supervision and testing are all inseparable. Open people, how the professional knowledge, technology and supervision effect of these people will directly affect the quality of the project. Therefore, the role of people in construction projects is self-evident, and human factors must be highly valued in construction management to ensure the smooth progress of construction projects.

(2) Influenced by material quality factors. In construction project management, in addition to the main person, the most important thing is the construction material. Construction materials refer to the materials after admission, and their quality directly affects the quality of construction projects, energy conservation and environmental protection, and other functions. Generally, the construction materials entering the site need to be sampled and tested before they can enter the site. Otherwise, the entry of inferior materials will affect the overall quality of the construction project. Therefore, the quality and performance appraisal of the materials must be carried out before entering the site to ensure the overall quality of the construction project.

(3) Influenced by mechanical equipment factors. Mechanical equipment is an important tool in construction engineering, and it is widely used in construction engineering with the continuous development of science and technology. the purchase of machinery and equipment at the beginning of construction projects, and improper management of dishing or use will affect the smooth progress of the entire project. At the same time, the use of integrated and automated machinery and equipment in construction projects cannot only shorten the construction period, increase speed, but also reduce labor intensity and improve engineering. construction efficiency. Therefore, in engineering construction management, attention should be paid to the impact of mechanical equipment on engineering construction, so as to better reduce engineering costs.

(4) Affected by environmental safety factors. As an uncertain factor, the impact of the environment on project management cannot be ignored. During the construction process, a large amount of dust will be generated and affect the quality of life of the surrounding people, thus causing engineering disputes. A large amount of water resources will be used in the construction of the project, and a large amount of sewage and sewage will be generated. Improper handling will affect the surrounding natural environment, thereby affecting the reputation of engineering construction companies. A large amount of garbage generated in the construction of the project will not only increase the cost of the project, but also cause delays in the construction period. In addition, the construction of the project may also affect the nearby rivers. Therefore, in construction management, we must attach great importance to the impact of environmental safety factors, minimize engineering disputes, reduce environmental pollution and reduce costs.

3. COUNTERMEASURES FOR INFLUENCING FACTORS OF CONSTRUCTION PROJECT MANAGEMENT

3.1 Improve the Quality of Management Personnel

In the actual management of construction projects, it is necessary for the relevant staff to have the professional skills and professional qualities they deserve, and there are particularly strict requirements for the staff. Managers are required to master the patent knowledge, management knowledge and professional skills of relevant aspects, and at the same time, they should comprehensively improve their comprehensive quality. According to the requirements of constructors, it is necessary to have corresponding professional experience and post competence, and at the same time, it is necessary to have safety awareness, responsibility awareness and quality awareness, so as to ensure the orderly progress of the whole project. In view of this situation, it is necessary to scientifically and reasonably introduce more excellent high-quality management talents with excellent professional skills, and at the same time conduct regular professional skills training for relevant personnel, and at the same time ensure that managers can truly grasp the essence of construction project management, so that the management level of managers can be significantly improved. At the same time, it is necessary to conduct

comprehensive and systematic pre-job training for constructors before construction, and strictly manage and standardize it, so as to ensure that relevant constructors can operate in an orderly manner according to established procedures and specifications, put an end to the behavior of leaving the organization and management, and ensure that managers and constructors can cooperate closely.

Managers will have a great influence on the development of construction project management, so it is necessary to ensure that every manager can have a strong sense of management and professional ability. Therefore, we should focus on improving the quality of managers. Specifically, it can be carried out from the following aspects: ① Regularly educate and train managers, and through education and training, managers can have a correct understanding of their own construction project management, and they can correct their work attitude and improve management efficiency in future work. In education and training, the emphasis should be placed on the teaching of management skills, so that managers can master more management knowledge and skills, thus applying them to management and realizing the orderly management. ② Fresh blood can be injected into the management department on a regular basis, so that managers can have a certain sense of crisis. In the process of recruitment, we should formulate strict recruitment standards and recruitment plans according to the job situation. In the recruitment plan, the recruitment time and positions should be clearly defined, so as to ensure that the incoming managers can adapt to their jobs in the shortest possible time, and the construction department does not need to spend extra time and energy on training. ③ in order to arouse the working enthusiasm and enthusiasm of managers, a reward and punishment system can be established. Employees who perform well in construction management can be appropriately rewarded. on the contrary, if employees perform poorly in construction management or cause serious consequences, they should be punished in time. Through the reward and punishment system, managers can have a deeper understanding of their own work and put more energy into management. In addition, managers should have a correct understanding of the corresponding laws and regulations to ensure that all work is carried out within the scope permitted by law.

3.2 Strengthen Construction Management and Build a Scientific Management System

In construction project management, it is necessary to do a good job in construction management in a timely manner. Construction management includes many contents, such as construction material management, construction personnel management and so on. In the management of construction personnel, it is necessary to ensure that each construction personnel can master more construction techniques and clarify the operation process of machinery and equipment. According to the specific construction situation, the construction technology should be reasonably applied, and the technical advantages and technical value should be fully exerted. Mechanical equipment is an important part of the construction of construction projects. the safe and stable operation of mechanical equipment and the correct operation of the equipment can realize the orderly progress of the construction work and improve the construction quality. Before construction, the construction personnel should be well educated and trained, so that the construction personnel should strictly follow the operation procedures and operation standards in the operation of the machinery and equipment. the quality of construction materials will have a direct impact on the construction quality, and is closely related to the project cost. In order to avoid the problem of material waste, it is necessary to do a good job in material management. In material procurement, in order to reduce costs and purchase high-quality materials, market research should be done in a timely manner before the actual procurement work is carried out, and the actual situation of materials should be monitored in real time, so that material procurement can be completed at the best time. Regarding the qualifications of material providers, professional staff should be arranged to do a good job of reviewing in advance to ensure that the purchased construction materials meet the construction requirements and construction standards. In the process of material transportation, it is necessary to choose a short transportation route as much as possible, and full consideration should be given to the smoothness of the road surface. During the transportation period, material protection work should be done to avoid the impact of bumps on the material. At the construction site, moisture-proof and sun-proof treatment should be done to the materials in time to ensure the rationality of material preservation, ensure the quality of materials, and prevent the construction quality and construction efficiency from being affected by materials. the process of knowledge management in engineering project management is shown in Figure 2.

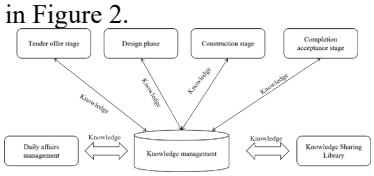

Fig. 2 Knowledge Management in the Process of Engineering Project Management

Construction management work should include construction management, cost management, safety management, etc. In order to do these tasks well, a construction management system must be scientifically established. Specifically, the following four links can be started: (1) Construction management As an important part of engineering construction, construction plans should be formulated reasonably, construction methods should be selected, and effective management should be implemented in terms of people, machines, materials, etc.; (2) Cost management runs through the entire process of engineering projects, so it is necessary to form a scientific Accounting standards, maintain the consistency between the preliminary budget, the budget and expenditure during the construction process, and the final accounts at the completion of the project, so as to ensure the effectiveness of project management; (3) Safety management is very important in the entire construction stage, and it is necessary to do a good job of management personnel,

Safety education and training of construction personnel to establish awareness of safe construction; (4) Progress management. the construction organization plan should be optimized and adjusted according to the actual construction situation to provide a guarantee for the smooth completion of the project.

4. CONCLUSIONS

To sum up, from the analysis of the investigation and research, we can know that there are still many influencing factors and relationship problems in the current construction project management. the stumbling block of construction project management can be solved and improved in various ways from different levels. In the process of actual construction work, it is necessary to analyze and understand the factors affecting construction project management, and give targeted solutions to improve construction quality. Constantly promote the scientific and efficient construction management of engineering enterprises the reform of modern organization in construction engineering management is the requirement and call of the times, and it is an important reform that is very necessary. Construction engineering management cannot only improve the operation efficiency of enterprises, but also improve the operation results of manufacturing enterprises in the long run and as a whole, and promote the continuous development of economy and society.

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Language Input and Second Language Acquisition

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Abstract: Language input has been of critical important to the second language acquisition. This paper will summarize the acquisition strategies under the guidance of four kinds of input opinions from abroad which has been proved as some famous theories in language input field. the final conclusion as follow, firstly, the interactive input has a better effect in higher education; secondly, the premodified input has a better effect in childhood education; thirdly, the interactive input is better than premodified input in understanding and acquiring of SLA.
Keywords: Input; Sla; Strategies

1. INTRODUCTION

The relationship between language input and Second Language Acquisition (SLA) has been a hot topic in SLA research field. the input is a kind of language that can be heard and acquired as target learning language in the process of language learning (J. C. Richard. 1992). Input is used to refer to the language that is addressed to the L2 learner either by a native speaker or by another L2 learner (Ellis, 1999). the Second Language Acquisition is a process that people improve their second language or foreign language levels in applied linguistics gradually(J. C. Richard. 1992). As we know, when the SLA learner acquires input, then the language acquisition will be occurred. Some scholars like Yang Dangling et al(2004). have clear the relationship between input and SLA, but what kind of inputs is workable and when is it should be inputted? It must be a problem. This paper will analyze these four kinds of input theories and summarize some workable input and acquisition strategies. These four kinds of input theories are Chomsky's LAD (Language Acquisition Device), Krashen's input hypothesis, Long's interactive hypothesis and Ellis's three points of view in second language input. This paper means to clear the relationship between input and SLA and summarize some strategies for SLA learner and does guidance to the SLA study in future.

2. THE FEATURE AND FUNCTION OF INPUT

2.1 The Feature of Input

The learner can get what kind of language is a question which is focused by all the researchers. Because the learner get the input information is not just like what the output people's intention and not just the same as what the books' original meaning. Some scholars have found out the differences between the language structure in books and the language structure in actual usage. We need to find a standard target language model as the learning standard. Once the differences appeared in communication context, the standard model will be changed, so we need to know when and how to input the target language to the target receiver. Such as the group language speakers and non-group language speakers, the adults and children, the teachers and students, the office speakers and informal speakers et al. In these communication processes, the non-group speaker, children and students have gotten a kind of decorated language form. We recognize the above phenomenon as a special field. According to the features of different fields, we divided the input into natural input and classroom input. (Cai Jinting, 2010)

2.1.1 The Nature Order Input

It means that the speaker output information which according to their original meaning of speaker without producing process. Take an example, the communication between mother and care taker. Their conversation is brief, short, clear and slow; it aims to attend the destination of communication(Lin Li, 2000).

Through researching, the scholars found that this kind of language has hardly influence in the route and the rate of acquisition to the children. Little is known about the relationship between motherese and the route of development. Newport et al. (1997) suggest that input influence only language specific features of the language being learnt and universal aspects. However, other studies have produced rather different results. the input has an obviously influence to the speed of language acquisition. At last, the scholar found that there is the similarity in the sequences of acquisition between the first language acquisition and the second language acquisition. Then Corder et al. (1980) argue that "L2=L1 hypothesis". It means that the sequences and strategies of SLA is the same as the FLA (First Language Acquisition). Therefore, the nature input of FLA makes a foundation to the research of SLA.

2.1.2 The Classroom Input

Krashen(1977) puts forward five hypotheses in the 1970s through the deep study in SLA. They are Acquisition-learning Hypothesis, Monitor Hypothesis, Nature order Hypothesis, Input Hypothesis and Affective Filter Hypothesis. These five hypothesizes are analyzed and used in classroom teaching. First, Krashen divided the adult learning into acquisition and learning. It was a new view which appeared in foreign learning field and it was benefit to the teachers who teaches foreign language. Second, sometimes, the first language is regarded as an obstruction to the SLA. In fact, the result is just being in the opposition. We can confirm the position of the first language in SLA according to the Nature order Hypothesis. Especially, the learning of grammar in SLA, there will be some similarities in the sequence of grammar rules. the grammar order is not always be effected by the first language. Third, the Affective Filter Hypothesis is helpful to focus on the non-intelligence factors. Through the multiple factors analyzing in SLA, we can conclude which

factor affects the foreign language leaning actually. Fourth, Monitor Hypothesis makes an important role in the process of language learning. the students can confirm the new sentences according to the grammar rules which have been learned before and make out a new sentence, passage or even article. So the Monitor Hypothesis makes an obvious effect in the foreign language teaching. Fifth, the Input Hypothesis tells us that the most effective input should base on the understanding. This hypothesis not only emphasizes the importance of classroom teaching, but also assures the function of classroom teaching. This paper mainly talks about the classroom input.

2.2 The Function of Input

In the process of SLA, input contents books, teacher talk, foreigner talk, motherese and interlanguage et al. the teacher talk is focused more by scholars, it involves listening, speaking, reading, translation and writing. Listening input provides the basic background to language structure. the speaking input is a direct way to supply information. Reading input is a kind of quite input that need more background information as basis. Writing and translation input is the best way to check the leaner's language structure. and polishes the learning strategies and knowledge structure.

3. THE RELATIONSHIP BETWEEN INPUT AND SLA

The relationship between language input and SLA is always being a hot topic in SLA research field. the relationship between input and SLA is base on the SLA strategies in classroom input under the guidance of four kinds of language input views. These four kinds of language input views are Chomsky's LAD (Language Acquisition Device), Krashen's input hypothesis, Long's interactive hypothesis and Ellis's three points of view in second language input.

3.1 Chomsky's Lad

Chomsky (1964) regarded that there exist an "Black box" in the head of human beings. It was a LAD (Language Acquisition Device), so the human being had the ability of producing and understanding language originally. This kind of ability was a part of intelligence of humans and it existed as a nature part of human being in their head. Chomsky (1964)also argued that the intelligence structure and cognitive ability were the natural part which only belongs to human being. Once it was stimulated by others from outside, it would make out the knowledge and language. In Chomsky's opinion, the function of input is to activate the internal language acquisition device, the language acquisition is a process of internal transformation. Even the input information in not enough, it also can achieve the goal of communication.

From Chomsky's opinion, we can conclude that the SLA is not only a kind of input of knowledge and information, but also include some non-language effects. With the help of non-language, the language learner can acquire the information fast and correctly. the second language teaching should focus more on the input of non-language information. A certain number of context input is necessary to the SLA.

3.2 Krashen's Input Hypothesis

At the end of 70s, Krashen (1977) stated the "Monitor Model". This model based on five hypothesizes. They are Acquisition-learning Hypothesis, Monitor Hypothesis, Nature order Hypothesis, Input Hypothesis and Affective Filter Hypothesis. the input hypothesis is the centre part of monitor model. It tells us clearly that how the language is acquired. This hypothesis tells us the comprehensive input is the initial condition to SLA. the comprehensive input is the comprehensive language material which can be heard and read. the degree of complexity is higher than current target language level. We call it as "i+1". the "i+1"model input is the best form of input; it needs enough quantities materials and available comprehensive input. Krashen argues that the ideal input should content the following three aspects: firstly, enough input materials, if a leaner want to acquire a new knowledge or a kind of language structure, he cannot get it by some simple samples. He requires some more hours of contactable, interesting and available input. Secondly, comprehensibility, the comprehensive input is not only can improve the interest of learner, but also improve the learning effects. the u comprehensive input is a kind of noise. Thirdly, not grammatically sequenced, the input needs to be understood, the grammatically sequenced is incomprehensive to learner.

Interest in the language of the classroom has grown steadily in the last twenty years. It has been motivated by the recognition that weather it is a subject lesson or a language lesson, successful outcomes may depend on the type of language used by teacher and the type of interactions occurring in the classroom. Under the guidance of the interest and leaching form, the students need to be inputted enough materials and some comprehensive background knowledge.

3.3 Long's Interactive Hypothesis

Long (1981) gave the interactive hypothesis; he proves a thorough critique of interaction analysis systems. the major problem lies in the choice of the variables to be examined. Long arguers that the categories selected are not more than "subjective hunches" as they are not verified by SLA research. It may be a reasonable hypothesis that a classroom leaner who frequently "accepts" and "steals" will progress more rapidly than one who does not, but it is not clear that one who "accepts" can be expected to outperform one who "steal" or vice versa. Another problem that Long draws attention to is that " in general, interaction analysis system code surface behavior and so miss the communicative value of remarks"(Ellis, 1999). Thus although such systems may achieve reliability, their validity and relevance are in doubt.

It is difficult to summarize what interaction analyses have revealed about the nature of input and interaction in language classroom, each with their own categories, precludes comparisons and therefore generalization. Many of the systems were developed for teacher training purposes. As it relates to SLA, does require both valid and generally accepted categories so that cross-study comparisons can be made. With the framework of case studies of individual learners, so integrating the quantitative information made available by such analyses

with the qualitative information of the case study approach, however, this kind of method also need to be undertaken.

3.4 Ellis's Three Points of View in Second Language Input

Ellis (1985) puts forward three points of view about input, he concludes that:

First, the behaviorist contended the model like this: stimulus-feedback-reinforcement, under the work of stimulus, learner internalizes the language knowledge through imitating the special forms and styles of speaker. the behaviorist views that the SLA is acquired by suitable language input, enough stimulus and adequate feedback. Therefore, we conclude that the leaner is the machine which used to produce the language. the input decides the output.

Second, the mentalist emphasizes the function of internal language acquisition device. the function of input is to stimulate the LAD in mind, and produce a certain language. It is the key to the SLA. So in mentalist's opinion, there is no direct connection between input and output.

Third, the interaction confirms that the SLA worked under the help of internal device of learner and input in certain environment. Depending on the cooperation of learners and other speakers, the qualitative of acquisition will be high. In their opinion, there is no direct connection between input and output.

The above input opinions has a common feature in content, they all emphasize the necessity of input. What's more, they all argue that the input should be comprehensive and enough, it quantity and quality are depend on the real level of learner. To the relationship between input and output, three points of view have different opinions. the behaviorist bases on surface connation, and emphasizes the fatal function of outside environments. and the mentalist thought the input is just a code to index the internal device in human's mind. the most important part is grammar which exists in the process of language producing. the interaction emphasizes not only work of internal device of mind but also the function of communication context. the context decides the acquisition of abstract language.

From the former three points of view, we can conclude that SLA not only needs the real materials but also needs the abstract environment and special language device to input. In the classroom teaching, the teacher should adapts the suitable methods to carry out the language teaching, and leaner needs to pay more attention on the other non-language input. the scholar shows the differences of various input, the reader must understand what that actually need in the real practice, it is very important to SLA.

4. CONCLUSION

Under the guidance of four kinds of input opinions from abroad scholars, we will clear about the relationship between input and SLA. the input is important to the SLA, but it is not the only thing. What's more, we can conclude that in different condition with different strategies to acquire knowledge. In this case, we can get different effects. the details in SLA strategies just as follow:

Firstly, the interactive input has a better effect in higher education. the higher students not only need input, but also need output in a certain field. a certain output will help them get new knowledge better, the language structure will be adjust through the output and new language structural will be made.

Secondly, the premodified input has a better effect in childhood education. the childhood education is just like a piece of blank paper, what you input will get what you want. the premodified input will provide background information that is benefit to the understanding of new language structure.

Thirdly, the interactive input is better than premodified input in understanding and acquiring of SLA. the learner just focuses on the grammar study and ignores the deep memory to new knowledge or words. A new kind of language structure needs to be recognized according to new input.

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Translation of Traditional Chinese Herbal Medicine from Sociosemiotic Perspective

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Abstract: With the fast development of traditional Chinese medicine, the demand for its translation is increasing rapidly. As an essential part of traditional Chinese medicine, herbal medicine's translation is also becoming more and more important. From the perspective of social semiotics, translation in essence is the transference between two different semiotic systems. This thesis explores the translation of traditional Chinese herbal medicine from social semiotic perspective. First the paper introduces the theory of social semiotics, then analyzes the errors in herbal medicine's translation, and at last summarizes some translation methods such as pinyin translation, liberal translation and combining transliteration with liberal translation.
Keywords: Social Semiotics; Traditional Chinese Herbal Medicine; Translation Methods

1. INTRODUCTION

Traditional Chinese medicine is the treasure of Chinese culture and nowadays it has attracted lots of attentions from home and abroad, especially in the foreign countries where more and more people believes that the Chinese medicine is natural and effective. In recent years, the development of traditional Chinese medicine, which has raised a huge demand for its translation, has made TCM (traditional Chinese medicine) translation and its research improve rapidly, therefore Chinese herbal medicine cannot be ignored in translation. It's translation can influence the TCM's worldwide transmission directly. In China a lot of Chinese-English herbal medicine dictionaries have been published, such as "汉英医学大辞典"-*The Chinese-English Medical Dictionary* and"现代中药词典"-*Dictionary of Chinese Herbs*. Up to now, many scholars in China have been involved in doing this research. They have published some books and articles which discuss the Chinese-English TCM translation from different perspectives. However, there are still a lot of problems in herbs' translation. There are two reasons to explain why the traditional Chinese herbal medicine's translation is not so perfect. the first one is that the works of TCM were written in ancient classical Chinese, which include a large amount of Chinese philosophy and culture, and should first be interpreted into modern Chinese and then be translated to English. Thus, the two procedures in translation make it hard to fully translate its essence in every aspect. the second reason is that when many translators interpret the items they tend to rely on their own habits and understandings instead of following the basic principles of translation and practical requirements. Translation is an activity with great practicality. It needs theory as a guide. Though a large number of scholars at home and abroad study in this field for many years, there is never a set of theory, which could explain translating activity thoroughly and satisfactorily. Recently more and more people study translation from different views in their own fields. Semiotics-oriented translation theory has been put forth under such background. Translation is never just the transference between two languages. It is an intercultural communication. the social semiotics have been applied to many fields such as architect and advertisement as a significant tool. In E. A. Nida's book *From One Language to Another* he pointed that translate in the way of social semiotics was the best and the most comprehensive method. (Nida, 1986:113) This paper will also discuss the traditional Chinese medicine herb's translation from the perspective of social semiotics.

2. AN OVERVIEW OF SOCIAL SEMIOTICS

2.1 The Theory of Social Semiotics

Semiotics is the study of sign processes (semiosis), or signification and communication, signs and symbols, both individually and grouped into sign systems, including the study of how meaning is constructed and understood. It was first proposed by Ferdinand de Saussure-the "father"of modern linguistics. He proposed a dualistic notion of signs, relating the signifier as the form of the word or phrase uttered, to the signified as the mental concept. (Saussure, 1974:3) It is important to note that, according to Saussure, the sign is completely arbitrary, i. e. there was no necessary connection between the sign and its meaning. He confirmed language is a sign system which expresses thoughts. Saussure pointed that no word is inherently meaningful. Rather a word is only a "signifier, " i. e. the representation of something, and it must be combined in the brain with the "signified, " or the thing itself, in order to form a meaning-imbued "sign. " the signifier is the sound of the linguistic object, the signified, on the other hand, is the mental construction or image associated with the sound and the sign, then, is essentially the relationship between the two. Saussure believed that dismantling signs was a real science, for in doing so we come to an empirical understanding of how human beings synthesize physical stimuli into words and other abstract concepts. At that time semiotics is mainly for linguistics research. Later semanticist Morris, the American linguist, put forth the meaning theory of semiotics that is every sign has referential meaning, linguistic meaning, and pragmatic meaning that they embrace almost every element involved in the interacting of two different languages like words, meanings and more importantly, context, culture, producer of the source language, and receptor of target language, without the considering of which, the full meaning of the source language can hardly be achieved. Linguistic theorist, Michael Halliday

introduced the term “social semiotics” into linguistics, when he used the phrase in the title of his book, *Language as Social Semiotic*. This work argues against the traditional separation between language and society, and exemplifies the start of a “semiotic” approach, which broadens the narrow focus on written language in linguistics. Halliday pointed out that languages evolve as systems of”meaning potential” (Halliday, 1978:39)or as sets of resources which influence what the speaker can do with language, in a particular social context. Social semiotics is a branch of the field of semiotics which investigates human signifying practices in specific social and cultural circumstances, and which tries to explain meaning-making as a social practice. Social semiotics expands on Saussure’s founding insights by exploring the implications of the fact that the “codes” of language and communication are formed by social processes. the crucial implication here is that meanings and semiotic systems are shaped by relations of power, and that as power shifts in society, our languages and other systems of socially accepted that meanings can and do change.

2.2 Translation Method Manipulated by Sociosemiotic Approach

Eugene A. Nida, a linguist and an expert in Bible translation with high attainments in language and rich experiences in translation, was the first person who combined the sociosemiotic with translation. He applied semiotic theories to translation as a guide and mainly focused on the meaning theory of semiotics, that is, the three-dimension meanings of signs. He commented:”Perhaps the most pervasive and crucial contribution to understanding the translation process is to be found in sociosemiotics, the discipline that treats all systems of signs used by human societies. the great advantage of semiotics over other approaches to interlingual communication is that it deals with all types of signs and codes, especially with language as the most comprehensive and complex of all systems of signs employed by humans. No holistic approach to translating can exclude semiotics as a fundamental discipline in encoding and decoding signs. “ (Nida, 2001:89) Every sign has referential meaning, linguistic meaning, and pragmatic meaning, which later became the basis for the semiotic translation approach. the six language functions, which were put forward by Peter Newmark, are suitable for translation study. Translation means transference from one set of sign system to another set, that is, decoding and encoding. the first step in translation is to understand the source language properly, decoding. At this stage the translator should consider the source language as a sign system. To understand this sign system involves the concrete social background, the relation between signs and its user. These factors result in the reproduction of the referential meaning, linguistic meaning and pragmatic meaning of the source language, that is, encoding. In *After Babel* Steiner states “To understand is to decipher. To hear significance is to translate. “ He challenges conventional theories of translation by maintaining that all human communication within and between languages is translation. Referential meaning is built on the relation of the sign with its referent. There are full correspondence, partial correspondence and non-correspondence in referential meaning between Chinese and English words and expressions. the linguistic meaning is what has been conveyed by using a linguistic form: a word, a phrase, a sentence, or even a text for communication. Pragmatic meaning deals with the relationship between signs, especially words and other elements of language, and their users. the translation from the perspective of social semiotic cannot only translate the designative meaning but also the associative meaning. (Jiang Xiaohua, 2003:17) When apply the above approach to the translation of traditional Chinese herbal medicine, there are three kinds of translation methods, that is pinyin translation, liberal translation and translation integrated by sounds and meanings. Applying semiotics to translation could grasp the function and meaning of the source language macroscopically, understand and reproduce them microcosmically. Thus it is helpful to improve translating skills.

3. TRANSLATION METHODS OF TRADITIONAL CHINESE HERBAL MEDICINE FROM SOCIAL SEMIOTIC APPROACH

3.1 Errors in Translation of Traditional Chinese Herbal Medicine

Though great success has been achieved in the traditional Chinese herbal medicine’s translation, problems can be seen quite often. There are four major problems. the first one is lack of the identical criterion, which results in lots of translations in one term. For example, 六味地黄丸 has been translated into “Bolus of Six Drugs Including Rehmannia” and “Rehmannia Plus”. These two translations appears in different situations, which will make common people confused about their real meanings. the second problem is that the pinyin translation is too simple, which expresses nothing, such as 板蓝根-Banlangen and 茯苓皮-Fulingpi. the English readers can understand nothing of these plain translations. the third one is that some interpretations are too complicate to convey the features of traditional Chinese herbal medicine. 黄连解毒汤 is “Decoction of Coptidis for Detoxification”. Though the translation, which contains some Latin words, conveying some information, it is too verbosity. the last problem is that the translations are over westernized and then the Chinese characteristics are concealed. These problems existing in the Chinese to English translation of traditional Chinese herbal medicine implies that there are a lot of work to do.

3.2 Translation Strategies of Traditional Chinese Herbal Medicine

In the following part the paper will discuss some translation methods such as pinyin translation, liberal translation and translation combined with pinyin and liberal translation, which can be applied to translate the traditional Chinese herbal medicine.

3.2.1 Pinyin Translation of Traditional Chinese Herbal Medicine

Pinyin translation means to translate the traditional Chinese herbal medicine by its original sounds, namely writing down the pinyin letters directly. Some herbs which

are unique in China and do not exist in other countries can be translated in pinyin as there is non-correspondence in referential meaning in English. However, it should be pointed out that pinyin translation method is the unique way, which can only be used between Chinese and other languages, but cannot apply in the other languages. It is different from transliteration which can be applied to the translation in any language. Transliteration is to change letters and words into corresponding characters of another alphabet or language. Pinyin translation is included in the transliteration. the herbal medicines translated by pinyin are limited. One reason is that the unique herbs in China are not that much and another reason is that pinyin translation is not a very effective method. Here are some examples that are translated in pinyin, 甘遂(味微甘而辣, 性味: 苦, 寒, 有毒. 用于水肿胀满, 胸腹积水, 痰饮积聚, 气逆喘咳, 二便不利.), Gansui Root is the dried tuber root of Euphorbia kansui, which can cause drastic purgation and expel the retained water, and mostly is used for making pills or powder after processing. Langdu is 狼毒(性味: 辛, 苦, 平, 有毒, 用于水气肿胀, 淋巴结结核; 外用治疥, 癣, 杀蝇, 蛆), which is traditionally used as herbal remedy for scabies and tinea, a poisonous plant mainly vegetating in degraded grasslands and is thought to be a limitation in the development of stockbreeding. (汉英医学大辞典, 1987:1818) Zhegucai-鹧鸪菜(藻体暗紫色, 干, 后黑色, 薄膜质. 性味: 咸; 平驱虫杀虫. 主蛔虫病), which can cure ascarid disease. 丹参(性味: 苦, 微寒, 用于月经不调, 经闭痛经, 症瘕积聚, 胸腹刺痛, 热痹疼痛, 疮疡肿痛, 心烦不眠; 肝脾肿大, 心绞痛.)is Danshen--the dried root and rhizome of Salvia miltiorrhiza Bge, which can remove blood stasis and relieve pain, promote the flow of blood and stimulate menstrual discharge, and ease the mind. From the translations like Gansui and Langdu the target text language readers can only feel puzzled. the translation impart no information about the referent except the reservation of pronunciation. These translations due to the lack of material equivalence in each culture that can be only written down their pronunciation in every letter. the translation though maintain the linguistic meaning of source language, in fact, have nothing to do with its original referent, and in the target text it does not fit the pragmatic meaning. Yet the pinyin translation can only meet the demand of linguistic meaning. Luckily the items translated in pinyin are not so much. In order to compensate the loss of meanings in pinyin translation, some notes is needed to be added to the translation. With the help of notes the foreigners can understand the translation of Chinese herb better. If "三七" (性味甘, 微苦, 温散瘀止血, 消肿定痛. 用于各种内, 外出血, 胸腹刺痛, 跌扑肿痛.) is translated to "Sanqi" with the notes-Sanqi, also called Tianqi or Tien-chi, is the dried tuber of Panax notoginseng(family: Araliaceae). It is classified as warm in nature, sweet and slightly bitter in taste, and nontoxic. Raw san qi can stop bleeding and can transform blood stasis. It can stop bleeding without causing blood clots. It is widely used in injury medicine as in broken bones, swelling, impact injuries. Cooked san qi can be used as tonic. (刘毅, 2002:372) Notes, in fact, is not the best way in translation, which is just a compensation method, however, with the notes the target language readers can at least know the basic meaning of the Chinese herb.

3.2.2 Liberal Translation of Traditional Chinese Herbal Medicine

Liberal translation is a translation method which only keeps the substance of original, but not keep the form of the original, and the translated text's language and the original text's language have the different form to show the same substance. Liberal translation is usually aimed at the writer's intended meaning rather than the conceptual meaning. It usually neglects the original way of expression, especially the figurative expressions. Actually from the saying "translating means translating meaning" uttered by Nida, the liberal translation may be the best translation method. Many Chinese herbs have the same equivalence in other countries and that's the base of translation. Earthworm, for example, is "地龙" which also means "蚯蚓" and can cure high fever and spasms, convulsions, painful joints due to arthritis and paralysis, heat type of wheezing, single item of ground up di long can be used, injuries and pain, edema and difficulty in urination. (张景文, 1996:18) But one more thing, the referential meaning between the English and China is different. "地龙"(环节动物门钜蚓科动物参环毛蚓. 性寒, 味咸. 清热定惊, 用于高热神昏惊痫抽搐, 关节麻痹, 肢体麻木, 半身不遂, 肺热喘咳, 尿少水肿, 高血压症.)means a kind of herb made by "蚯蚓", "地龙" has its linguistic meaning in the system of traditional Chinese herbal medicine but "蚯蚓" doesn't have that meaning in the same system. So when translation is "earthworm", some notes should be added "a kind of traditional Chinese herbal medicine made by lumbricus which can anti-histamine and calming asthma and expand bronchi, " the insect exists in almost everywhere that its translation is very easy-pick out these two references(the same)and then find the each word. 麻黄(辛, 微苦, 温. 归肺, 膀胱经用于外感风寒, 恶寒发热, 头, 身疼痛, 鼻塞, 无汗, 脉浮紧等表实证.)is Ephedra Herb, which can increase the contraction of heart muscle thus increases the cardiac output and causes less arrhythmia than epinephrine, but if there is physical diseases of the hearts or if the patients are using digitalis, it can cause arrhythmia and systolic and diastolic pressure to go up, here "ephedra" means all plants belongs to the category of ephedra, to the people out of China ephedra may have many functions that the only translation into "ephedra" will give many different images to different people. the translation "Ephedra Herb"have reserved the referential meaning of "麻黄" to the most extend, the linguistic meaning is also fit for English and the pragmatic meaning has reached the target language readers. With the word "herb" following its meaning will be narrowed and target language readers can catch the meaning easily. Liberal translation has another advantage, that is, it can express the original culture to the most degree. 阿胶(用驴皮加水熬成的胶, 原产山东东

阿，有滋补养血的作用.)is the traditional Chinese tonic for nourishing the blood, made by stewing donkey hide with water. If it is translated by pinyin-E Jiao, it will fall into a plainness and confusion situation, however, it is translated to “donkey-hide gelatin” (by the method of liberal translation) that the medicine’s procedure and ingredients can be seen from its name. Most liberal translated words are easy to understand and what’s more, in the target text the liberal translated words are not rigid, which fits for the readers’ desire. the meaning and culture loss is the least among other translations. With its pragmatic meaning well reserved, and the referential meaning as well. But there is one shortage that the translation “donkey-hide gelatin” sounds little strange for there is culture gap which is hard to cross. Another kind of translation can be called semi-liberal translation, such as “半边莲” translated to “Chinese Lobelia Herb”. Actually word “lobelia” means the plant--半边莲, the add word “Chinese” refers to the place where the herb come from and can also remind people abroad that it is a kind of traditional Chinese herb. There are a lot of translations such as Chinese Osbeckia Herb-金锦香, Chinese Trumpetcreeper Flower Common Trumpet creeper Flower-凌霄花 and Chinese Tallowtree Root-bark-乌桕, the meanings are well preserved in the words. Like liberal translation this kind of translation can also reserve the referential and pragmatic meaning and at the same time it has added some national features. Maybe the only problem is that the translation seems not so brivety. Though this semi-liberal translation is not so formal as the full liberal translation, with the mark of Chinese culture it is still a good supplimentary to the liberal translation. Here is another example to be pointed, 黄连(用于湿热痞满，呕吐吞酸，泻痢，黄疸，高热神昏，心火亢盛，心烦不寐，血热吐衄，目赤，牙痛，消渴，痈肿疔疮.)is the dried rhizome of Coptis chinensis Franch erbaceous perennial, with stem height from 3 or 4 cun to 1 chi, having pinniform compound leaves, small white flowers, bitter-tasting root and stem, commonly known as “Wei-lian”, “Ya-lian” or “Yun-lian” respectively, which can remove damp-heat, quench fire and counteract toxicity is translated to “goldthread”. But how can the foreign readers understand “goldthread” to Chinese herb but not a thread in golden color? There are ambiguities in the pure word “goldthread”. It seems that the “goldthread” is translated from the meaning of “黄连”, “黄” means the color of yellow or gold and “连” means a string or thread, and then the translation come out. In fact “goldthread” is just the mix meaning of “黄” and “连” (it first analyzes each word’s meaning apart and then combine the two meanings together. That’s how the “goldthread” come into being.) but not the true meaning of that herb, so under this circumstance the Latin word “Coptis”will be a good alternative. Coptis is the exact meaning of 黄连. Also the word “古山龙”-”Mountain dragon” made the same mistake. the Latin translation “Caulis Arcangelisiae” will be much better. Some people may wonder whether the English readers can possibly understand the translation in Latin. There is no need to worry because English is a language that lots of its words come from other languages, like French, Spanish, Greek and Latin. It will not be an obstacle for the English readers to understand “Coptis”. But one more thing, for the translation is translating the traditional Chinese herbal medicine from Chinese to English that too many Latin words seem not so qualified and formal, though the Latin word will help the readers to understand better.

3.2.3 Combining Transliteration with Liberal Translation

Here combination means a special translation method, it is a translation that combines transliteration with liberal translation. In the translation of traditional Chinese herbal medicine it means translate the item from two aspects, one part is transliteration and the other part is liberal translation. the integrated translation requires the translators to understand the full meaning of the herbs and at the same time possess the creativity. the tranliteration here not only means the pinyin translation but in a wider range. For example, 九香虫(有特异的腥臭气，味微咸主治胸腹胀满，胃痛，腰膝酸痛，性神经衰弱. 取净九香虫置锅内，用文火加热有香气逸出.)-possesses a strong inhibiting effect on Staphylococcus aureus, Salmonella typhi, Bacillus paratyphosus, Shigella dysenteriae, and also promote metabolism, translate to “Jiuxiang Bug”, “Jiuxiang” is pinyin translation of “九香” and “Bug” is the liberal translation of “虫”. From translation people know that term is a kind of bug and its original pronunciation, but the meaning of word “九香” which describes the flavour of the herb has lost in translation, while some notes are in need to explain the essence of that herb. Like the donkey-hide gelatin mentioned above, Jiuxiang Bug actually smells foul after being fried, its good flavour burst out. A note-Jiuxiang Bug is the dried body of Aspongopus chinensis Dallas, which can regulate the flow of qi and relieve pain, warm the stomach, and restore the kidney yang, According to Ben Cao Cong Xin this herb may not be suitable for decoction because its slippery characteristics may increase bowel movements-will give the useful explanation to the foreign readers. However, though with the help of the notes which seems quite verbosity, the translation is obviously not the best one, the referential and linguistic meaning are partly retained. “Bug” reminds the foreign readers of the basic material of the herb(yet some readers will misunderstand the herb into just a kind of insect, and thus the pragmatic meaning will totally disappear), that’s why the referential meaning partly retained. In fact, “Jiuxiang”s linguistic meaning can only exist in the system of Chinese language. But there are no better choices for the culture gap is really too large. 党参(性平，味甘，微酸补中益气，健脾益肺. 用于脾肺虚弱，气短心悸，食少便溏，虚喘咳嗽，内热消渴.)is “Szechwon Tangshen Root”. Tangshen is the dried root of Codonopsis pilosulaAction, which can reinforce qi and invigorate the function of the spleen and the lung, and stimulate nervous system, and improve immune system, and increases red blood cells, white blood cells and heme. “Tangshen” shares the same sound with “党参”, “root” means the herb

is the root of the plant, and "szechwon" means "四川" where 党参 originally comes from. the crucial points like the function, shape and usage in the herb have shown no appearances in the translation. "广防己" (Historically that produced in Han Zhong area was called han zhong fang ji and it belonged to the aristolochiae family. Today, when the herb fang ji goes through the area of Han Kou, it is called Han fang ji; so it is not one type. Usually in prescribing if it is written as "fang ji" it is deemed to be fen fang ji unless it is written as "mu fang ji'.) is "Fangchi Root", partly transliteration and partly liberal translation. the meaning loss in "Fangchi Root" is more than the translation "Tangshen Root" since "广" means the place of production of "Fangchi Root". From the notes above come out an information that "防己" has distributed in variety areas so that in the different places people call it in different names. It is one of the features of traditional Chinese herb that its ignorance will cause ambiguities even to the local Chinese people. So the translation "广防己" has lost the designative meaning of the token, which can also be called referential meaning in semiotic, and lead the target language readers to the wrong associative meaning. the linguistic meaning of "Fangchi Root" in the system of English isn't as logical as the original English words, which seems quite strange, though the word "root" implies the material of the term, without notes people may guess that will be the root of any plant. the pragmatic meaning in the translation "Fangchi Root" is also hard to reach. the word may appear, in most occasions, in the context that relates to medicine, though readers will think "Fanchi Root" belongs to the medicine field, they still don't know the exact meaning, and perhaps they will treat "Fangchi Root" as a kind of medical equipment. and in the very few contexts that have no relation with medicine, it is harder for the target language readers to get the real meaning. the pragmatic meaning may operate like a broken compass that guides the target language readers to the wrong direction. From the above translations the foreign readers cannot understand the herb very well. the referential meaning, linguistic meaning and pragmatic meaning in the item of herb are reserved in major part, at least from the translation the target text language readers know what is said, though they do not understand the whole meanings. However, this kind of translation tries to reserve the referential, linguistic and pragmatic meaning of the source language will, to some degree, make the target language readers feel confusion.

4. CONCLUSION

This thesis is a study of the Chinese to English translation of traditional Chinese herbal medicine in the perspective of social semiotic. Translation is usually defined in dictionaries as "expressing the sense of a word, sentence or book in another language". Nida holds the view that "translating means translating meaning". the nature of translation is the corresponding transference of meaning from one language to another. Meaning is the kernel problem that must be dealt with in translation. the Chinese to English translation of traditional Chinese herbal medicine aims at providing information about the traditional Chinese medicine for foreigners and enlarging the influence of TCM. In most translations of traditional Chinese herbal medicine, the meaning has been well retained. Semiotic theory offers a most comprehensive summation of the sign's meaning, which is the network of the relationship between vehicle, referent and interpreter. Meaning thus falls into three categories: referential, linguistic and pragmatic meaning. After a careful study of sociosemiotics, the essay illustrates several basic principles of sociosemiotic approach which can be applied to the translation of traditional Chinese herbal medicine. With the sociosemiotic approach, people can analyze how the three semiotic meanings can be perfectly transferred, thus proposing relative translation strategies in this regard. Among the three translation methods discussed above, up to now the liberal translation is better than the other two methods, and of course the other two methods(pinyin translation and integrated translation)should not be abolished, they are still the supplements when deal with the term that very difficult to translate. the traditional Chinese herbal medicine bear so much elements of Chinese culture and nature that its translation work is extraordinarily hard. Though adding notes will be a useful conduct, it doesn't seem so beautiful in the translated context and too many notes will slow the reading speed and even confuse the target language readers. With the sociosemiotic approach, we can solve the problem of cultural obstruction from a different angle, thus further promoting cultural exchange and prosperity. Yet no one single theory can be applied to solve all practical problems and the socio-semiotic approach is no exception, therefore further research is much needed in the hope of finding more inspiring ideas and insightful thoughts.

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Brief Discussion on the Correlation between Cultural Intelligence and Academic Adaptation for Medical Major International Students in China under the Context of New Medicine

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Abstract: This study systematically systematizes the theories related to the two concepts of cultural intelligence and learning adaptation, paying special attention to the relationship between the two factors of international students. This study introduces the concepts, characteristics, research methods and previous studies of international students' cultural adaptation and learning adaptation. It is expected to bring a basic idea for further research on this problem. It may also shed lights on the medical humanistic training.
Keywords: Cultural intelligence; Academic adaptation; International students

1. INTRODUCTION

Since 1950, the education of studying abroad in China has gone through nearly 70 years. History shows that studying abroad in China has always been an important part of China's opening to the outside world and an important way of cultural exchanges at home and abroad. With China's increasingly stepping onto the world stage and the continuous development of social economy, the world's interest in China is also increasing day by day. International educational exchanges and cooperation have gradually shown a rapid development trend, and the number and quality of foreign students in China have increasingly begun to step on the right track. According to the statistics of the Ministry of Education, in 2018, a total of 492, 185 foreign students from 196 countries and regions studied in 1, 004 colleges and universities in 31 provinces (autonomous regions and cities), an increase of 3, 013 over 2017, an increase of 0.62%, including 258, 122 foreign students receiving academic education, accounting for 52.44% of the total number of students in China, an increase of 6.86% over 2017. the top three by country: 50, 600 in South Korea, 28, 608 in Thailand, 28, 023 in Pakistan and 23, 198 in India. A lot of research on the cultural adaptation of foreign students at home and abroad, but mainly from Europe, America, Central Asia and other regions, because most people think that the gap between Europe, America and us is relatively large, and the problems faced by foreign students in China must be more representative, so there is still less research on foreign students in neighboring countries. Some domestic studies involve foreign students in China, mainly about studying language. In addition, there are few in-depth studies on foreign students' cultural adaptation and cultural intelligence. Many cultural differences will become obstacles to the adaptation process and academic performance of foreign students in China. This study will clarify the problems related to cultural intelligence. These problems provide favorable information and solutions for the group of foreign students, the management institutions and departments of foreign students, and are also the stepping stone to expand the research on foreign students.

In the process of integrating into the culture of the host country, international students are considered to be a special group. Nowadays, the number of international students studying abroad all over the world is increasing, and the academic adaptation of this group has also become a major theme. For the definition of academic adaptation, researchers have conducted various studies and given different views. Klein (1971) found that some international students with good grades are still isolated and disconnected in the host country's culture. He believes that good grades cannot determine academic adaptation. Bochner (1986) pointed out that academic adaptation does not mean that international students accept all the values of the host society or imitate the learning style and habits of the host students. Yan (2009) believes that cross-cultural academic adaptation itself is a cultural learning process, which is to transfer a prior knowledge and experience from the family culture to the host culture. Combined with the above definitions, this paper believes that the academic adaptation of foreign students is that foreign students have the ability to have a positive attitude in the learning environment of the host country, maintain a good relationship between teachers and students, communicate with school staff, get used to the education system and complete academic tasks.

2. PROBLEM STATEMENT

The influencing factors of cross-cultural adaptation range widely, and cultural intelligence has been paid more and more attention in recent years. Because of the importance of cultural intelligence in the process of cultural adaptation, scholars began to prove their related research. Earley and Ang(2003)proposed the pioneering theory of cultural intelligence includes three key elements necessary for effective cross-cultural interaction: Cognition, motivation and behavior. Cognitive aspects are needed to conceptualize and process new information. It's not just a simple understanding of Culture, but the ability to transfer learning to different cultural backgrounds. Adapting to different cultural norms and values requires motivation aspect. However, it is not only to adapt to strange

environments; on the contrary, it means that one has the right to respond to ambiguity. In order to effectively and appropriately participate in cross-cultural interaction, behavioral aspects are needed. It is also mentioned that the internal factors of cross-cultural adaptation including cross cultural contact is linked to knowledge and skills. (Chen Hui et al, 2003)

CQ represents their ability to deal with people from different background. If they can adjust well with an alien culture in a long run, it infers that they are quite flexible for dealing with people. Therefore, this research is choosing medical majored international students from one university in China as the object of the study to obtain a better understanding of the correlation between cultural intelligence and academic adaptation in the field of international education.

3. SIGNIFICANT OF THE STUDY

The spread of COVID-19 in the world has proved from another perspective that the community of human destiny is not only a "community" related to the rise and fall of human economic and social development, but also a "community" shared by all kinds of catastrophic events such as major infectious diseases. Different countries, social systems and cultures should put aside stereotypes and prejudices, cooperate and support each other, and jointly build a human health community. Excellent compound clinical medical talents must have the "international vision" of the world, the "family and country feelings" of serving the people, the "great love spirit" of doctors; benevolence, and the "exquisite medical skills" to help the world at the overall level; At the professional level, they should have four abilities: autonomous learning ability, innovative practice ability, communication ability and analytical and speculative ability; in terms of knowledge structure, they should have a solid foundation in clinical medicine, a considerable degree of preventive medicine knowledge, a certain foundation of science and engineering and good humanities literacy.

In September, 2020, the general office of the State Council issued the guiding opinions on accelerating the innovative development of medical education, which clearly pointed out that in the face of the new challenges posed by the epidemic situation, the new task of implementing the healthy China strategy and the new requirements of world medical development, there are still some problems in China's medical education, such as the urgent need to optimize the talent training structure and improve the training quality. It also puts forward the idea of "leading the innovation of medical education with new medicine". the concept of "New Medicine" was first put forward in August, 2018. It puts forward a new medical concept of life cycle and health process. Realize the change from "medical model mainly supported by biomedical science" to "medical model supported by medical literature, medical engineering, medical science and medical+X interdisciplinary", and cultivate high-level medical talents who can use interdisciplinary knowledge to solve medical problems. Therefore, medical humanistic education has become particularly important. Medical students' empathy ability, ethical decision-making ability, clinical imagination. Both verbal and nonverbal communication skills and reflective ability need to be strengthened. Doctors who lack communication skills cannot use their own language to experience the pain and despair of patients in clinical practice, which may lead to the loss of the trust originally placed in doctors, and finally hinder the treatment of diseases.

With the continuous innovation and wide application of new technology in the medical field, the progress of technology provides a broad space for the development of medicine. When the clinical difficult and miscellaneous diseases are solved one by one, the patient's pain is effectively relieved, and the doubled sense of achievement makes the medical process rely too much on the test results of instruments. When people see a doctor, the doctor directly looks at the test report and lacks the necessary humanistic care for the patient. However, in the process of seeing a doctor, patients are not only satisfied with the diagnosis and treatment of the disease, but also pay more attention to the medical experience and the doctor's attitude. In view of this, medical students in the new medicine era are required to understand medicine and diseases not only at the micro level such as cells and molecules, but also back to the whole of human beings.

Humanistic quality includes humanistic care consciousness and humanistic care skills. Humanistic care not only reflects a medical student's mastery of clinical skills, but also reflects whether medical students have empathy and can think from the perspective of patients. Zhao Shengmei (2021) pointed out that the current tense relationship between doctors and patients in China is not only that the medical level cannot meet the expectations of patients and their families, but also due to the decline of patients' trust and satisfaction with doctors. However, the trust between doctors and patients cannot be established in one or two sentences. Doctors need to be the leader and have skilled communication with patients for a long time.

For the management departments of international students, this study provides evidence and practical statistical data to understand the learning adaptation of medical students in China, so as to improve the quality of medical majored international student education and improve the status of Chinese education on the global education map. For medical majored students and those preparing to study in China, this study provides meaningful data and helps them make reasonable decisions and solutions, so as to improve their adaptability, give full play to their personal abilities and talents in China's educational environment and make more contributions to the society. For the overseas learning guidance and training center in China, this study provides guidance for consultation, guidance, curriculum development, training plan and preparation, so as to help students build confidence and enter China more smoothly.

To cure sometimes, To relieve often, to comfort always----E. L. Trudeau. This famous saying refers the root of medicine and the features of the relationship between doctor and patient. It is hope that medical humanity education will cultivate the medical international students to understand that they need to care more about the patients' psychological, social needs, personal feelings and values

besides their physical comfort. This medical values centered about patients is what the medical field and society need and should put effort to.

The adaptation problems of international students in each country are different, and the effects of internal and external factors on adaptation are also different. This shows the urgency of digging out the correlation, which makes it difficult for them to adapt to learning and find the best solutions for foreign students from different places and countries. Students in each country (region) have different cultural characteristics. Therefore, in order to better deal with this adaptation problem, it is best to study the foreign students in each country and focus on particular major separately.

Cultural intelligence (CQ) is a term used in business, education, government and academia. It comes from interpersonal intelligence and intelligence between society and emotion, which is an ability to identify, understand and manage the emotions of oneself and others (Gardner, 1983). Goleman(1995) found that EQ(EQ) accounts for 80% to 90% of the ability to distinguish between outstanding leaders and ordinary leaders. These abilities include the ability to have self-awareness and other people's awareness, which can be coordinated with ones emotions and others' emotions. Emotional intelligence also means that people have the ability to regulate themselves, or control their emotions and behaviors under pressure, and delay gratification in order to achieve long-term goals. Enough motivation. In addition, this means that one can show empathy for others and use social skills to communicate. Cultural Intelligence further develops this self-consciousness and other consciousness. Until 2002, Christopher Earley (2002), Earley and soon Ang (2003) developed the research on cultural intelligence and the abbreviation "CQ". They believe that cultural intelligence is the ability of individuals to skillfully perform their functions in an environment different from their own cultural background. This means that people with cultural intelligence should not only sympathize with others and communicate with others, but also get along well, and be able to recognize different values, beliefs, attitudes and behaviors, so as to anticipate, act and respond in an appropriate way, so as to maximize its role to achieve effective results, and then reassess and try to act or respond in different ways.

The above definition of cultural intelligence can be regarded as complementary. on the one hand, it refers to the behavior considered wise from the perspective of people in a specific culture. Such behavior can include the rapid application of previously learned information in some cultures and in other cultures. Get along with people in other cultures, and slowly and deliberately consider alternative actions in other cultures. on the other hand, cultural intelligence can also refer to the traits and skills that people quickly adapt with minimal pressure when they interact widely in cultures other than social networking. the two uses of this term are relevant, because people who want to be sensitive to others can check intelligence defined and proved in other cultures and adjust their behavior in cross-cultural experience.

However, most of the study related with CQ are mainly in the filed of business, and the object of the study are also rotated around the multinational companies and the expatriate employees. Thought there are some studies expand to the field of education, very few are concerned about the medical majored international students, since their identity are quite special.

The findings are limited as the study followed the design of cross-cultural sectional approach, which is not able to reflect the dynamic changes in the progress of the development of cross-cultural adjustment. Moreover, some of the variables can be affected by the situation on the time data was collected.

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The Reform of English Teaching in Higher Vocational College under the Mode of Applied Talent Training

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Abstract: Applied talents trained by higher vocational education refers to skilled talents who can apply theoretical knowledge, learning knowledge and new technology and so on to the actual production process and in life. the higher vocational English teaching reform based on the training of applied talents that can adapt to the requirements of economic and social development is the inevitable choice of higher vocational education reform. Therefore, the higher vocational English teaching reform should optimize the English curriculum teaching system, cultivate students' independent learning ability, give full play to the role of evaluation, and effectively improve the English teaching effect.
Keywords: Higher vocational education; Applied talents; English curriculum; Teaching reform

1. INTRODUCTION

(i)The reform of higher vocational English teaching can meet the requirements of economic and social development

English is one of the important disciplines in the field of higher vocational education, and it is also the main position to cultivate students' English ability and promote students to obtain better and more comprehensive development. In the background of current times, more and more exchanges with other countries, English as an international language, make the demand of English application talents increased sharply, but because of higher vocational English teaching backward teaching concept, backward teaching methods, and lead to the applied talents cannot meet the actual needs of society. In this regard, higher vocational English should reform the higher vocational English teaching under the application-oriented talent training mode, so as to promote the continuous improvement of the quality of application-oriented talent training. on this basis, it can be seen that the English teaching reform of higher vocational colleges under the application talent training mode can meet the needs of social and economic development, and cultivate more applied talents that can adapt to social development and meet the market demand.

(ii) English teaching reform is the inevitable choice of higher vocational education reform

Since the 1990s, the implementation of the policy of enrollment expansion in Chinese colleges and universities has made the larger and larger scale of Chinese vocational colleges, and the number of students in school. on this basis, the employment problem of higher vocational graduates follows, and many higher vocational students cannot find suitable jobs after graduation. Nowadays, many higher vocational colleges have also taken note of this point, have adjusted their teaching ideas, innovate for the talent training methods, and then build a teaching system with employment-oriented guidance and the training of applied talents as the teaching goal.

The English subject is the main subject in the higher vocational education system, so the English subject is also involved in the teaching reform. In the reform of English teaching, we should conform to the main reform trend of higher vocational colleges and reform English teaching under the mode of applied talent training. In view of the continuous innovation of teaching objectives, continuous optimization of teaching content, the continuous improvement of curriculum system and continuous innovation of teaching evaluation, an English teaching mode suitable for the development of higher vocational colleges and students' employment. In order to cultivate students' English ability, and promote students to become applied talents. It is worth noting that under the background of the continuous improvement of the new curriculum reform, it provides the direction and ideas for the reform of higher vocational English teaching.

(iii) English teaching reform in higher vocational colleges can provide better ways to cultivate applied talents

For higher vocational education, its stage characteristics are very obvious. In the stage of elite education, higher vocational education undertakes the important mission of cultivating and selecting management talents and scientific and technological talents, and has the function of shaping talent personality and mind. Its main purpose is to cultivate academic talents. In the stage of mass education, higher vocational colleges undertake the important mission of teaching students relevant social knowledge and cultivating students' professional ability and professional ability. Their main purpose is to cultivate applied talents. Under the background of the Times, China's education field has entered the stage of mass education, and all social industries are urgent to need application-oriented talents. However, for the application-oriented talent training system in China's higher vocational colleges, there are still many problems, such as the imperfect application-oriented talent training system, no obvious educational characteristics, and the relatively serious homogenization problems, and this situation is very unfavorable for the training of applied talents in higher vocational colleges. Therefore, in the process of reform, higher vocational English teaching should constantly innovate for the teaching content, and

reasonably integrate the training of application talents and teaching content together. In this case, it cannot only strengthen the cultivation of students' application ability, but also improve the scientific, systematic, perfect and application of English knowledge.

2. HIGHER VOCATIONAL ENGLISH TEACHING UNDER THE STRATEGY OF APPLIED TALENTS TRAINING MODEL

(i) Change the previous traditional English teaching concept, and optimize the English curriculum teaching system

In targeting the English teaching reform, higher vocational colleges must fully realize the importance of students as the learning subject, clarify the necessity of cultivating students' English knowledge, English ability and comprehensive English ability, and then optimize and innovate the English curriculum system. Moreover, in addition, in the process of optimizing the English curriculum teaching system, students should be organized to participate in English related practical activities, or teachers should organize to carry out various English practice activities, so as to create more English knowledge application platforms for students and strengthen the cultivation of students' English application ability. It is worth noting that teachers should change the previous concept of English teaching under the influence of the traditional exam-oriented education, and pay attention to the analysis and exploration of the new English curriculum reform, which can promote the better development of English teaching. In addition, in the past, the traditional higher vocational English teaching paid more attention to the impart of knowledge, usually paying attention to vocabulary, grammar and other language education, but ignoring the cultivation of students' ability, which cannot achieve the purpose of training students to become applied talents. Therefore, teachers should establish a new teaching concept, to cultivate students' English ability, and promote students to become applied talents as the main teaching goal.

(ii) Strengthen the reform and innovation of English teaching mode, and cultivate students' ability to learn independently

In carrying out English teaching in higher vocational colleges, teachers must attach great importance to the reform and innovation of English teaching mode, so as to achieve the reasonable integration of English teaching mode and applied talent training mode. This situation can lay a good foundation for the cultivation of applied talents, in the process of actually reforming and innovating the English teaching mode, Teachers can try to introduce hierarchical teaching mode, network online teaching mode, group cooperation inquiry teaching mode, task-driven teaching mode, game teaching mode, simulation teaching mode, practice teaching mode, etc, in this way to make the teaching mode even richer, Let students to learn English knowledge from many aspects and channels, Improve my comprehensive English ability from many aspects and through multiple channels, in order to cultivate students' independent learning ability, This situation can lay a good ability foundation for students to better learn English knowledge in the future.

(iii) Pay full attention to practicality and practicality, and effectively improve the English teaching effect

In the process of traditional English teaching in higher vocational colleges, teachers will not make English teaching plans according to students' English learning ability, English learning characteristics and English learning needs, and usually adopt a unified teaching plan for teaching. However, under the requirements of application talent training mode, teachers need to pay special attention to the practicality of English teaching and take the practicality of English teaching as the first consideration factor. Specifically, teachers need to fully consider the students' actual needs for English learning and teach students in accordance with their aptitude. In short, different English teaching objectives and teaching plans are formulated according to different students 'majors, which can further enhance students' subjective initiative in English learning, stimulate students 'interest in learning, and maximize the improvement of students' English learning effect. In addition, the practicality of English teaching should be fully considered.

(iv) Reasonably conduct the compilation and improvement of English textbooks, and pay attention to the optimization of English teachers

For higher vocational English teaching, teaching materials are crucial. English textbooks are an important tool for students to learn English knowledge and teachers to teach English knowledge. This also means that teachers should pay full attention to the compilation of English textbooks. For the English teaching materials of higher vocational colleges under the applied talent training mode, we should not only fully consider the basic level of English, but also how to improve students' English application ability. Specifically, in the first teaching stage of English teaching, students should help to lay a good foundation, help students accumulate more knowledge, and strengthen students' understanding of English knowledge. In the second teaching stage of English teaching, emphasis should be placed on strengthening students' English application ability, and the above two aspects should be fully considered when writing English teaching materials.

3. SUMMARY

In a word, the implementation of English teaching reform in higher vocational education under the mode of application-oriented talent training is the key to higher vocational education and the practical English learning needs of students. Therefore, should cultivate applied talents as the main teaching goal of vocational English teaching, and on the basis of innovative vocational English teaching mode, teaching methods, teaching methods, curriculum system, evaluation methods and teaching ideas, etc., to better cultivate students' English application ability, encourage students to obtain more comprehensive development, and for the society to cultivate more high quality and high ability applied talents, and constantly improve the teaching level of higher vocational colleges.

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A Literature Review of an English Vocabulary Acquisition Strategy---Guessing(inferring) words from context

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Abstract: Guessing(inferring) words from context is an effective English vocabulary, through which a literature review is made, from the perspective of contextual strategy and a comparison of its effectiveness with Semantic Mapping and Word Lists Strategies, through some listed experimental studies. As a result that a learner should pay much attention to appplying fully contextual strategy in the second language vocabulary acquisition.
Keywords: Inferring; Contextual strategy; Semantic mapping; Word lists

1. INTRODUCTION

De Bot, Paribakht and Wesch(1997), Fraser(1999), Paribakht and Wesche(1997, 1999)(as cited in Bengeleil. & Paribakht, 2004) maintained that Lexical inference, which involves guessing the meaning of an unfamiliar word using available linguistic and other cues, appears to be a primary lexical processing strategy used by L2 readers in initial comprehension of unknown words in context. Jung (2000) (as cited in Chin, 2002) reported that when Korean EFL students encountered unknown words in context while reading, they could readily figure out the meanings of the new words. Bengeleil and Paribakht (2004) insisted that an understanding of this process and factors involved in lexical inferencing that may contribute to its success and vocabulary acquisition is greatly valuable in SLA(Second Language acquisition) research.

De Glopper(1996), Dubin and Olshtain(1993), Haastrup(1991), Haynes(1993), Hulstijin(1992), Li(1988), Sternberg(1987)(as cited in Paribakht&Wesche, 1999)held that a vital factor in successful vocabulary learning through reading is the presence of the context and clear semantic and other linguistic cues that enable the reader to correctly infer the meaning of an unfamiliar word.

A study conducted by Bengeleil and Paribakht(2004) put a focus on 20 Arabic-speaking ESL medical university students, who were from two reading proficiency levels(intermediate and advanced) and given the same English expository text (approximately 1000 words) with the target words underlined, which was used to assess the two experimental groups' inferring process. Two weeks before this experiment, the researchers applied the assessment instrument--- the Vocabulary knowledge Scale(VKS) to judge the participants' depth of knowledge of the target words and then a week before this experiment, the researchers trained the participants how to use think-aloud procedure. During the individual research session, each participant was presented with the target text and asked to read it for general comprehension. the text was collected and then the participant was given the same text with 26 underlined target words and was asked to read the text and guess the meanings of the underlined target words, using think-aloud procedure. Based on the transcripts, the tapes, and the researchers' notes for each participant during each research session, the result of analysis indicated that during reading, the two experimental groups used almost the same knowledge sources and contextual cues to infer the meanings of the target words. the following table 1 presents those knowledge sources participants used to help inferring the word.

Table 1 See the Taxonomy of Knowledge Sources Used in L2 Lexical Inferencing (Bengeleil& Paribakht, 2004, p. 231)

1. Linguistic sources
A. Intralingual sources
1: Target word level
a. word morphology b. homonymy c. word association
2: Sentence level
a. sentence meaning b. syntagmatic relations c. paradigmatic relations
d. grammar e. punctuation
3. Discourse level
a. discourse meaning b. formal schemata
B. Interlingual sources
1:Lexical knowledge
2: Word collocation
II. Non-linguistic sources
A. Knowledge of topic
B. Knowledge of medical terms

Bengeleil and Paribakht study showed that the two groups with different language proficiency applied various knowledge sources while guessing the meanings of the target words. the researchers found both the two groups applied intralingual sources(based on L2) more often than interlingual sources (based on L1) and that sentence –level source was used most frequently. In addition, the researchers noticed that during the reading activity, both experimental groups applied local cues(those found in the same sentence as the target word) and globe cues(those found beyond the sentence containing the target word) to infer the meanings of the target words. In each research session, the researchers carefully transcribed, recorded tapes and took notes on participants' performance so that the research result, therefore, could be considered as reasonable and objective. Nevertheless, the participants did not include low-proficient learners, which did not seem to indicate that research result is overall and convincing.

In order to test what strategies learners use most and what knowledge sources and contextual cues they prefer when

understanding the unknown words in context, Paribakht & Wesche(1999) conducted a study being involved in 10 ESL intermediate-level university students from different L1 backgrounds (French, Chinese, Farsi, Spanish, Vietnamese, and Arabic), who were asked to perform two comprehension tasks: a question task and a summary task in 2-hour individual research session. Similar to Bengeleil and Paribakht study(2004), this researchers trained participants how to use think-aloud procedure. the training occurred at the beginning rather than before performance of tasks, however. the question task required participants to answer questions based on the text. After their answering, they were asked whether they had encountered unfamiliar words while doing the task and how they had dealt with them while the summary task required participants to read the text and stop at the end of each paragraph to give a summary of its content. After their summary, they were asked the same questions as those mentioned in the question task. the result of the study showed that during the two tasks, participants applied three different strategies to seek the meanings of unknown words: word retrieval, appeals for assistance and inferencing, among which inferencing was most often applied where participants used various cues and kinds of knowledge to attempt to guess the meanings of the target words in context, which seemed to indicate task type did not significantly affect learners' patterns of strategy use. It was noticed that both groups applied various knowledge sources to help infer the meanings of the target words. But the frequency of using them varied.

Table 2 listed the order of their frequent use. (Paribakht&Wesche, 1999, p. 207)

Extralinguistic sourc	Linguistic sources
World knowledge	Major Minor Sentence-level Discourse/text grammatical knowledge Homonymy Word morphology Word association Punctuation

Table 2 shows that sentence-level grammatical knowledge was taken by participants as the most important knowledge source used in inferencing, which is accordance with Bengeleil and Paribakht(2004) study in which sentence- level knowledge source was most frequently applied. To the other, both the two studies indicated that subjects prefer turning to sentence –level knowledge source to help them infer the meanings of the target words in the context. the assessment for Bengeleil and Paribakht(2004) study as well as Paribakht & Wesche(1999) study was based on the written transcripts, the tapes, the researcher's notes and both two groups of researchers did not supply the meanings of unfamiliar words when participants asked for help in order to encourage their application of lexical solving strategies. Both the findings from the two argued studies above indicated that learners acquire L2(English) vocabulary through context, particularly using concerning contextual cues to infer the meanings of the unknown words they encounter.

2. A COMPARISON OF THE EFFECTIVENESS OF CONTEXT STRATEGY WITH SEMANTIC MAPPING AND WORD LISTS STRATEGIES

The next study(Chin 2002), looking at 116 first year low-level Korean EFL university students(divided into three groups), compared the effectiveness of context strategy with semantic mapping and word lists strategies in vocabulary acquisition through three different tasks – definition test, multiple-choice test, and fill-in test. Chin examined the effectiveness of context use in comparison with word form analysis on low –level Korean EFL readers and found that context use significantly outperformed word form analysis in facilitating EFL vocabulary acquisition. Before the study began, a pre-test was administered to assess the participants' English proficiency through 'The Complete Guide to TOEIC'(Rogers, 1997, cited in Chin, 2002). the test result showed that there was no significant difference between the three groups' English proficiency. Therefore, the researcher randomly arranged each group into a different treatment of vocabulary instruction. the definition test provided 10 participants with 10 target words (4 adjectives and 6 verbs) and they were asked to give corresponding definitions. the multiple-choice test consisted of 10 items, each of which included a cloze type of simple sentence with three distractors. Participants were required to choose the most reasonable answer among them; the fill-in test contained two passages and two vocabulary tables and each passage required five words to be complete and there provided five words to be selected in each table. Firstly the researcher conducted the Context Treatment through presenting the 10 target vocabulary, each of which was introduced in three different contexts and then participants were required to guess the meanings of the target words following the five steps noted by Clarke and Nation(1980)(as cited in Chin, 2002): '(1) determine the part of speech of the unknown word, (2)look at the immediate context of the unknown word, (3)look at the wider context of the unknown word, (4)guess the meaning of the unknown word, and (5)check the guess(Chin, 2002, p. 140). 'In the Semantic Mapping Treatment, the researcher demonstrated beforehand how to use this strategy and then presented target words and clarified their meanings. Participants were directed to give as many connected words as possible and create semantic maps. In Word List Treatment, an alphabetical list of the target words with their meanings was presented to participants. English explanations as well as Korean translations for the target words were presented.

The statistical data showed that the three groups achieved high scores across the three treatments on the definition test. the researcher believed that it was because of participants' extensive exposure to the definition task that led to the result above. on the other hand, it was found that participants under the Context Treatment yielded better scores than those under the Semantic Mapping Treatment and the List Treatment on multiple choice task and fill-in task. Chin maintained that what his experimental result indicated was consistent with the findings of the research literature like Carnine,

Just as Huckin(1986)(as cited in Huckin and Bloch, 1993) suggested that 'beginners are *unable* to use many of the context clues discussed here, and it is possible that

advanced learners may find less of a *need* to use them. (Huckin and Bloch, 1993, p. 174). 'What if participants are involved into a large group? the questions above seem to be valuable for the further research about the vocabulary acquisition strategy-'Guessing (inferring) words from the context. '

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Exploration and practice of ideological and political education and teaching reform of Engineering Mechanics course

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Abstract: Engineering mechanics course is the basic course of most engineering majors, with a wide coverage and its theory is widely used in the field of engineering. Based on the characteristics of the course and the construction objectives of engineering mechanics curriculum, this article will explore and reform the teaching of engineering mechanics curriculum by the embedding of ideological and political elements, so as to achieve the goal of practicing ideological and political education and comprehensively improving the ability of talent training, which has achieved certain effects.

Keywords: Engineering mechanics; Curriculum ideology and politics; Teaching design, Teaching reform

INTRODUCTION

In December 2016, (X_JP) stressed that ideological and political work in universities is related to the fundamental question of what kind of people they train, how to train and for whom to train people, at the National Conference on Ideological and Political Work in Universities. We should continue to take moral education as the central link, take ideological and political work throughout the whole process of education and teaching, realize whole-process and all-round education, and strive to create a new situation for the development of higher education in China [1]. In the report to the 19th National Congress of the (C-P-C), General Secretary (X_JP) pointed out that we should fully implement the Party's educational policy, implement the fundamental task of cultivating people by virtue, develop quality-oriented education, promote equity in education, and train socialist builders and successors who develop morally, intellectually, physically and aesthetically [2]. the Opinions on Strengthening and Improving the Ideological and Political Work in Colleges and Universities issued by the (C-P-C) Central Committee and the State Council point out that universities shoulder the important mission of personnel training, scientific research, social services, cultural inheritance and innovation, and international exchanges and cooperation. Strengthening and improving ideological and political work in colleges and universities is the fundamental issue of what and how to run what kind of universities, the leadership of the Party over colleges and universities, and the successors of the cause of (SWCC) [3].

To implement the national ideological and political work conference in colleges and universities spirit, in 2020, the Ministry of Education issued the higher education curriculum ideological construction guidelines [4]. It was put forward to promote curriculum ideological construction, the ideological and political education through talent training system, it gives play to the role of each course education, improve the quality of talent training in colleges and universities. To comprehensively promote the ideological and political construction of the curriculum, it must combine values with knowledge transmission and ability training, and help students to shape the correct world outlook, outlook on life and values. Give full play to the role of the main channel of classroom teaching in the ideological and political work in colleges and universities, comprehensively promote the reform of ideological and political education of courses, make all kinds of courses in the same direction, and form a synergistic effect. In this context, combing course teaching content, combining with the characteristics of different courses and value concept, mining the ideological education elements, organic into the classroom teaching, let students through learning, master the development law, rich knowledge, increase knowledge, shaping character, efforts to become the all-round development of socialist builders and successors, it is of great significance.

In order to implement the spirit of the document of the Ministry of Education, the course team of Engineering Mechanics, under the guidance of the ideological and political concept of the course, conducts the exploration and practice of the teaching reform of Engineering Mechanics into the ideological and political concept of the course. In the teaching of Engineering Mechanics, teachers should pay attention to the integration of ideological and political education elements, strengthen students 'engineering ethics education, cultivate students' craftsman spirit of striving for perfection, and stimulate students' national feelings and mission responsibility of serving the country through science and technology. Combined with the socialist core values and the chinese excellent traditional culture education, curriculum dig the ideological connotation, in the process of knowledge and ability training "trace" into ideological education, highlight the curriculum value guidance function, so as to realize the knowledge, ability training and value shaping the trinity teaching objectives.

1. OBJECTIVE OF IDEOLOGICAL AND POLITICAL TEACHING REFORM OF ENGINEERING MECHANICS COURSE

The overall goal of the ideological and political course of engineering mechanics is to integrate the ideological and

political ideas into the course teaching objectives and teaching content, in teaching, it will combine knowledge teaching, ability training and value guidance. According to the characteristics of the course itself, the thinking mode and the embodiment of the value, the ideological and political education for students were carried out, and the ideological and political education elements such as national feelings, scientific questioning spirit, professional ethics, engineering ethics, rule of law consciousness and social responsibility were integrated into the whole process of the course teaching. By telling the history of mechanics, the stories of mechanics and China's civil engineering construction achievements, such as Zhaozhou Bridge, Anlan Bamboo Cable Bridge, Hong Kong-Zhuhai-Macao Bridge, Canada Quebec Bridge, Titanic and other engineering cases, which can enhance students' national pride and identity, strengthen students' sense of mission and responsibility, make students understand the spirit of craftsmanship in a subtle way, and take a more positive, rigorous, meticulous and realistic attitude into their study and work [5].

The 2020 version of the talent training program divides the course objectives of engineering mechanics into two teaching objectives: (1) it is to master the main concepts and static analysis of engineering mechanics, and the research methods, principles and characteristics of strength, stiffness and stability. (2) it has the ability to choose appropriate methods to analyze various engineering mechanical problems; it can abstract mechanical models from simple practical problems, using mathematics and the basic theory of engineering mechanics for static analysis, internal force, stress and strength, deformation, stiffness and stability design calculation. In the curriculum ideological and political teaching reform. Course objectives should not be changed, That is, the course objectives of this course are still the above two points, What you need to join is this lesson, Cheng's ideological and political education goals, Although all the moral education work is ideological and political, But as reflected in the ideological and political goals of the course, There should also be some distinctions, Therefore, the ideological and political education goals of this course are the following four points: (1) Through classic cases, students can cultivate their national pride and educate students about patriotis. (2) Combined with classic cases, students should cultivate their materialist dialectical view to cultivate students' critical thinking ability. (3) Through the introduction of typical character inspirational stories, students are encouraged to never forget their own heart even when they encounter difficulties. (4) Combined with typical cases, to cultivate students' engineering literacy, that is, when solving engineering problems, environmental and social benefits must be preferred.

2. THE IDEOLOGICAL AND POLITICAL TEACHING REFORM PRACTICE OF ENGINEERING MECHANICS COURSE

2.1 in terms of teaching content: the integration of the curriculum ideological and political concepts with the curriculum content

Engineering mechanics course combined with actual engineering project is very closely, will have ideological education engineering case into classroom teaching, the content of each ideological knowledge seamless integration into mechanics knowledge, not only can teach professional knowledge, but also can strengthen students' ideological education, "engineering mechanics" course content and the corresponding relationship between ideological elements are shown in table 1.

Table 1 Corresponding relation between course content and ideological and political elements of Engineering Mechanics

Chapter	Course content	Ideological and political material	Moral education thought
Introduction	Course research tasks and content; Introduction to the history of mechanics; the basic assumptions of deformable body; the basic forms of deformation	Mechanical phenomena in nature; Famous case of mechanical history; Mechanics class celebrity deeds; Famous cases of the engineering.	The beauty of mechanics; cultural confidence; National identity and pride; spirit of patriotism; Scientific exploration spirit.
Statics	Axioms and inferences of statics; Constraints and constraining force; simplification of force system; Force analysis of balanced object and object system	Three elements of force; Drawing method of constraining force according to the constraint characteristics; Force diagram of object system and single object; Balance equation according to the force system type to solve the unknown binding forc; Static problem and hyperstatic problem.	The formation of the calculation rules; Strict and realistic scientific attitude; Solid work style; A steadfast craftsman spirit.
Basic deformation and combined deformation	Section method for the internal force of the bar; the drawing method of internal force; Stress and deformation calculation; Strength and stiffness check.	The regulation of positive and negative internal force; the cross-section method is used, assuming that the internal force is positive. the drawing method of internal force figure. Strength check according to dangerous section and dangerous point. Reasonable design of beams.	Beauty in naturalness; beauty of structure; cultural confidence; National identity and pride; Strict work attitude; Scientific exploration spirit; Engineering responsibility consciousness and craftsman spirit
Analysis of Stress and Strain Failure Criteria	Analysis of Stress state; Four Failure criteria and applications	The concept of principal stress; Classification of the stress states; Failure criteria applications	Strict working attitude; Engineering responsibility consciousness and craftsman spirit
Buckling of Columns	The basic concepts of columns and critical load; Check the stability of columns	Applicable range for Euler's formula; the measures to enhance the columns stability	Strict working attitude; Engineering responsibility consciousness and craftsman spirit

2.2 in terms of teaching methods and means: curriculum ideological and political ideas are integrated with teaching methods and means

Engineering Mechanics has more course content, but less credit hours. In classroom teaching, teachers cannot spend a large and whole time to explain ideological and political

education content. So we must adopt flexible and decentralized methods to put ideological and political elements in appropriate teaching links and teaching content. Teachers need to grasp the characteristics of curriculum and students, adhere to the student as the center, achievement-oriented education concept, pay attention to heuristic teaching, by asking questions, guide students to think and analysis, inspire students naturally solve the mechanical problem, and improve the ideological literacy, play the role of "double" teaching, namely the student main body and teachers leading role, and realize both interesting and effective classroom teaching purpose. In teaching, it is necessary to comprehensively design the implementation points and strategies of professional knowledge and ideological and political knowledge teaching. the ideological and political knowledge points to be expounded are properly interspersed into the mechanical knowledge points, and the ideological and political education is carried out in a way that is popular with students.

In terms of teaching methods, around the "student-centered" education and teaching concept, teachers often use heuristic and case-type teaching in class to cultivate students' independent thinking ability, the ability to apply mechanical knowledge to solve complex engineering problems and good professional norms. For example, when teaching pure bending beam positive stress, first of all, combined with the difference between the positive stress of the pure bending beam and the axial stretching of the rod, teachers give examples and ask questions, to stimulate students' thinking and exploration spirit, let the students deeply understand similar things. When exploring these laws, we must follow the contradiction, to do specific problem specific analysis, grasp the principal contradiction of things (particularity), to master the inner nature of things. When deriving the positive stress formula of pure bending beam, we can observe the pure bending experiment of the beam to infer the change law of the longitudinal line strain at each point in the cross section, let the students have a more profound experience of dialectical materialism and epistemology. the course of engineering mechanics is inseparable from scientific experiments. Only with the help of life or production practice, we can obtain relevant theoretical formulas and in the engineering practice and to try the verification and promotion. Another example is the strength calculation of combined deformation, we list the examples of winch, let the students first conduct mechanical modeling, then static balance analysis and calculation, and finally use the relevant mechanical knowledge to test whether the strength of the transmission shaft meets the requirements. If not meet the requirements, we let the students think about what measures should be taken to improve its strength, and the required measures to ensure the safety of the transmission shaft under the premise to reflect the economy, but also to reflect the concept of green environmental protection.

In terms of teaching means, the course group also introduces the intelligent teaching tools "learning tong" and the "rain classroom" for auxiliary teaching. Using these information teaching means, teachers cannot only efficient attendance in class, and can interact with students anytime and anywhere, communication, and even correcting homework, timely grasp students understanding of a knowledge or some teaching content, timely get students to course teaching and learning evaluation, to improve or adjust the teaching strategy, to ensure the quality of teachers "teaching" and the effect of students "learning". In addition, the introduction of intelligent teaching tools in the teaching of engineering mechanics curriculum can make students understand and experience the degree of deep integration of current information technology and higher education teaching, thus guiding students to cherish the current happy life, study hard, and aspire to serve the motherland.

2.3 in terms of teaching mode: the curriculum ideological and political concept are integrated with the teaching mode

Figure 1 Network Teaching Platform of Engineering Mechanics

With the development of the times, the network has become an important means for people to obtain information. the teaching methods should also follow the pace of the times and make full use of software platforms in the teaching activities before, during and after class. Adopt a mixed online and offline teaching mode, the first step is carried out before class, teachers push or make appropriate and appropriate engineering mechanics teaching resources through the network platform, establish requirements and time limits for learning task points, and help students master basic knowledge before class. Students can also use the practice test link to learn self-examination and review, so that the teacher understand the students' mastery. the second step is carried out in class, the teacher speaks the main content of engineering Mechanics in class, and explains the weak knowledge points according to the pre-class platform test results, so that students can break the key and difficult points of knowledge. In classroom activities, teachers can use software such as learning to carry out selection, answer answer, and theme discussion, which can help students' classroom concentration and improve the learning effect. the third step is carried out after class, teachers carry out live broadcast, thinking to expand knowledge, answer questions, and discuss after class, etc., so that students can consolidate, improve and expand their knowledge. the advanced teaching based on the software platform ensures the depth and breadth of students

'learning content, ensures students' knowledge reserve, and improves students' self-study ability and employment competitiveness. the network teaching platform of Engineering Mechanics can be shown in Figure 1.

Through daily life and engineering practice, we consciously collect and sort out relevant teaching resources. on the one hand, there is a purposeful interspersed application in classroom teaching, on the other hand, in view of the limited class time, the relevant ideological and political materials can be released through online platforms such as QQ, wechat, Learning Tong and Rain Classroom after class, to encourage students to learn, think, discuss and leave messages, and share their understanding and perception, which can play a role in leading the development of students' values. Ideological and political teaching resources not only include pictures, text, video, animation and other physical resources, but also include some hidden resources. For example, in the teaching links after class, homework reading and other classroom teaching, teachers must use their own decent words and deeds, rigorous academic style, noble personality, to infect and lead students to establish a correct materialist outlook on life, world outlook and values, in order to help students adult, become, become virtuous.

Figure 2 Related ideological and political materials are released on the network platform

2.4 in terms of curriculum research methods: curriculum ideological and political ideas are integrated with curriculum research methods

Taking the research method of the balance part of material system in engineering mechanics as the integration point, we can cultivate students' overall situation, the relationship between individual and collective, harmonious society and other values.

For the balance of the material system, the research method is usually to conduct for the overall analysis to find the support reaction force, and then the local analysis was performed again, in order to educate students should have the overall situation. Force analysis for material system requires that the whole and local should be consistent, mutual coordination, and not contradictory. Thus it can be used to guide and educate students that people do not exist in isolation, between people, individuals and the collective, individuals and the society should be coordinated and unified, harmonious coexistence.

Taking the research method of combining theoretical analysis and experimental verification in engineering mechanics as the integration point, students' scientific spirit of combining theory with practice, pursuing truth and innovating is cultivated. For example, in the positive stress part of pure bending beam, it first learns the calculation formula of the positive stress of pure bending beam in theory, and analyzes the distribution law of the positive stress along the section height. Then let the students consult the literature, draw up the experimental test scheme, through the experiment to verify the distribution law of pure bending beam positive stress and theoretical calculation formula. and by comparing the advantages and disadvantages of various experimental test schemes, it can be used to cultivate students' scientific spirit of combining theory with practice and having the courage to explore and innovate. Inquiry teaching was carried out to cultivate the students' innovative spirit, as shown in Figure 3.

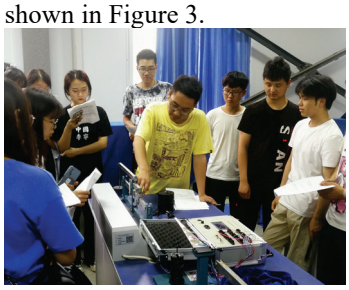

Figure 3 Students formulate the experimental scheme, conduct theoretical analysis and experimental verification

3. CURRICULUM IDEOLOGICAL AND POLITICAL WORK THINKING

Engineering mechanics is a basic engineering course. This paper puts forward some ideological and political elements penetrating into the course from different aspects. These elements can enrich the content of the classroom, make the classroom no longer a monotonous digital formula, which can mobilize the enthusiasm of students to learn, and play the effect of teaching. the teaching design of ideological and political education in engineering mechanics courses not only strengthens the humanistic cultivation of professional teachers and realizes the organic unity of knowledge transmission and value guidance, but also plays an important guiding role in realizing the goal of "ideological and political education" in other courses.

Next, the engineering mechanics curriculum will be implemented combined with “the implementation of the Curriculum Ideological and Political Construction Guidelines of Higher Learning”, and strive to deepen the ideological and political construction of the curriculum. It includes three aspects: (1) further explore the teaching design and implementation path of ideological and political construction of engineering mechanics; (2) to study and establish the standard and evaluation system of the course ideological and political affairs department; (3) construct the ideological and political mode of engineering mechanics course. Through the above work, the value leading points of ideological and political courses are further combed and the elements of ideological and political courses are fully explored, the rich ideological and political case database is built, and the forms and methods of integrating ideological and political education into engineering mechanics teaching are explored. At the same time, it will innovate education and teaching methods, study different curriculum ideological

and political methods of online and offline teaching, and construct the effective path of ideological and political education of engineering mechanics courses, so as to form the system and method of ideological and political education in the first-class curriculum construction of engineering mechanics, and promote the application.

Next, the course of engineering mechanics will implement the ideological and political construction of universities, and deepen the ideological and political construction of the curriculum, including three aspects: (1) further explore the teaching design and implementation path of ideological and political construction of engineering mechanics;

ACKNOWLEDGEMENT

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Rural Innovation and Entrepreneurship of College Students from the Perspective of Rural Revitalization

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Abstract: Under the background of new era development, rural revitalization has been attached great importance to by all levels of society. Rural revitalization needs the support of many talents. With the social problem of college students finding jobs after graduation, the rural innovation and entrepreneurship of college students from the perspective of rural revitalization has attracted attention. Based on the perspective of rural revitalization, this paper explores the difficulties of college students' rural innovation and entrepreneurship, and puts forward relevant solutions and suggestions.

Keywords: Rural Revitalization; College Students; the Countryside; Innovative Undertaking

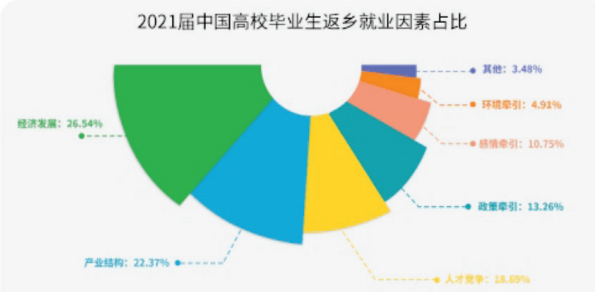
1. INTRODUCTION

Following the development strategy of agriculture, rural areas and farmers, rural revitalization has gradually been put on the agenda of government agencies. the main goal of rural vitalization is to achieve basic modernization of agriculture and rural areas. A three-step strategy is implemented for rural revitalization, of which the second step is to basically realize agricultural and rural modernization by 2035, and the third step is to fully realize agricultural and rural modernization by 2050, so as to achieve "agriculture strengthens farmers, makes rural areas more beautiful" [1]. Rural revitalization serves farmers, but they are mainly divided into three categories. the first category is peasant families who have obtained stable employment and high income in cities, and the countryside is not very important to them. the second category is the whole family who have not settled down in cities, or some of them have moved to cities. Rural revitalization will focus on the second and third categories of farmers. However, the real realization of rural revitalization requires the introduction of high-quality talents first, which establishes a better meeting point for rural revitalization and college students' innovation and entrepreneurship.

Through policy support, the government can create a good social environment for innovation and entrepreneurship for college students and solve the employment difficulties of college students. Meanwhile, it can also import a group of high-quality talents for rural revitalization and inject vitality into development. As talents of the new era, college students can help to integrate big data, Internet of things, Internet and other high-tech into agricultural production, accelerate the development of rural e-commerce, and create good conditions for the construction of smart agriculture. At the same time, the college students to participate in building a new type of agricultural management main body construction, can propel agricultural enterprises gradually towards the brand, market development, will further extend characteristic agriculture industry chain, to fully demonstrate the agricultural value chain, the introduction of new technology, within the scope of the rural areas to build more efficient mode of agricultural development, speed up the transformation of agricultural production [2]. Therefore, based on the perspective of rural revitalization, this paper puts forward corresponding suggestions and measures for college students' rural innovation and entrepreneurship.

2. CURRENT SITUATION AND PROBLEMS OF COLLEGE STUDENTS RETURNING HOME FOR ENTREPRENEURSHIP

The number of college graduates is increasing, and the employment pressure of college students is expected to peak in 2022. According to relevant surveys, the number of college graduates in 2022 is expected to be 10.76 million, an increase of 1.67 million over the same period last year. This comes from the lagged pressure after the expansion of higher vocational enrollment in 2019. According to the 2020 Government Work Report, higher vocational enrollment will be expanded by 2 million between 2020 and 2021. Higher vocational colleges generally have three years of schooling, and the enrollment expansion will peak in 2022. the employment pressure of young people is already great, and college graduates in 2022 May further increase the pressure. Local governments have guided graduates to find jobs and encouraged them to return home to start their own businesses in combination with rural revitalization. But at present, there are still some problems for college students to return home to start their own business.



According to the survey, among the factors affecting the return employment of college graduates, economic development and industrial structure are the most concerned factors, followed by 13.26% by policy, 10.75% by emotion, and 4.91% by environment. College students

still pay more attention to local economic development, industrial structure and policy impact [3].

(1) College students lack enthusiasm for rural entrepreneurship

Although rural revitalization has been attached great importance by the state, college students are accustomed to urban life and are not well adapted to the relatively low living environment and living conditions in rural areas, so their enthusiasm for returning home to start a business is seriously low. Compared with the low risk and high comfort of direct employment, most graduates prefer direct employment rather than rural entrepreneurship.

(2) College students lack of experience in rural entrepreneurship

I lived in the city during my college years and knew little about the rural environment. Therefore, in the early stage of starting a business, college students should first be prepared to deal with many uncertain factors, and secondly, the reality of lack of contacts and equipment supply in the new environment cannot be ignored.

(3) College students lack the ability to start a business in rural areas

College students' rural entrepreneurship ultimately depends on entrepreneurial leadership and team ability. Entrepreneurship requires good planning based on local environmental problems and resources. Therefore, the team of college students is required to be down-to-earth, carefully investigate the local resources, environment and conditions, and work out a path of rural revitalization in line with local development. and combined with the use of current technical means, innovation publicity and promotion. At present, many college students who go back to their hometown to start a business do not have high entrepreneurial ability, which leads to too much obstacle when they start a business and easy to fail.

3. SUGGESTIONS ON COLLEGE STUDENTS' RURAL INNOVATION AND ENTREPRENEURSHIP FROM THE PERSPECTIVE OF RURAL REVITALIZATION

From the perspective of rural revitalization, college students' rural entrepreneurship cannot be separated from multiple supports. Including the government, universities, and students themselves and many other stakeholders. This paper argues that the government should first of all to do a good job of social environment to support creative, secondly in colleges and universities should make great efforts to provide rural college students innovation entrepreneurship resources and training platform, the students should play their subjective initiative, positive into rural college students in innovative undertaking, comprehensive use of various resources and strategy, boost rural revitalization of [4].

(1) the government will optimize the rural innovation and entrepreneurship environment for college students

Rural infrastructure is relatively weak, and the government should work together to create a good environment for innovation and entrepreneurship. For example, in the face of college students' innovation and entrepreneurship in rural areas, preferential policies such as tax cuts and capital subsidies are provided. Optimize the loan environment to provide certain funds for college students to start a business; in addition, college students should also carry out entrepreneurial consulting and guidance in the rural environment. Policy support is one of the key factors affecting college students' rural innovation and entrepreneurship.

(2) Colleges and universities actively provide simulated rural entrepreneurship activities and platforms

In order to obtain some entrepreneurial experience after graduation, colleges and universities should actively hold entrepreneurial competition activities and rural practice. At the same time, college students should actively participate in campus entrepreneurship or rural activities. College students can participate in more competitions about innovation and entrepreneurship during college, such as "Challenge Cup" and "Internet +" competitions [5]. In addition, college students should get to know good entrepreneurial partners in the entrepreneurship competition to establish a human resource foundation for future innovation and entrepreneurship. In addition, colleges and universities also need to build a rural innovation and entrepreneurship exchange center to provide a platform for graduates to exchange information and establish a foundation for information resources.

(3) Colleges and universities should attach importance to the cultivation of college students' entrepreneurial ability

Colleges and universities can first set up special courses related to rural innovation and entrepreneurship of college students. To establish a theoretical basis for college students in rural innovation and entrepreneurship. In addition, colleges and universities should regularly invite successful practitioners of rural entrepreneurship and innovation to give lectures on college forums, share their practical innovation and entrepreneurship experience, and stimulate students' enthusiasm and love for rural entrepreneurship. In addition, colleges and universities should insist on close exchanges and communication with enterprises, implement school-enterprise cooperation, and jointly establish business incubation bases [6]. Colleges and universities should combine with many resource channels to effectively enhance the entrepreneurial ability of college students from all aspects of theory and practice.

(4) College students should give full play to the initiative of rural innovation and entrepreneurship

College students should pay attention to rural innovation and entrepreneurship, pay more attention to the current situation of rural development at ordinary times, practice the actual needs of rural areas, and understand the advantages and disadvantages of local rural characteristics. For rural innovation and entrepreneurship pay attention to local conditions. In addition, for rural innovation and entrepreneurship, cash technology should be actively introduced, such as the development of rural e-commerce, combined with the current blockchain technology to visualize the source of crops and improve the trusted link between products and consumers [7].

4. CONCLUSIONS AND PROSPECTS

(1) Conclusions

From the perspective of rural revitalization, this paper analyzes that the current problems of college students

returning to their hometown for employment mainly lies in their inadaptability to the rural environment and lack of enthusiasm for innovation and entrepreneurship. Moreover, due to lack of understanding of the rural environment, innovation and entrepreneurship cannot be carried out effectively; Lack of innovation and entrepreneurship experience and ability, low success rate of innovation. In order to solve the above problems, this paper argues that various parties should cooperate and support, the government should optimize the environment for college students' rural innovation and entrepreneurship, and the university should pay attention to the cultivation of college students' entrepreneurial ability, and actively provide simulated rural entrepreneurship activities and platforms. College students should give full play to the initiative of rural innovation and entrepreneurship and bring cutting-edge technology into rural development.

(2) Future prospects

To achieve rural revitalization, we need to integrate urban and rural areas, achieve common prosperity, develop agriculture with quality, develop green rural areas, flourish culture, promote good rural governance, and reduce poverty with distinctive features. College students should combine the general direction of rural revitalization with innovation and entrepreneurship, develop characteristic rural revitalization, combine advanced science and technology, and help rural areas to achieve common prosperity. Rural development has a wide range of dimensions, and it is necessary to take the road of sustainable development based on the local situation of rural areas. For example, to develop creative agriculture, we need to refer to foreign agricultural production activities, introduce more new development modes, and improve the shortcomings of traditional agricultural production. In addition, promote rural e-commerce and develop Internet rural industries.

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Pythagorean Fuzzy N-Soft Rough Set and Its Application in Decision Making

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Abstract: In this paper, we introduce two new hybrid models, namely rough N-soft Pythagorean fuzzy sets and Pythagorean fuzzy N-soft rough sets, and investigate some of their fundamental properties. Then, the lower and upper Pythagorean fuzzy N-soft rough approximation operators and the score function of Pythagorean fuzzy N-soft rough numbers are presented. Finally, we introduce a algorithm to Pythagorean fuzzy N-soft rough sets for dealing with decision-making problems and through an practical example to illustrate the new approach.

Keywords: Soft Sets; Rough Sets; Rough N-Soft Pythagorean Fuzzy Sets; Pythagorean Fuzzy N-Soft Rough Sets Decision-Making

1. INTRODUCTION

With the rapid development of technology, we are faced with a large amount of data every day. However, most of these data cannot get the expected conclusions directly, and often need further processing and mining. In addition, uncertainty issues such as ambiguity, imprecision and inconsistency arise when processing data. Obviously, traditional mathematical tools are gradually becoming impractical. It is especially important to find mathematical tools that can deal with problems of uncertainty.

In 1965, the fuzzy set theory proposed by mathematician Zadeh [29] marked the birth of fuzzy mathematics. Considering that the fuzzy set is only a single analysis of fuzzy objects from the perspective of membership. Atanassov [9] comprehensively analyzes membership and non-membership degrees and proposes intuitionistic fuzzy sets. However, with further research, people find that intuitionistic fuzzy sets require that the sum of membership and non-membership degrees of elements in the set does not exceed 1 is too harsh. In order to meet more needs, Yager [25] proposed Pythagorean fuzzy set, which only requires that the sum of squares of element membership and non-membership does not exceed 1, which expands the membership space. As a generalization of intuitionistic fuzzy sets, Pythagorean fuzzy sets are considered more objective and comprehensive. In recent years, researchers have carried out extensive research on Pythagorean fuzzy sets and obtained rich theoretical results. For example, Zhang and Xu [27] defined related operations and properties on Pythagorean fuzzy sets, and presented a TOPSIS multi-attribute decision-making method. Peng et al. [21] studied the systematic transformation of distance measure, similarity measure and other measures, and proposed a new information measure formula. Khan, M. S. A. et al. [17] proposed the Pythagorean hesitant fuzzy set and discussed its application in decision-making problems. Garg, H. [16] proposes an improved interval-valued Pythagorean fuzzy set ranking score function.

In practical problems, what we encounter is not only pure ambiguity, but also incomplete information. It is often not ideal to use fuzzy set theory to deal with similar problems. In 1982, Pawlak [20] proposed rough sets, which use indistinguishable relations to classify elements in a set. Then, using the rough approximation method, certain and doubtful knowledge can be mined from the data information space without any prior information other than the data. Therefore, it has great advantages when dealing with ambiguous, uncertain data in complex information systems. Since the advent of rough sets, the theory has been successfully applied to many fields, such as: medical treatment, meteorology, finance, artificial intelligence and so on. In order to improve the applicability of rough sets, scholars have constructed various rough set models, such as: fuzzy rough sets [11], covering rough sets [22], intuitionistic fuzzy rough sets [10], etc.

In order to overcome the limitation of uncertainty problem in terms of parameter expression, Molodtsov [19] proposed soft set theory from the perspective of parameterization in 1999. This theory is not limited by parameter conditions, so it has great advantages in solving uncertainty problems. Therefore, it has received extensive attention from relevant researchers. With the deepening of research, considering that many uncertain problems faced in real life are non-binary evaluation structures. Such as: voting situation, ranking, etc. Fatimah et al. [12] refined and expanded the soft set in 2018, and proposed a new model that can be ordered in a non-binary evaluation system - N-soft set. Since the N-soft set theory was put forward, many scholars at home and abroad have integrated this theory with other theories, studied many new mixed models, and achieved new research results. For example, Akram et al. [1] studied hesitant N-soft set, fuzzy N-soft set [2], N-soft topology [23], N-soft rough set [6], intuitionistic fuzzy N-soft set [8], interval-valued hesitant fuzzy N-soft set [3], hesitant fuzzy N-soft ELECTRE-II model [4] and Bipolar N-soft set [14], etc.

Each of the theories such as Pythagorean fuzzy sets, rough sets and N-soft set theory can be used as a mathematical tool to deal with uncertainty problems. Because of their strong complementarity, many researchers have begun to work on their hybrid models. For example, Zhang et al. [28] Present concepts of soft rough intuitionistic fuzzy sets and intuitionistic fuzzy soft rough sets. After this, on the one hand, Akram et al. [8] promoted them and introduced three new hybrid models of intuitionistic fuzzy N-soft set, N-soft-rough intuitionistic fuzzy set, and intuitionistic fuzzy N-soft-rough set. on the other hand, Hussain et al. [15] proposed soft-rough Pythagorean fuzzy sets and

Pythagorean fuzzy soft-rough sets and applied them to decision-making problems where experts provide preferences. Zhang et al. [26] proposed the Pythagorean fuzzy N-soft set theory and discussed the related operations of the theory, then applied it to the multi-attribute decision-making problem.

It can be seen from the existing literature that there is no concept of N-soft rough Pythagorean fuzzy sets and Pythagorean fuzzy N-soft rough sets, but there are still many practical problems that cannot be solved by existing models. For example, when the sum of membership and non-membership in the problem is greater than 1, the intuitionistic fuzzy N-soft rough set [8] cannot handle it. Pythagorean fuzzy soft rough sets [15] cannot be applied when the rank evaluation is either 0 or 1. This motivates this paper to propose new methods of N-soft-rough Pythagorean fuzzy sets and Pythagorean fuzzy N-soft-rough sets, and propose their application in decision-making. the rest of this paper is organized as follows. In section 2, we recall some basic concepts, such as rough set, N-soft set, Pythagorean fuzzy set, Pythagorean fuzzy N-soft set. In section 3, the new structure of N-soft rough Pythagorean fuzzy set is presented and the related properties of N-soft rough Pythagorean fuzzy approximation operators are studied. We study Pythagorean fuzzy N-soft rough set and investigate their related properties in section 4. In section 5, we give a algorithm to solve multi-attribute decision-making problems in real life by this novel model. In section 6, we present conclusion.

2. PRELIMINARIES

In the section, we recall some basic notions, such as rough set, N-soft set, Pythagorean fuzzy set, Pythagorean fuzzy N-soft set that are useful for discussion in the next section.

Definition 2.1[29] LetRbe an equivalence relation on the universe$U, K = (U, R)$ be a Pawlak approximation space. A subset $X \subseteq U$ is called definable if $\underline{Apr_R}(X) = \overline{Apr}_R(X)$; in the opposite case, i. e., if $\underline{Apr_R}(X) - \overline{Apr}_R(X) \neq \emptyset$ is said to be a rough set, where the two operations are defined as:

$$\underline{Apr_R}(X) = \{x \in U: [x]_R \subseteq X\},$$
$$\overline{Apr}_R(X) = \{x \in U: [x]_R \cap X \neq \emptyset\}$$

assigning to every subset$X \subseteq U$, two sets$\underline{Apr_R}(X)$ and $\overline{Apr}_R(X)$ are called the lower and upper approximations of X with respect to (U, R).

Definition 2.2[12] Let U be a universe set of objects and E be attributes, $A \subseteq E$. Let$R = \{0, 1, \cdots, N-1\}$ be a set of ordered grades where $N = \{2, 3, \cdots\}$. We say that (G, A, N) is an N-soft set on U if$G: A \to 2^{U \times R}$. With the property that for each $e \in A$ and there exists a unique $(x, r_e) \in U \times R$ such that

$$(x, r_e) \in G(e), x \in U, r_e \in R.$$

Definition 2.3[25] Let U be a universe of discourse. A Pythagorean fuzzy set (PFS)is an object having the following form:

$$Q = \{(x, u_Q(x), v_Q(x)) | x \in U\},$$

where $u_Q: U \to [0, 1]$ represents the membership degree and $v_Q: A \to [0, 1]$ represents the non-membership degree of the element $x \in U$, with condition$0 \leq u_Q^2 + v_Q^2 \leq 1$.

$\pi_Q(x) = \sqrt{1 - (u_Q(x))^2 - (v_Q(x))^2}$ is identified as the degree of indeterminacy.

For simplicity, we call $\lambda = (u_\lambda, v_\lambda)$ a Pythagorean fuzzy number (PFN).

Definition 2.4[26] LetU be a non-empty universal set of objects, E be a set of attributes, and $A \subseteq E$. Let $R = \{0, 1, \cdots, N-1\}$ be a set of ordered grades with $N = \{2, 3, \cdots\}$. the triple (G_P, A, N) is called a Pythagorean fuzzy N-soft set on U(PFNSS(U)), if G_P is a mapping $G_P: 2^{U \times R} \times PFN^{U \times R}$, in which $G: A \to 2^{U \times R}$, and $P: A \to PFN^{U \times R}$, that PFN denote a Pythagorean fuzzy number, i. e. $u: A \to [0, 1]$ and $v: A \to [0, 1]$ with for all $e \in A, 0 \leq u_e^2 + v_e^2 \leq 1$.

Foe each $e \in A$ and $x \in U$ there exists a unique $(x, r_e) \in U \times R$ such that $r_e \in R$ and $PFN = (u_e(x), v_e(x))$. Hence, (G_P, A, N) can be written as $G_P(e) = \{< (x, r_e), (u(x, r_e), v(x, r_e)) > | (x, r_e) \in U \times R\}$, where r_e denotes the level of the element attribute. $u(x, r_e)$ denotes the membership degree, and $v(x, r_e)$ denotes the non-membership degree of the element $x \in U$ to the attribute e.

For simplicity $G_P(e) = \{< (x, r_e), (u(x, r_e), v(x, r_e)) > | (x, r_e) \in U \times R\}$ is denoted as $G_P = (r_e, (u, v))$, and is called Pythagorean fuzzy N-soft numbers(PFNSN).

The complement of a Pythagorean fuzzy N-soft set $X = \{< (x, \alpha), (u_X(x, \alpha), v_X(x, \alpha)) > | (x, \alpha) \in U \times R\}$ is denoted by $\sim X = \{< (x, N - \alpha), (v_X(x, \alpha), u_X(x, \alpha)) > | (x, \alpha) \in U \times R\}$.

The basic operations on Pythagorean fuzzy N-soft sets are defined as follows, for all $X = \{< (x, r_X), (u_X(x, r_X), v_X(x, r_X)) > | (x, r_X) \in U \times R\}, Y = \{< (x, r_Y), (u_Y(x, r_Y), v_Y(x, r_Y)) > | (x, r_Y) \in U \times R\}$:

(1) $X \subseteq Y$ if and only if $r_X \leq r_Y$ and $u_X(x, r_X) \leq u_Y(x, r_Y)$ and $v_X(x, r_X) \leq v_Y(x, r_Y)$, for all $x \in U$.

(2) $X = Y$ if and only if $X \subseteq Y$ and $Y \subseteq X$.

(3) $X \cap Y = \{< (x, r_X \wedge r_Y), (u_X(x, r_X) \wedge u_Y(x, r_Y), v_X(x, r_X) \vee v_Y(x, r_Y)) > | x \in U, r_X, r_Y \in R\}$.

(4) $X \cup Y = \{< (x, r_X \vee r_Y), (u_X(x, r_X) \vee u_Y(x, r_Y), v_X(x, r_X) \wedge v_Y(x, r_Y)) > | x \in U, r_X, r_Y \in R\}$.

3. N-SOFT ROUGH PYTHAGOREAN FUZZY SET

In this section, we present the notion of N-soft rough Pythagorean fuzzy set. Previously, we need to define the notions of N-soft relation and N-soft approximation space.

Definition 3.1 Let U be a nonempty and finite universe of discourse and A be a set of parameters. $R = \{0, 1, \cdots, N-1\}$ be a set of ordered grades where $N = \{2, 3, \cdots\}$. Let $K = (G, A, N)$ be a N-soft set over U and $0 \leq t < N$ a threshold. Then, a subset η of $U \times A$ is said to be a N-soft relation over $U \times A$ is given by

$$\eta = \{< (x, e), f_{t^{\geq}}(x, e) > | (x, e) \in U \times A\},$$

where $f_{t^{\geq}}: U \times A \to \{0, 1\}, f_{t^{\geq}}(x, e) = \begin{cases} 1, \text{if } G(e)(x) \geq t, \\ 0, \text{if } G(e)(x) < t. \end{cases}$

Definition 3.2 Let $K = (G, A, N)$ be a N-soft set over U and $0 \leq t < N$ a threshold. For any N-soft relation $\eta \subseteq U \times A$, a set-valued mapping $\eta_s: U \to P(A)$ is defined by

$$\eta_s(x) = \{e \in A | (x, e) \in \eta, x \in U\}.$$

A triple (U, A, η) is referred to as a N-soft approximation

space. For every $Q \subseteq A$, we define the lower N-soft approximation $\underline{\eta}(Q)$ and upper N-soft approximation $\overline{\eta}(Q)$ of Q about (U, A, η) as follows:

$$\underline{\eta}(Q) = \{x \in U | \eta_s(x) \cap Q \neq \emptyset\},$$
$$\overline{\eta}(Q) = \{\{x \in U | \eta_s(x) \subseteq Q\}.$$

The pair $(\underline{L}(Q), \overline{L}(Q))$ is referred to as a N-soft rough set, and $\underline{\eta}, \overline{\eta}: P(A) \to P(U)$ are, respectively, referred to as upper and lower N-soft approximation operators induced from (U, A, η).

Example 3.3 Let $K = (G, A, 5)$ be a 5-soft set over an initial universe U, where $U = \{x_1, x_2, x_3, x_4, x_5\}$ and $A = \{e_1, e_2, e_3, e_4\}$ a set of attributes, which is defined by Tab. 1.

Tab. 1. Table for 5-soft set $K = (G, A, 5)$

G	e_1	e_2	e_3	e_4
x_1	*3*	*4*	*3*	*1*
x_2	*4*	*3*	*4*	*0*
x_3	*2*	*0*	*1*	*1*
x_4	*0*	*3*	*1*	*3*
x_5	*1*	*4*	*2*	*0*

From Tab. 1. and Definition 3.1., the 5-soft relation η over $U \times A$ can be presented by a table as in the following form:

Tab. 2. Table for the 5-soft relation η

η	e_1	e_2	e_3	e_4
x_1	*1*	*1*	*1*	*0*
x_2	*1*	*1*	*1*	*0*
x_3	*1*	*0*	*0*	*0*
x_4	*0*	*1*	*0*	*1*
x_5	*0*	*1*	*1*	*0*

Then, a N-soft relation (η) is given by

$$\eta = \{(x_1, e_1), (x_2, e_1), (x_3, e_1), (x_1, e_2), (x_2, e_2), (x_4, e_2), (x_5, e_2), (x_1, e_3), (x_2, e_3), (x_5, e_3), (x_4, e_4)\}.$$

By Definition 3.2, we can compute

$$\eta_s(x_1) = \{e_1, e_2, e_3\}, \eta_s(x_2) = \{e_1, e_2, e_3\},$$
$$\eta_s(x_3) = \{e_1\}, \eta_s(x_4) = \{e_2, e_4\}, \eta_s(x_5) = \{e_2, e_3\}$$

If $Q = \{e_2, e_3, e_4\} \subseteq A$, we have,

$$\underline{\eta}(Q) = \{x_1, x_2, x_4\}, \overline{\eta}(Q) = \{x_4\}.$$

Thus the pair $(\underline{\eta}(Q), \overline{\eta}(Q))$ is the crisp N-soft rough set.

Now we are ready to define N-soft rough Pythagorean fuzzy sets. Just as combining the N-soft relation from U to A with the rough intuitionistic fuzzy sets to obtain N-soft rough intuitionistic fuzzy sets [8], we present the concept of N-soft rough Pythagorean fuzzy sets by combining the N-soft relation from U to A with the rough Pythagorean fuzzy sets, and investigate the properties of N-soft rough Pythagorean fuzzy approximation operators.

Definition 3.4 Let (U, A, N, η) is said to be a N-soft approximation space, for all $X = \{< (e, r_e), u_X(e, r_e), v_X(e, r_e) > | e \in A, r_e \in R\} \in PF^{(A \times R)}$, we define the lower N-soft approximation $\underline{\eta}(X)$ and upper N-soft approximation $\overline{\eta}(X)$ of X, respectively, as follows:

$$\underline{\eta}(X) = \{< (x, \alpha \wedge \beta), u_{\underline{\eta}(X)}(x, \alpha), v_{\underline{\eta}(X)}(x, \beta) > | x \in U, r_e \in R\}$$

$$\overline{\eta}(X) = \{< (x, \alpha \vee \beta), u_{\overline{\eta}(X)}(x, \beta), v_{\overline{\eta}(X)}(x, \alpha) > | x \in U, r_e \in R\}$$

where

$$u_{\underline{\eta}(X)}(x, \alpha) = \bigwedge_{e \in \eta_s(x)} u_X(e);\ v_{\underline{\eta}(X)}(x, \beta) = \bigvee_{e \in \eta_s(x)} v_X(e)$$

with the condition that $0 \leq [u_{\underline{\eta}(X)}(x, \alpha)]^2 + [v_{\underline{\eta}(X)}(x, \beta)]^2 \leq 1$

$$u_{\overline{\eta}(X)}(x, \beta) = \bigvee_{e \in \eta_s(x)} u_X(e);\ v_{\overline{\eta}(X)}(x, \alpha) = \bigwedge_{e \in \eta_s(x)} v_X(e)$$

which satisfies that $0 \leq [u_{\overline{\eta}(X)}(x, \beta)]^2 + [v_{\overline{\eta}(X)}(x, \alpha)]^2 \leq 1$

$\alpha = \wedge_{e \in \eta_s(x)}(N - r_e);\ \beta = \vee_{e \in \eta_s(x)} r_e.$

The pair $(\underline{\eta}(X), \overline{\eta}(X))$ is called an N-soft rough Pythagorean fuzzy set of X about (U, A, N, η), and $\underline{\eta}, \overline{\eta}: PF(A) \to PF(U)$ are referred to as lower and upper N-soft rough Pythagorean fuzzy approximation operators.

Example 3.5 Reconsider Example 3.3, and let the crisp 5-soft relation(η) over $U \times A$ be defined as

$$\eta = \{(x_1, e_1), (x_2, e_1), (x_3, e_1), (x_1, e_2), (x_2, e_2), (x_4, e_2), (x_5, e_2), (x_1, e_3), (x_2, e_3), (x_5, e_3), (x_4, e_4)\}.$$

We now define an Pythagorean fuzzy subset X of $U \times A$ by

$X = \{< (e_1, 2), 0.64, 0.41 >, < (e_2, 0), 0.35, 0.76 >, < (e_3, 3), 0.81, 0.36 >, < (e_4, 4), 0.97, 0.31 >\}.$

Then by Definition 3.4,

$u_{\underline{\eta}(X)}(x_1, 2) = 0.35, v_{\underline{\eta}(X)}(x_1, 3) = 0.76,$
$u_{\underline{\eta}(X)}(x_2, 2) = 0.35, v_{\underline{\eta}(X)}(x_2, 3) = 0.76,$
$u_{\underline{\eta}(X)}(x_3, 3) = 0.64, v_{\underline{\eta}(X)}(x_3, 2) = 0.41,$
$u_{\underline{\eta}(X)}(x_4, 1) = 0.35, v_{\underline{\eta}(X)}(x_4, 4) = 0.76,$
$u_{\underline{\eta}(X)}(x_5, 2) = 0.35, v_{\underline{\eta}(X)}(x_5, 3) = 0.76,$
$u_{\overline{\eta}(X)}(x_1, 3) = 0.81, u_{\overline{\eta}(X)}(x_1, 2) = 0.36,$
$u_{\overline{\eta}(X)}(x_2, 3) = 0.81, u_{\overline{\eta}(X)}(x_2, 2) = 0.36,$
$u_{\overline{\eta}(X)}(x_3, 2) = 0.64, u_{\overline{\eta}(X)}(x_3, 3) = 0.41,$
$u_{\overline{\eta}(X)}(x_4, 4) = 0.97, u_{\overline{\eta}(X)}(x_4, 1) = 0.31,$
$u_{\overline{\eta}(X)}(x_5, 3) = 0.81, u_{\overline{\eta}(X)}(x_5, 2) = 0.36,$

Hence

$\underline{\eta}(X) = \{< (x_1, 2), 0.35, 0.76 >, < (x_2, 2), 0.35, 0.76 >, < (x_3, 2), 0.64, 0.41 >, < (x_4, 1), 0.35, 0.76 >, < (x_5, 2), 0.35, 0.76 >\},$

$\overline{\eta}(X) = \{< (x_1, 3), 0.81, 0.36 >, < (x_2, 3), 0.81, 0.36 >, < (x_3, 3), 0.64, 0.41 >, < (x_4, 4), 0.97, 0.31 >, < (x_5, 3), 0.81, 0.36 >\}.$

Thus the pair $(\underline{\eta}(X), \overline{\eta}(X))$ is an 5-soft rough Pythagorean fuzzy set of X about (U, A, η).

Theorem3.6 Let (U, A, N, η) be a N-soft approximation space, then the upper and lower N-soft rough Pythagorean fuzzy approximation operators $\underline{\eta}(X)$ and $\overline{\eta}(X)$ in Definition 3.4 satisfy the following properties, for all $X, Y \in PF^{(A \times R)}$:

(1) $\underline{\eta}(X) = \sim \overline{\eta}(\sim X)$,
(2) $\overline{\eta}(X) = \sim \underline{\eta}(\sim X)$,
(3) $\underline{\eta}(X \cap Y) = \underline{\eta}(X) \cap \underline{\eta}(Y)$,

(4) $\overline{\eta}(X \cup Y) = \overline{\eta}(X) \cup \overline{\eta}(Y)$,
(5) $\underline{\eta}(X \cup Y) \supseteq \underline{\eta}(X) \cup \underline{\eta}(Y)$,
(6) $\overline{\eta}(X \cap Y) \subseteq \overline{\eta}(X) \cap \overline{\eta}(Y)$,
(7) $X \subseteq Y \Rightarrow \underline{\eta}(X) \subseteq \underline{\eta}(Y)$,
(8) $X \subseteq Y \Rightarrow \overline{\eta}(X) \subseteq \overline{\eta}(Y)$,
where $\sim X$ is the complement of X.

Proof: We only prove properties of the lower N-soft rough Pythagorean fuzzy approximation operator $\underline{\eta}(X)$. the upper N-soft rough Pythagorean fuzzy approximation operator $\overline{\eta}(X)$ can be proved similarly.

By Definition 3.4, we have

$N - (\alpha \wedge \beta) = (N - \alpha) \vee (N - \beta)$
$= [N - \wedge_{e \in \eta_s(x)}(N - r_e)] \vee (N - \vee_{e \in \eta_s(x)} r_e)$
$= (\vee_{e \in \eta_s(x)} r_e) \vee (N - \vee_{e \in \eta_s(x)} r_e)$
$= (\vee_{e \in \eta_s(x)} r_e) \vee (\wedge_{e \in \eta_s(x)}(N - r_e))$
$= \alpha \vee \beta$.

Thus, for any $X, Y \in PF^{(A \times R)}$,

(1) $\sim \underline{\eta}(\sim X)$

$= \{< (x, N - (\alpha \wedge \beta), v_{\underline{\eta}(\sim X)}(x, \beta), u_{\underline{\eta}(\sim X)}(x, \alpha) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \vee \beta), u_{\overline{\eta}(X)}(x, \beta), v_{\overline{\eta}(X)}(x, \alpha) > | x \in U, r_e \in R\}$
$= \overline{\eta}(X)$.

(3) $\underline{\eta}(X \cap Y)$

$= \{< (x, \alpha \wedge \beta), u_{\underline{\eta}(X \cap Y)}(x, \alpha), v_{\underline{\eta}(X \cap Y)}(x, \beta) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \wedge \beta), \wedge_{e \in \eta_s(x)} u_{X \cap Y}(e), \vee_{e \in \eta_s(x)} v_{X \cap Y}(e) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \wedge \beta), \wedge_{e \in \eta_s(x)} [u_X(e) \wedge u_Y(e)], \vee_{e \in \eta_s(x)} [v_X(e) \vee v_Y(e)] > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \wedge \beta), [\wedge_{e \in \eta_s(x)} u_X(e)] \wedge [\wedge_{e \in \eta_s(x)} u_Y(e)], [\vee_{e \in \eta_s(x)} v_X(e)] \vee [\vee_{e \in \eta_s(x)} v_Y(e)] > | x \in U, r_e \in R\}$
$= \underline{\eta}(X) \cap \underline{\eta}(Y)$.

(5) $\underline{\eta}(X \cup Y)$

$= \{< (x, \alpha \vee \beta), u_{\underline{\eta}(X \cup Y)}(x, \alpha), v_{\underline{\eta}(X \cup Y)}(x, \beta) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \vee \beta), \wedge_{e \in \eta_s(x)} u_{X \cup Y}(e), \vee_{e \in \eta_s(x)} v_{X \cup Y}(e) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \vee \beta), \wedge_{e \in \eta_s(x)} [u_X(e) \vee u_Y(e)], \vee_{e \in \eta_s(x)} [v_X(e) \wedge v_Y(e)] > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \vee \beta), [\wedge_{e \in \eta_s(x)} u_X(e)] \vee [\wedge_{e \in \eta_s(x)} u_Y(e)], [\vee_{e \in \eta_s(x)} v_X(e)] \wedge [\vee_{e \in \eta_s(x)} v_Y(e)] > | x \in U, r_e \in R\}$
$= \underline{\eta}(X) \cup \underline{\eta}(Y)$.

(7) Now to prove that if $X \subseteq Y$ then $\underline{\eta}(X) \subseteq \underline{\eta}(Y)$.

$\underline{\eta}(X)$
$= \{< (x, \alpha \wedge \beta), u_{\underline{\eta}(X)}(x, \alpha), v_{\underline{\eta}(X)}(x, \beta) > | x \in U, r_e \in R\}$
$= \{< (x, [\wedge_{e \in \eta_s(x)}(N - r_e)] \wedge [\vee_{e \in \eta_s(x)} r_e]), \bigwedge_{e \in \eta_s(x)} u_X(e), \bigvee_{e \in \eta_s(x)} v_X(e)) > | x \in U, r_e \in R\}$
$\subseteq \{< (x, [\bigwedge_{e \in \eta_s(x)} (N - r_e)] \wedge [\bigvee_{e \in \eta_s(x)} r_e]), \bigwedge_{e \in \eta_s(x)} u_Y(e), \bigvee_{e \in \eta_s(x)} v_Y(e)) > | x \in U, r_e \in R\}$
$= \{< (x, \alpha \wedge \beta), u_{\underline{\eta}(Y)}(x, \alpha), v_{\underline{\eta}(Y)}(x, \beta) > | x \in U, r_e \in R\}$
$= \underline{\eta}(Y)$.

4. CONSTRUCTION OF PYTHAGOREAN FUZZY N-SOFT ROUGH SETS

In this section, we introduce the concept of Pythagorean fuzzy N-soft rough sets and the properties of Pythagorean fuzzy N-soft approximation operators are studied.

Definition 4.1 Let (g, K, N) be a Pythagorean fuzzy N-soft set over a universal set U. Any subset L of $(U \times A) \times R$ is set to a Pythagorean fuzzy N-soft relation from $U \times A$ to R and is defined as

$$L = \{< ((x, e), r), u_L((x, e), r), v_L((x, e), r) > | ((x, e), r) \in (U \times A) \times R >\}$$

Where $u_L : (U \times A) \times R \to [0, 1]$ and $v_L : (U \times A) \times R \to [0, 1]$ denote the membership grade and non-membership grade, with $0 \leq [u_L(x, r)]^2 + [v_L(x, r)]^2 \leq 1$ for all $((x, e), r) \in (U \times A) \times R$.

If $U = \{x_1, x_2, \cdots, x_i\}, A = \{e_1, e_2, \cdots, e_j\}, N = \{r_{ij} | i, j = 1, 2, \cdots\}$.

Then a Pythagorean fuzzy N-soft relation L from $U \times A$ to R can be written in tabular form as follows:

Tab. 3. Table for Pythagorean fuzzy N-soft relation L

L	e_1	e_2	$\cdots$	e_j
x_1	$< r_{11}, (u_{11}, v_{11}) >$	$< r_{21}, (u_{21}, v_{21}) >$	$\cdots$	$< r_{1j}, (u_{1j}, v_{1j}) >$
x_2	$< r_{21}, (u_{21}, v_{21}) >$	$< r_{22}, (u_{22}, v_{22}) >$	$\cdots$	$< r_{2j}, (u_{2j}, v_{2j}) >$
$\vdots$	$\vdots$	$\vdots$	$\ddots$	$\vdots$
x_i	$< r_{i1}, (u_{i1}, v_{i1}) >$	$< r_{i2}, (u_{i2}, v_{i2}) >$	$\cdots$	$< r_{ij}, (u_{ij}, v_{ij}) >$

Example 4.2 Let $U = \{x_1, x_2, x_3, x_4, x_5\}$ be a universal set. $A = \{e_1, e_2, e_3, e_4\}$ a set of attributes and $R = \{0, 1, 2, 3, 4\}$. A Pythagorean fuzzy 5-soft relation $L: U \times A \to R$ is given by Tab. 4.

Tab. 4. Table for Pythagorean fuzzy 5-soft relation L

L	e_1	e_2	e_3	e_4
x_1	$< 4, (0.91, 0.32 >$	$< 3, (0.83, 0.50 >$	$< 2, (0.71, 0.53 >$	$< 0, (0.42, 0.76 >$
x_2	$< 3, (0.85, 0.50 >$	$< 4, (0.92, 0.46 >$	$< 1, (0.47, 0.38 >$	$< 1, (0.55, 0.61 >$
x_3	$< 2, (0.73, 0.45 >$	$< 2, (0.32, 0.91 >$	$< 3, (0.82, 0.30 >$	$< 0, (0.43, 0.79 >$
x_4	$< 0, (0.19, 0.58 >$	$< 2, (0.27, 0.76 >$	$< 3, (0.81, 0.49 >$	$< 4, (0.93, 0.21 >$
x_5	$< 0, (0.19, 0.30 >$	$< 4, (1.00, 0.00 >$	$< 2, (0.69, 0.51 >$	$< 1, (0.55, 0.43 >$

Definition 4.3 Let U be a non-empty set and A be a set of parameters. For any Pythagorean fuzzy N-soft relation L over $(U \times A) \times R$, a 4-tuple (U, A, N, L) is said to be a Pythagorean fuzzy N-soft approximation space. For each Pythagorean fuzzy subset X of $A \times R$, we define the lower N-soft approximation $\underline{L}(X)$ and upper N-soft approximation $\overline{L}(X)$ of X, respectively, as follows:

$\underline{L}(X) = \{< (x, \alpha \wedge \beta), \underline{u}(x, \alpha), \underline{v}(x, \beta) > | x \in U, r \in R\}$
$\overline{L}(X) = \{< (x, \alpha \vee \beta), \overline{u}(x, \beta), \overline{v}(x, \alpha) > | x \in U, r \in R\}$

where

$\underline{u}(x,\alpha) = \bigwedge_{e\in A}\{[1-(u((x,e),r))^2] \vee u_X(e)\}$;
$\overline{u}(x,\beta) = \bigvee_{e\in A}[u((x,e),r) \wedge u_X(e)]$;
$\underline{v}(x,\beta) = \bigvee_{e\in A}[u((x,e),r) \wedge v_X(e)]$;
$\overline{v}(x,\alpha) = \bigwedge_{e\in A}\{[1-(u((x,e),r))^2] \vee v_X(e)\}$;
$\alpha = \bigwedge_{e\in A}[(N-r^L) \vee r^X]$; $\beta = \bigvee_{e\in A}(r^L \wedge r^X)$.

For all $e \in A$. the pair $L(X) = (\underline{L}(X), \overline{L}(X))$ is referred to as the Pythagorean fuzzy N-soft set of X about (U, A, N, L).

It can be easily verified that $\underline{L}(X)$ and $\overline{L}(X) \in PF^{(U\times R)}$. In fact, $\forall((x,e),r) \in (U\times A)\times R$, and notice that $X \in PF^{(A\times R)}$, we have

$[v((x,e),r)]^2 \le 1-[u((x,e),r)]^2, [v_X(e)]^2 \le 1-[u_X(e)]^2$, then

$[\overline{v}(x,\beta)]^2$
$= \bigwedge_{e\in A}\{[1-(u((x,e),r)^2]^2 \vee [v_X(e)]^2\}$
$\ge \bigwedge_{e\in A}\{[v((x,e),r))^2 \vee [v_X(e)]^2\}$
$\le 1-\bigvee_{e\in A}\{[1-(v((x,e),r))^2] \wedge [1-(u_X(e))^2]\}$
$\le 1-\bigvee_{e\in A}\{[u((x,e),r)]^2 \wedge [u_X(e)]^2\}$.

Consequently,

$[\overline{u}(x,\beta)]^2 + [\overline{v}(x,\alpha)]^2$
$= \bigvee_{e\in A}\{[u((x,e),r)]^2 \wedge [u_X(e)]^2\}$
$+\bigwedge_{e\in A}\{[1-(u((x,e),r))^2]^2 \vee [v_X(e)]^2\}$
$\le \bigvee_{e\in A}\{[u((x,e),r)]^2 \wedge [u_X(e)]^2\} +$
$1-\bigvee_{e\in A}\{[u((x,e),r)]^2 \wedge [u_X(e)]^2\}$
$=1$.

Hence, we have proved that $\overline{L}(X) \in PF^{(U\times R)}$. Similarly, we can obtain $0 \le [u(x,\beta)]^2 + [\underline{v}(x,\alpha)]^2 \le 1, \underline{L}(X) \in PF^{(U\times R)}$. So we call $\underline{L}, \overline{L}$: $PF^{(A\times R)} \to PF^{(U\times R)}$ the lower and upper Pythagorean fuzzy N-soft rough approximation operators, respectively. In addition,

$$Pos\{X\} = \underline{L}(X),$$
$$Neg\{X\} = U - \underline{L}(X),$$
$$Bnd\{X\} = \overline{L}(X) - \underline{L}(X)$$

are called the positive, negative, and boundary regions ofX, respectively.

For simplicity, we can write $L(X) = (\underline{L}(X), \overline{L}(X)) = (< (x, \alpha\wedge\beta), u(x,\alpha), \underline{v}(x,\beta) >, < (x, \alpha\vee\beta), \overline{u}(x,\beta), \overline{v}(x,\alpha) >)$ as $\lambda_{ij} =< (\underline{r_{ij}}, \overline{r_{ij}}), ((\underline{u_{ij}}, \overline{u_{ij}}), (\underline{v_{ij}}, \overline{v_{ij}})) >$ and call Pythagorean fuzzy N-soft rough number.

Remark 4.4:

If $q = 1$ is fixed, then it is easy to observe that $(\underline{L}(X), \overline{L}(X))$is an intuitionistic fuzzy N-soft rough set.

If $N = 2$ is fixed, then it is easy to observe that $(\underline{L}(X), \overline{L}(X))$is a Pythagorean fuzzy soft rough set.

If $q = 1, N = 2$ is fixed, then it is easy to observe that $(\underline{L}(X), \overline{L}(X))$is an intuitionistic fuzzy soft rough set.

The following example can help us better understand the concept of Pythagorean fuzzy N-soft rough sets.

Example 4.5 in order to reduce the consumption of petroleum in the automobile industry and reduce the emission of pollutants and greenhouse gases, new energy vehicles are the inevitable trend of future development. Because of this, many auto companies have stepped up their shifts to the development and production of new energy vehicles. Suppose that $U = \{x_1, x_2, x_3, x_4, x_5\}$ is the set of five best-selling brands of new energy vehicles. Let A be a parameter set, where $A = \{e_1, e_2, e_3, e_4\}$ ={Appearance, recharge mileage, Cost, Safety performance}, and $R = \{0, 1, 2, 3, 4\}$. A customer wants to buy the vehicle which qualifies with the parameters of A to the utmost extent from available vehicles in U. Assume that the customer describes the "attractiveness of the vehicle" in form of a Pythagorean fuzzy 5-soft relation L: $U \times A \to R$ is given in Table 4.

Now consider the customer gives the optimum normal decision object W which is a Pythagorean fuzzy subset over $A \times R$ defined as follows:

$W = \{< (e_1, 3), 0.82, 0.37 >, < (e_2, 4), 0.90, 0.16 >,$
$< (e_3, 1), 0.51, 0.56 >, < (e_4, 2), 0.68, 0.51 >\}$

Then by Definition 4.1, we have

$\underline{u}(x_1, 3) = 0.17, \underline{v}(x_1, 3) = 0.56,$
$\underline{u}(x_2, 3) = 0.15, \underline{v}(x_2, 4) = 0.51,$
$\underline{u}(x_3, 2) = 0.33, \underline{v}(x_3, 2) = 0.56,$
$\underline{u}(x_4, 2) = 0.14, \underline{v}(x_4, 2) = 0.56,$
$\underline{u}(x_5, 3) = 0.00, \underline{v}(x_5, 4) = 0.56,$
$\overline{u}(x_1, 3) = 0.83, \overline{v}(x_1, 3) = 0.31,$
$\overline{u}(x_2, 4) = 0.90, \overline{v}(x_2, 3) = 0.16,$
$\overline{u}(x_3, 2) = 0.73, \overline{v}(x_3, 2) = 0.47,$
$\overline{u}(x_4, 2) = 0.68, \overline{v}(x_4, 2) = 0.51,$
$\overline{u}(x_5, 4) = 0.90, \overline{v}(x_5, 3) = 0.16,$

By Definition 4.1, the operators $\underline{L}(W)$ and $\overline{L}(W)$, respectively, are given as follows:

$\underline{L}(W) = \{< (x_1, 3), 0.17, 0.56) >, < (x_2, 3), 0.15, 0.51)$
$>, < (x_3, 2), 0.33, 0.56) >,$
$< (x_4, 2), 0.14, 0.56) >,$
$< (x_5, 3), 0.00, 0.56) > \},$

$\overline{L}(W) = \{< (x_1, 3), 0.83, 0.31 >, < (x_2, 4), 0.90, 0.16)$
$>, < (x_3, 2), 0.73, 0.47) >,$
$< (x_4, 2), 0.68, 0.51) >,$
$< (x_5, 4), 0.90, 0.16) >\}.$

Thus the pair $(\underline{L}(W), \overline{L}(W))$ is a Pythagorean fuzzy 5-soft rough set of W about (U, A, N, L).

Theorem 4.6 Let (U, A, N, L) be a Pythagorean fuzzy N-soft approximation space, then the upper and lower Pythagorean fuzzy N-soft rough approximation operators $\underline{\eta}(X)$ and $\overline{\eta}(X)$ in Definition 4.1 satisfy the following properties.

for all $X, Y \in PF^{(A\times R)}$:

(1)$\underline{L}(X) = \sim\overline{L}(\sim X)$,
(2)$\overline{L}(X) = \sim\underline{L}(\sim X)$,
(3) $\underline{L}(X \cap Y) = \underline{L}(X) \cap \underline{L}(Y)$,
(4) $\overline{L}(X \cup Y) = \overline{L}(X) \cup \overline{L}(Y)$,
(5) $X \subseteq Y \Rightarrow \underline{L}(X) \subseteq \underline{L}(Y)$,
(6) $X \subseteq Y \Rightarrow \overline{L}(X) \subseteq \overline{L}(Y)$,
(7)$\underline{L}(X \cup Y) \supseteq \underline{L}(X) \cup \underline{L}(Y)$,
(8)$\overline{L}(X \cap Y) \subseteq \overline{L}(X) \cap \overline{L}(Y)$,

where $\sim X$ is the complement of X.

Proof. It is similar to the proof of Theorem 3.6.

Example 4.7 Reconsider Example 4.5, we have

$\sim X = \{< (e_1, 2), 0.37, 0.82 >, < (e_2, 1), 0.16, 0.90 >,$
$< (e_3, 4), 0.56, 0.51 >, < (e_4, 3), 0.51, 0.68 >\}.$

Similar to Example 4.5, we have

$\overline{L}(\sim X) = \{< (x_1, 3), 0.83, 0.31 >,$
$< (x_2, 4), 0.90, 0.16) >,$

$< (x_3, 2), 0.73, 0.47) >,$
$< (x_4, 2), 0.68, 0.51) >,$
$< (x_5, 4), 0.90, 0.16) >\}.$

It follows that

$$\sim\overline{L}(\sim X) = \{< (x_1, 3), 0.17, 0.56) >, < (x_2, 3), 0.15, 0.51) >, < (x_3, 2), 0.33, 0.56) >, < (x_4, 2), 0.14, 0.56) >, < (x_5, 3), 0.00, 0.56) > \}$$

That is, $\sim\overline{L}(\sim X) = \underline{L}(X)$.

On the other hand, let

$Y = \{< (e_1, 1), 0.47, 0.72 >, < (e_2, 3), 0.78, 0.40 >, < (e_3, 4), 0.93, 0.15 >, < (e_4, 3), 0.81, 0.36 >\}.$

$$\underline{L}(Y) = \{< (x_1, 1), 0.47, 0.72 >, < (x_2, 2), 0.47, 0.72) >, < (x_3, 3), 0.47, 0.72) >, < (x_4, 3), 0.81, 0.36) >, < (x_5, 3), 0.81, 0.40) >.$$

On the other hand, we have

$X \cap Y = \{< (e_1, 1), 0.47, 0.72 >, < (e_2, 3), 0.78, 0.40 >, < (e_3, 1), 0.51, 0.56 >, < (e_4, 2), 0.68, 0.51 >\}.$

Thus, we have

$$\underline{L}(X \cap Y) = \{< (x_1, 1), 0.17, 0.72 >, < (x_2, 2), 0.15, 0.72) >, < (x_3, 2), 0.33, 0.72) >, < (x_4, 2), 0.81, 0.56) >, < (x_5, 3), 0.00, 0.56) >.$$

It follows that $\underline{L}(X \cap Y) = \underline{L}(X) \cap \underline{L}(Y)$ holds.

Definition 4.7 Let $\lambda_{ij} =< (\underline{r_{ij}}, \overline{r_{ij}}), ((\underline{u_{ij}}, \overline{u_{ij}}), (\underline{v_{ij}}, \overline{v_{ij}})) >$ be Pythagorean fuzzy N-soft rough number, we define the score function of λ_{ij} as

$$SF(\lambda_{ij}) = \frac{1}{3}(\underline{r_{ij}} + \overline{r_{ij}} - \frac{\overline{r_{ij}} - \underline{r_{ij}}}{\overline{r_{ij}}} + (\underline{u_{ij}})^2 + (\overline{u_{ij}})^2 - (\underline{v_{ij}})^2 - (\overline{v_{ij}})^2),$$

The greater the score value, the greater the Pythagorean fuzzy N-soft rough number.

5. APPLICATION OF PYTHAGOREAN FUZZY N-SOFT ROUGH SETS IN DECISION MAKING

In this section, we propose a decision method based on Pythagorean fuzzy N-soft rough sets and illustrate its effectiveness and practicality with real-life examples.

Let (U, A, N, L) be a Pythagorean fuzzy N-soft approximation space, where U is the universe of the discourse, E is the parameter set, and L is a Pythagorean fuzzy N-soft relation on $(U \times A) \times R$. Then we can give the following Algorithm 1 for the selection of a suitable alternation.

Algorithm 1

Step 1. Input a domain U containing m objects.

Step 2. Input A as a set of parameters. the optimum normal decision object W.

Step 3. Establish a tabular representation of the Pythagorean N-soft set, or a Pythagorean fuzzy N-soft relation L from $U \times A$ to R.

Step 4. Input $W \in PF^{A \times R}$ as an optimal decision object according to needs of decision makers.

Step5. Computer the Pythagorean fuzzy N-soft rough approximation operators $\underline{L}(W)$ and $\overline{L}(W)$ by Definition 4.3.

Step 6. Determine the Pythagorean fuzzy N-soft rough number of objects.

Step 7. Compute the score function of objects according to Definition 4.7, and find the maximum grade value $SF(\lambda_i)$, then optimal decision will be x_i, where $i = 1, 2, \cdots, m$.

Example 5.1 Reconsider Example 4.5., we have computed Pythagorean fuzzy N-soft rough approximation operators $\underline{L}(W)$ and $\overline{L}(W)$ the optimum normal decision object W given by the consumer. Now by using the fourth step of the algorithm for Pythagorean N-soft rough sets in decision making presented in this section, Let the Pythagorean fuzzy N-soft rough number of object x_i is λ_i. We can obtain

$$\lambda_1 =< (\underline{r}, \overline{r}), (((\underline{u}, \overline{u}), (\underline{v}, \overline{v})) >$$

According to Definition 4.7,

$$SF(\lambda_1) = \frac{3 + 3 - \frac{3-3}{3} + 0.17^2 + 0.83^2 - 0.56^2 - 0.31^2}{3} = 2.10,$$

$$SF(\lambda_2) = \frac{3 + 4 - \frac{4-3}{4} + 0.15^2 + 0.90^2 - 0.51^2 - 0.16^2}{3} = 2.41,$$

$$SF(\lambda_3) = \frac{2 + 2 - \frac{2-2}{2} + 0.33^2 + 0.73^2 - 0.56^2 - 0.47^2}{3} = 1.37,$$

$$SF(\lambda_4) = \frac{2 + 2 - \frac{2-2}{2} + 0.14^2 + 0.68^2 - 0.56^2 - 0.51^2}{3} = 1.27,$$

$$SF(\lambda_5) = \frac{4 + 3 - \frac{4-3}{4} + 0.00^2 + 0.90^2 - 0.56^2 - 0.16^2}{3} = 2.40.$$

$SF(\lambda_4) < SF(\lambda_3) < SF(\lambda_1) < SF(\lambda_5) < SF(\lambda_2)$, it is noted that the optimal decision is x_2. Hence, this consumer will buy the vehicle x_2.

6. CONCLUSION

Rough sets, N-soft sets, and Pythagorean fuzzy set theory are all important mathematical tools for dealing with uncertainty. In this paper, we fuse these three theories and propose two new concepts, N-soft rough Pythagorean fuzzy sets and Pythagorean fuzzy N-soft rough sets, they can be seen as a generalization of intuitionistic fuzzy N-soft rough sets or Pythagorean fuzzy soft rough sets. Then, we give some fundamental properties of new models. and we also propose a Pythagorean fuzzy N-soft rough set decision algorithm and illustrate the effectiveness of the algorithm. In further research, the generation model of rough N-soft set theory is an interesting issue to be addressed.

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Research on the Exploration and Practices of Teaching Mode of Sports Club Type in Ordinary Colleges and Universities from the Perspective of the "Three National Regulations to Cultivate People"

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Abstract: This article, directed by the concept of "three national regulations to cultivate people", basing on the analysis of the existing health problems of ordinary college students in China, with the reform of physical education teaching in ordinary colleges and universities as the object of study, and starting from the shortages of current physical education teaching modes in colleges and universities, proposes new measures helpful to improve the physical health of students, and the progressive hierarchical teaching concept according to the teaching modes of sports club to establish an integrated teaching model with in and out of class activities appropriate to local conditions at a correct time, so as to promote the high-quality development of sports teaching in colleges and universities and serve as an reference for the reform of common physical education course in ordinary colleges and universities.

Keywords: Three National Regulations to Cultivate People; Physical Health of Students; Sports Club; Teaching Model

1. THEORETICAL BASIS

With the increasingly deepening of reform and construction of physical education teaching in colleges and universities, traditional teaching models for physical education have been unable to meet the demand of schools for development.

In order to improve the physical quality of students, the Ministry of Education issued the *National Physical Health Standards for Students (Revision 2014)* (hereinafter referred to as *Standards*). the data collected by the 7-year-long national student health test shows a continuous decline of the physical quality indexes of students over the years, which is most significantly reflected in aspects as a rapid increase of the proportion of obese group, grave decline of indicators of strength and endurance, and the increasingly high possibility for young people to suffer from nutritional diseases as hypertension, diabetes etc. Colleges and universities, as the national cultivation bases for excellent talents, should hold a clear understanding of the mission of sports development in them, and fulfill the fundamental task of moral education and cultivation of students, improve the level of physical health of students, improve the sports cultural literacy of students, actively carry out group activities and athletic competitions among students, so as to make contributions to building a strong country in sports. College sports, as a comprehensive discipline, should contrive to realize the diversification of its physical education teaching functions while following psychological, physiological, age and other characteristics of students at the same time. Currently, most of studies on the teaching models of sports clubs in colleges and universities conduct no deeper researches other than discussions about theoretical concepts, and for the moment there has been no research finds involving major innovations and practices with ordinary colleges and universities as the object, which also leads to the poor quality in current physical education teaching and the lack of reasonable and effective organization plan for physical education teaching. Physical education teaching in colleges and universities needs to grasp existing opportunities of the time, implementing reforms according to their actual conditions, so as to continuously improve their physical education teaching level, reinforce the learning of physical education teaching theories, promote physical quality of students, motor skills and motivation to participate in sports, and provide strong support for accelerating the construction of first-class universities and first-class disciplines.

The state council issued the *Outline of the Nationwide Body-building Plan* on Jun. 20, 1995, and the *Sports Law of the People's Republic of China* on Aug. 29, 1995. the ministry of education issued the *Overall Teaching Reform Plan of Two Kinds of Physical Education Courses* (hereinafter referred to as *Plan*) on Jun. 13, 1999, the state council issued *Decision of the (C-P-C) Central Committee and the State Council on Deepening Educational Reform and Comprehensively Promoting Quality-oriented Education* (referred to as *Decision*). on Aug. 6, 2002, the ministry of education issued *Outline of PE course*

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teaching Guidance in Chinese Colleges and Universities (referred to as *Outline*). In February 2010 and March 2011, the state council successively issued two successional documents as the second phase project (year 2001-2010) plan of *Outline of the Nationwide Body-building Plan* (year 2011-2015) and the *Nationwide Physical Fitness Plan*, aiming to ensure the sustainable development of national fitness work. China successfully held the 29th Olympic Games in 2008 and won the most gold medals, which is a proud achievement. Nevertheless, by sharp contrast, there was not much emphasis on the mass sports, and the constitution of young people is declining year by year. It is also an important part of the development of our country in post-Olympic era as well as a crucial strategy to promote national fitness program. the version 2009 of the *Regulations on National Fitness*, issued by the state council on Aug. 19, 2009, was formed based on the outcome summarized from national health conditions, which had been checked by practices. on Oct. 8, 2019, the ministry of education issued the *Opinions on Deepening the Reform of Undergraduate Education and Teaching to Improve the Quality of Talent Training*, which clearly pointed out that the assessment of students on physical education course must be enhanced and those who fail to reach the qualified level of requirements of *National Physical Health Standards for Students* may not graduate. In Oct. 2020, the general office of the state council printed and issued the *Suggestions on Comprehensively Strengthening and Improving Physical Education in Schools in the New Era*. In Aug. 2021, the state council printed and issued the *National Fitness Program* (year 2021-2025). Those series of documents and the spirits reflected in them, aimed to promote the national fitness into a higher level of development to better satisfy people's fitness and health demands, and served as the crucial theoretical basis for implementing curriculum reform and construction of physical education.

2 ANALYSIS OF THE CURRENT SITUATION OF PHYSICAL EDUCATION TEACHING MODELS IN COLLEGES AND UNIVERSITIES

Sports club got its name from the researches on curriculumization of out-of-class activities. Physical education teaching in early times commonly laid emphasis on the importance in curriculumization of out-of-class activities, for example, Eibert K. Fretweil once appealed: “If feasible, out-of-class activities should be listed among other formal lessons to be the supplementation of those formal lessons”. Foreign scholars in early times discussed about how to “curricularize” out-of-class activities, while domestic scholars proposed “the second class”, “the second channel”, “activity curriculum” and other concepts. After years of exploration, “most educational authorities have shared the idea that out-of-class activities should be deemed as formal lessons”. Current teaching models of physical education severely damage teaching effect, resulting in a gradual decline in the physical health of students, which has already revealed the existence of grave problems in current teaching models of physical education in ordinary colleges and universities.

The authority in China mainly in charge of sports in colleges and universities has successively designed more than 10 kinds of teaching models, forming the current situation involving diverse teaching models in colleges and universities. the major kinds of those teaching models are as follows:

2.1 Physical Education Teaching Model of “Club” Type

The physical education teaching model of “Club” type is designed according to the objective of talent training in colleges and universities, in combination with demands of students for physical education teaching, aiming to cultivate and establish the life-long sport consciousness in students and enable them to grasp 1-2 skills and methods for their long-term physical exercise, so as to fully exploit their individual talents, interests and hobbies in sports, which is a kind of teaching model for physical education class laying foundation for life-long health. Features of the Physical Education Teaching Model of “Sports Club” Type Teaching of club type in the form of physical education class are diverse from clubs in society, and they are two completely different concepts. the most significant feature of the teaching of “club style” is that it is conducted in an open style, where students are granted with extremely sufficient freedom to decide what to do. There are various teaching groups in club rich in colorful and enjoyable contents. It requires sound and high-quality sports facilities to ensure that the teaching process of this type can be conducted successfully. Teaching concepts of the past shall be completely altered, especially converting the teaching evaluation which stressed examinations and expected grades too much in the past, into a new comprehensive evaluation with combination of regards to whether students have fun in the actual activities, whether their life-long sports consciousness is enhanced, and whether their abilities for appreciating sports are improved.

2.2 Physical Education Teaching Model of “Three Basics Type”

The features of the physical education teaching model of “three basics type” lie in the emphasis on delivering basic knowledge, basic skills and basic abilities to students, i. e. what we commonly refer as the teaching model of “three basics”, in whose teaching and organization forms the original teaching classes function as its units during teaching process. That type of physical education teaching model can let teachers to play a leading role, and can achieve positive results in aspects as cultivating student's volitional quality and collectivism spirit. But that type of teaching model follows the teaching models of union class system created by the former Soviet, being unable to give play to the subjective initiative of students with rigid teaching process during whose process students feel boring in training, making it hard to stimulate their potentials.

2.3 Physical Education Teaching Model of “Integration Type”

Physical education teaching model of “integration type” can improve the comprehensive quality of students in sports, but this kind of physical education teaching model raises particularly high level of requirements for sports fields and facilities, meaning it requires sufficient fields

and facilities to support the teaching process either in class or out of class. the physical education teaching model of "integration type" organizes the whole students in a way that they are required to collaboratively processing their training, so ordinary colleges and universities are unable to supply sufficient fields and facilities to meet the requirements for integration teaching model for whole students in regard to their current conditions.

2.4 Physical Education Teaching Model of "Three-stage Type"

The features of physical education teaching model of "three-stage type" lie in the fact that it lays emphasis on teaching basic knowledge, skills and abilities in sports in aspect of the guiding thoughts of teaching process, and its sports learning stages are arranged in a way that the basic physical education courses are offered for freshmen, the physical education elective courses are offered for students in their sophomore years, and students take the courses of general education in their third or fourth college years. Its shortages are: Lack of teaching projects and flexibility.

Through my investigation and research, I have conducted analysis of above four kinds of physical education teaching models and found that those four models all have their own advantages. But from the perspective of talent cultivation and life-long sports culture, it would form a comparatively ideal teaching model by reasonably integrating the physical education teaching model of "three-stage type" with an optimized version of the physical education teaching model of "club" type.

3. ANALYSIS OF FACTORS AFFECTING THE IMPLEMENTATION OF PHYSICAL EDUCATION TEACHING MODEL OF "SPORTS CLUB" TYPE IN COLLEGES AND UNIVERSITIES

According to existing research results, this paper reflects and discusses the cultural differences in teaching reform of sports clubs at home and abroad, and lays emphasis on the research of theoretical applicability of the physical education teaching reform in ordinary colleges and universities. Joyce and Will, both of whom were American educators, first put forward the word Teaching Model, and they believed that a complete teaching model normally comprises following five factors: theoretical basis, realization conditions, teaching objectives, teaching process and teaching evaluation. Physical education teaching Model of "Club" Type in colleges is normally conducted in these five aspects:

3.1.1 Theoretical Basis

Transformation from traditional physical education teaching materials to modern informationized teaching materials. As teaching material is the core element of a course, the physical education teaching materials serve as the most crucial basis for physical education teaching process. Modern informationized technology is the mainstream of current social development. As for the development of physical education teaching models of sports club type in colleges and universities, traditional physical education teaching materials must be converted into new informationized teaching materials which keep a close pace with the development of our time. the contents of traditional teaching materials are mainly about introductions of basic skills. While modern informationized teaching materials mainly deliver knowledge to students through information means and through explanation on video, with intuitive expression styles easy to understand and imitate, so that students can learn it and take motor skill training on their own in anywhere at any time in the absence of their teachers.

3.1.2 Realization Conditions

The implementation process of physical education teaching is transformed from previous physical education teaching courses in the first two years in college to comprehensively realizing a four-year-in-a-row teaching model of club type with the "three national regulations to cultivate people" as its guidance. the implementation process of the club type model: elective system of primary club (basic courses for students) for the freshman year; Elective system intermediate club (special course selection system) for the sophomore year; Selection system of senior club for students in their third or fourth college year or graduate students. There are totally 15-17 physical education courses offered for the freshman year. the contents of courses in freshman year are categorized into two layers, the former of which is mainly about teaching contents of exercises to strengthen physical conditions, aiming to reach the national physical training standards; the second layer mainly teaches contents of exercises to strengthen physical conditions supplemented by some contents of sports skills, aiming to enable students to grasp at least one sport per person as his/her fundamental project when they select intermediate clubs to participate in in the sophomore year, on the basis of their having already reached the national physical training standards. There are totally 10-12 physical education courses offered for the sophomore year. the physical education teaching in sophomore year is mainly constituted by two aspects contents with the same proportions to strengthen physical conditions and train special sports skills, which simultaneously provides students with special sports skill training and physical conditions promotion training to let them supplement each other, so as to ultimately achieve the goal of common improvements of both sports skills and physical conditions. Students in their third or fourth years in college or graduate students may select superior clubs of various sports projects to learn relative knowledge according to their own interests, with an ultimate goal to enter the sports team with highest skill level in college.

3.1.3 Teaching Objectives

It must be stressed that physical education teaching shall be conducted in a reasonable and scientific way, according to the objective law of physical education teaching and the body's own rule of exercise, so as to ensure the function of physical education course to be fully applied and contrive to realize the major goals of physical education courses. Follow the requirements of the *Physical Health Standards for Students (Trial Plan)*, implementing health tests in a safe way, so as to promote the physical health and improve the sports literacy of students, specially including aspects as the degree of participation in physical

activity, cognition ability of sports culture, appreciation ability of sports competition, ability of self-exercise and consciousness of life-long sports etc.

During the teaching process, we should reach basic goals in five fields as sports participation, motor skills, physical health, mental health and social adjustment. the basic goals in above five fields focus on the comprehensive cultivation of students, reflecting both the basic idea of "quality-oriented education" and the teaching concept of "putting people first".

3.1.4 Teaching Process

Convert the previous knowledge delivery mode in single direction as teachers "teach" and students "learn" to teaching modes as "teaching" of teachers and "learning" of students, guidance of teachers and autonomous learning of students, autonomous learning of students and life-long sports exercise.

In order to steady promote the physical education teaching process in colleges and universities, it is first required to study and comprehend new educational measures in our country. Second, we must earnestly fulfill the plans of implementation to realize our goals. Those new measures include three aspects as well teaching, well organizing and well managing, among which the teaching process shall achieve the goals of successfully delivering knowledge to students at first, and taking diligent exercises and holding frequent competitions, requiring participation of whole students, guidance along whole process and monitoring in all directions, so as to transform students from a previous state of passive study into a new state of autonomic study, finally realizing the ultimate goal of enjoying funs, enhancing physical conditions, perfecting personality and training will.

3.1.5 Teaching Evaluation

Establish diversification of physical education teaching evaluation methods, which aims to improve the sports level of students, promote students to develop in a balanced and diversified way and break through the obsolete evaluation system in the past, so as to finally contain students' sports skills, their ability of applying knowledge and expressing emotions and their attitudes towards physical education teaching into the physical education evaluation. Take students' active learning as the center line, and apply the method with combination of peer evaluation among teachers, students' evaluation of teachers, grading of teachers, peer evaluation among students, extracurricular and in-class grades into the teaching evaluation process.

4. CONSTRUCTION OF THE TEACHING MODEL OF SPORTS CLUB TYPE IN ORDINARY COLLEGES AND UNIVERSITIES FROM THE PERSPECTIVE OF THE "THREE NATIONAL REGULATIONS TO CULTIVATE PEOPLE"

4.1 Establish an "All-around" Collaborative Cultivation System in and out of Class

First, in accordance with the spirit of relevant national policies, with the "health first", "lifelong sports" as the starting point, carry out in-depth investigation and research on characteristics of college students, field and facilities, faculty conditions, campus culture, etc. Second, under the guidance and overall planning of the school sports committee, we should start from the aspects of departmental coordination and system improvement to construct the teaching reform program of sports clubs from the aspects of curriculum guiding ideology, curriculum objectives, curriculum content, and the innovation and assessment of teaching methods. Finally, the institute of physical education (physical education teaching department) in colleges and universities serves as the main body of the implementation that is in charge of the detailed operation and the fulfillment of reform contents. the reform comprises of two aspects as in-class reform and extracurricular reform, with its focus on the approach to realize an effective connection between extracurricular physical education and in-class physical education as well as evaluation problems, so as to finally form an "all-dimensional" cultivation mechanism integrated with teaching and training in class, extracurricular exercise and culture shaping, communication and competition.

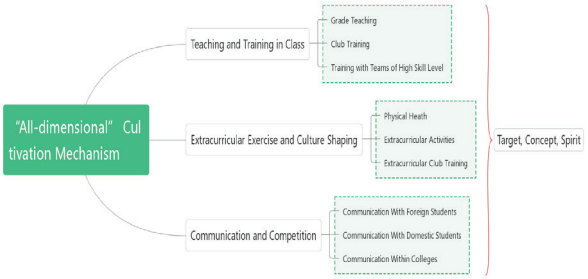

Figure 1: "All-dimensional" Collaborative Cultivation Model in and out of class

4.2 Establish an "All Members" Curriculum Management System

Formulate the construction plan and standard of club courses. In accordance with the *Outline of teaching Guidance for Physical Education Courses in National Colleges and Universities*, and targeting at the actual situation of physical education works in colleges, actively expand the time and space of physical education curriculum, highlight students' dominant position, and construct a new teaching mode of student-centered "all members" club.

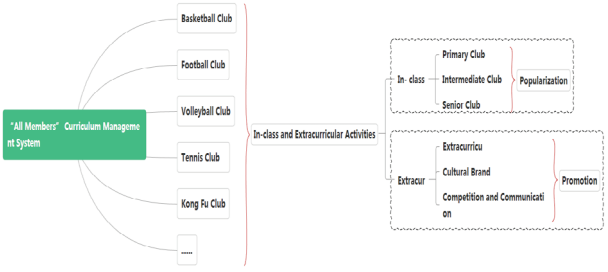

Figure 2: "All Members" Curriculum Management System

4.3 Establish a "Whole Process" Teaching Approach

Contain the physical education teaching, extracurricular sports activities, sports training and competition, etc. In to the whole process system of club, and build an integrated club operation mechanism with a whole process of selecting courses in office of academic affairs -- physical

education teachers (in class) -- students (association in extracurricular hours), representative team (extracurricular technical services).

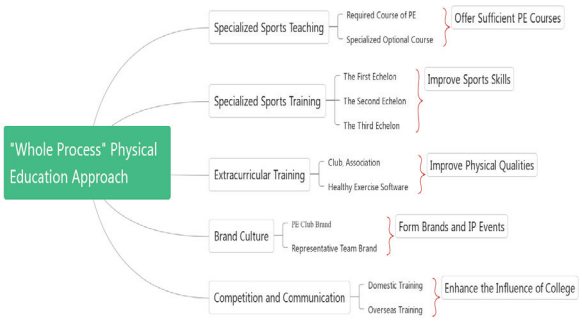

Figure 3: "Whole Process" Teaching Approach

5. CONCLUSION

During the construction process of physical education theory and practice in colleges and universities in our country, the guiding ideology must be expanded from the previous competitive education with sports skills as its center line to the target with direction of perfecting people's physical health, and with direction of fitness and cultivation of people. We must transform our focus from developing students' sports skills to cultivating students' life-long fitness consciousness and their habits to continuously strengthen their physical conditions, improve their self-training ability and sports culture level and make physical education courses an important means to cultivate sports and health consciousness in students and enable them to develop a good exercise habit, so as to finally provide an effective curriculum approach for the improvement of students' sports cultural literacy.

Ordinary colleges and universities in China have already had advantageous teaching conditions and opportunities to implement physical education teaching of sports club type. In order to develop the physical education teaching, we should seriously fulfill the goals of *Outline of Teaching Guidance for Physical Education Courses in National Colleges and Universities*, strengthen teacher resource, perfect field and facilities, with quality-oriented education as the direction for our work, and the improvement of students' physical conditions and the comprehensive development of mental and physical health of students as the focus of our task, so as to accomplish the physical education teaching targets in all respects and improve the teaching quality of physical education.

During the reform of physical education courses, ordinary colleges should add some contents of sports culture and health consciousness education on the basis of previous physical education courses. In consideration of restrictions and influences of some aspects as teaching hours, etc., education authorities and ordinary colleges and universities should promote the application network teaching and multimedia teaching, so as to meet students' demands for the knowledge of sports and health.

Based on the actual situation with foresight of the future trend, we should not only stress the near-term effects of physical exercise, but also pay more attention to the long-term goal in future to "enjoy for a life-long time" the benefits of sports. Therefore, it is of crucial practical significance for students' sports ideas to implement the physical education teaching model of sports club type. First, make the concept of "self sports" to be established in the mind of students, and enable them to actively and spontaneously engage in sports from which they enjoy fun according to the demands of themselves. Second, implementing the physical education teaching model of sports club type allows colleges to set increasingly diverse targets for their physical education teaching, and improves physical education teaching quality from a stage of quantity development to the stage of quality promotion, so as to provide students with an all-around sports exercise integrated with fitness, competition, recreation and health. Third, implementing the reform as the physical education teaching model of sports club type can also test teachers' abilities and stimulate their potentials. Meanwhile, it is also an inevitable development trend for physical education in colleges and universities in future to gradually to "let physical education cover its own costs" by establishing the sports funds compensation mechanism to release the burden of colleges.

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The Practical Dilemma and the Way Out of the Organic Supply of Vocational College Education

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Abstract: With the continuous reform of higher education in China, the mode of Chinese vocational college talent training also changes to the needs of the society and the market, to organically realize the seamless professional talent supply and market demand, improve the current vocational college education organic supply mechanism and develop a reasonable education system is the key to its development. In order to effectively improve the current vocational college education level, the article adopts the literature method, for the organic supply of Chinese vocational college education and reform of the reality of the analysis, and on the basis of targeted put forward the corresponding solution, the purpose is in order to effectively promote the healthy development of vocational college education in China.

Keywords: Vocational Colleges; Organic Supply; Reform; Practical Dilemma; Way Out

As the main training base and transportation place of vocational and technical professional talents, vocational colleges play a certain important position in the education field. the quality and quantity of talents will affect and even determine the progress and degree of China's future economy and technology development. Therefore, under the background of the new era, the reform of the current education methods and organic supply methods of Chinese vocational colleges has a very important role and practical development significance in promoting the in-depth development and innovation of Chinese vocational colleges. At the same time, it will contribute more to the training and transportation of high-quality talents in China.

1. CURRENT SITUATION OF EDUCATION SUPPLY IN VOCATIONAL COLLEGES

With China's increasing demand for professional talents, and many emerging industries have a large number of professionals in the production process, vocational colleges have developed rapidly in recent years, and specialized vocational colleges of various majors have been established in various places. Under the appearance of such rapid development, vocational schools education inevitably has problems and contradictions caused by the restrictions of traditional factors and social conditions. There are mainly the following current situations about the current education status and organic supply of vocational schools.

1.1 The lack of high-quality talent supply makes it difficult to improve the teaching quality

At present, most vocational colleges in China have a primary problem in the organic supply and development of education, that is, there is a lack and shortage of talent supply in vocational colleges, and the lack of high-quality talent transmission. the teaching quality and the achievement of teaching results in vocational colleges mainly rely on the teacher resources in the school, and the professional level and quality of teachers determine the results of talent training. Plus due to the number of vocational colleges in today's society, teachers resources and competition is fierce, many just built does not have a reputation and famous vocational colleges in teacher resources cannot provide favorable conditions to guarantee, also cannot participate in the reasonable distribution of resources, so the internal teachers team overall level is not good or even not qualified. This will lead to the teaching quality of vocational colleges themselves is not pass, affect the reputation and prestige of colleges, and unable not make a loud reputation between students and parents, so that the further loss of teacher resources and the teaching quality is weakened again. Such a cycle continues, resulting in an irreversible vicious circle, making the vocational colleges gradually decline.

1.2 Lack of perfect system to support the supply management work chaos

Under the current call of China to vigorously advocate the training of professional talents, many vocational colleges have emerged rapidly from all over the country to carry out the education and transmission of professional talents from all walks of life, temporarily forming a prosperous trend of prosperity and development. the advantage is that for the education community, to increase the power of talent training, to accelerate the number and speed of talent transmission, for students, but also to broaden the opportunities to go to school and receive education. However, due to its rapid development speed, the establishment of the corresponding system and management system cannot keep up in time, so the current management of the vocational college education lacks perfect institutional support and supply, and the operation and assessment in the industry cannot be fully controlled. Therefore, there are some speculative events, some people take advantage of the good opportunity of the development of vocational colleges, take use of students' eager to go to school, open some performance colleges that do not have actual business education qualifications and educational ability, capital fraud, damaged the physical and mental property interests of students and parents.

1.3 Lack of complete supply of teaching elements, and the teaching mode is backward

Most of the professional disciplines teaching in vocational colleges require professional venues and professional equipment as teaching guidance. For example, some industrial vocational colleges design and construction focus on the selection and construction of industrial technology teaching; the music vocational colleges focus on the sound insulation and reasonable distribution of the piano, and the teaching process of medical vocational colleges requires the support of a complete set of medical anatomy buildings and the corresponding laboratory specimens. and in today's vocational colleges, due to the increasing number of students, industry competition, the interests and benefits are reduced background, most of the vocational colleges supply side development situation is facing the lack of teaching resources and teaching elements, many vocational colleges and dormitory building building facilities still maintain the specifications, too old for students, many modern function is not realized, teaching equipment and equipment are not updated, cannot meet the requirements of modern teaching.

2. PRACTICAL DILEMMA OF EDUCATION REFORM AND DEVELOPMENT IN VOCATIONAL COLLEGES

Due to the current education reform of vocational colleges, restricted and hindered by the objective social development factors and the subjective factors of colleges and universities themselves, there are still many difficulties and difficulties in the reform work of vocational college education, which are mainly reflected in the following aspects.

2.1 Managers lack the consciousness of reform and the courage to reform

Hding and delaying the supply-side reform and innovation of vocational college education, First of all, the teachers and managers in colleges and universities do not have a deep understanding of the development and survival of the status quo of vocational colleges, Unable to realize the adverse impact and threat of the current situation on the development of colleges and universities, Therefore, the lack of active concept and consciousness for the supply side and teaching reform of colleges and universities, It is easily disturbed by the current thriving surface development phenomenon of vocational colleges everywhere, Cannot deeply and specifically analyze and explore its essential development characteristics, Still immersed in the mood of success, Thus missed the opportunity for reform and innovation, Let the vocational colleges are gradually eliminated by the Times. Another reason that hinders the implementation and implementation of the reform is that the managers lack the courage to reform, are afraid of the adverse consequences of the failure of the reform, pay too much attention to the immediate vested interests, and fail to truly realize the long-term interests and development.

2.2 Organic supply involves more complex links and structural resistance

Organic supply of vocational college education and reform of the main content and the main requirements is, through the current vocational college education education teaching methods and teaching content reform and innovation, change the traditional vocational colleges talent resources supply chain, strengthen the cross interaction with other aspects and disciplines, realize its organic combination and organic transformation. Therefore, the departments, disciplines and links involved in the organic supply reform of vocational school education are quite complex, and the correlation between each part is strong, so there is easily a risk of overall paralysis due to the mistakes in the intermediate links. Under the guidance and temptation of risk escape, the specific departments of the implementation of the reform are easy to form negative neglect and failure to implement the behavior. the corners of the reform rules not only affects the progress of the reform, but also affects the effect of the reform. Therefore, the complexity of the reform itself also causes the difficulty of the reform.

2.3 Incomplete relevant systems and funds cannot further promote the education reform of vocational colleges

Reform and innovation not only need responsible passion and courage, but also a lot of capital and manpower. At the same time, when resistance and difficulties need legitimate systems and legal support. Another major factor hindering the organic supply and reform of vocational college education is that the relevant system of the reform is not perfect to provide practical and reasonable guarantee for colleges; and due to the large distribution, most vocational colleges are unable to bear the huge financial consumption caused by the reform. So produced and created the current situation of vocational college education reform: only superficial simplification of the reform work, only the minimum impact on the college survival reform work, making the organic supply of vocational college education and reform work always cannot get deep, unable to achieve further more profound and effective results.

2.4 Teachers cannot undertake the heavy task of reform

Many vocational colleges are just built new schools, its reputation and acceptance between parents than the old schools, at the same time in the industry visibility as some development time, so both in the quality of students or in the professional level of teachers ability, cannot immediately reach an excellent standard. Many graduates of famous normal colleges are more willing to choose some more guaranteed famous universities when finding employment, so that for these new vocational colleges, their teachers are very weak and very little competitive in the industry. For the complex consumption and high standards of the organic supply adjustment of college education and the teaching reform, the professional ability of these teachers cannot achieve the purpose and expectations of the reform, and it is difficult to undertake the heavy task of the reform, thus bringing great resistance to the reform.

3. IMPLEMENTATION MEASURES TO PROMOTE THE REFORM OF THE ORGANIC SUPPLY OF EDUCATION IN VOCATIONAL COLLEGES

At present, there are obvious deficiencies in the development of organic supply and the teaching status of

vocational colleges. These defects are not conducive to the school education and training of vocational talents, and seriously affect the results of school teaching quality evaluation. Therefore, we urgently need to reform and innovate the organic supply of vocational college education.

3.1 Reform the traditional management system and means, and learn from the experience of the university system

When carrying out the organic supply and reform of vocational college education, the responsible and management personnel of the school should have a positive and serious attitude and confidence, and correctly and objectively treat the reform work of the school. the first thing to do is to review and evaluate the existing management system and system of the school in detail and detail, find out the problem and explore the root cause, boldly break the shackles of traditional management concepts and means, and carry out the establishment of a complete management system again. Vocational colleges in this process can be most of the domestic university management mode and experience to learn and reference, because the complexity of university internal management and the diversity of structure department, are significantly higher than vocational colleges, so the university model imitation and reference, can help vocational colleges for more long-term and grand reform planning.

3.2 Improve the construction of teachers and optimize the hardware conditions to realize the rationality of organic resource supply

For the current lack and shortage of teaching elements and teaching equipment in vocational colleges, the reform and organic adjustment should be from the inside out, small to large. Since some schools were built earlier, the choice of school site cannot be changed, and even the campus area cannot be significantly expanded, so it is difficult for the reform of the organic supply of teaching elements. However, on such a basis, the school should still try its best to make good use of the school's land and site resources, fully develop and build, and optimize the hardware conditions. At the same time, for the improvement of teachers, colleges can gradually improve the professional quality of teachers by increasing the recruitment quota and raising the recruitment threshold. So as to realize the rational allocation and organic supply of resources.

3.4 Enhance the intersection of discipline and talent introduction to achieve organic unity

The organic supply of teaching requires the organic supply adjustment of the professional courses involved in the teaching process, the organic exchange and improvement of the subject teachers of teaching activities, and the organic improvement and innovation of the teaching management experience. on the one hand, the purpose is to enhance the teaching richness and comprehensiveness of vocational colleges, and on the other hand, to improve the current supply-side deviation of vocational colleges. Therefore, colleges and universities can organize regular discipline exchange conferences and seminars on campus, and display and share the teaching results and teaching experience of each major, so as to promote the intersection and complementarity between each discipline and majors. At the same time, in the introduction of talents, we should also enhance the diversification of talent evaluation standards, comprehensive investigation of talents, so as to achieve a timely grasp of multi-faceted or special talents, to prevent the occurrence of waste and missing the recruitment of talents due to the single and rigidity of the assessment standards.

4. CONCLUSION

The current Chinese vocational colleges in recent years after rapid and prosperous development, formed the current quantity, wide distribution situation and development status, but due to the development of Chinese vocational colleges, the internal system and system cannot timely adapt to its change and development, so that the vocational college education in organic supply and there are a lot of teaching problems. When we carry out organic supply adjustment and education reform to Chinese vocational colleges, it requires the joint efforts of various parties to solve the problem, so as to effectively promote the long-term and healthy development of vocational colleges in China.

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The Development Path of the Supply-Side Reform of Higher Education

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Abstract: At present, China's development and reform concept of "delegating power, delegating regulation and service" has released more space for China's supply-side reform of higher education. As carrying higher education at all kinds of universities and research institutions, should be based on their educational philosophy, talent training direction and market orientation, etc, from financing, education concept innovation, professional knowledge innovation and innovation supply side reform, to optimize the asset structure to improve operation performance, improve education teaching quality, activate creative incentive innovation, optimize talent training mode leading economic and social development, give full play to higher education talent training, knowledge innovation, intelligence support and wisdom leading function.
Keywords: Higher Education; Supply-Side; Reform

In two times of great changes unseen in a century, China's higher education has not only had opportunities for China's stability and rapid development, but also faces the impact of deepening reform and opening up. on the premise of ensuring the security of national system, road safety, the safety of cultural safety and education system and mechanism, the supply-side reform of higher education is the only way for self-improvement and development of higher education, and it is also a brave exploration to break through the blockade of western developed countries and the victory over western hegemony. To solve the problem of "often poor and surplus" reform process ", " management "" system "" target replacement "" patchwork " reform, reform of higher education supply side maintenance higher education development, play to higher education institutions initiative, creativity, create a new era of high quality higher education system with Chinese characteristics.

1 DIFFICULTIES IN THE CURRENT HIGHER EDUCATION REFORM

1.1 The institutional constraints of the current school-running mode

The government-led mode of running higher education determines the subordinate attribute of the higher education reform. With the deepening of the reform, the constraints of the current system and mechanism have been prominently shown. First, "insufficient initiative in local governments and institutions of higher learning". In the current jurisdiction system and mechanism of higher education institutions, such as the deployment of university jurisdiction belongs to the Ministry of Education, the provincial university jurisdiction belongs to the provincial education department, and some professional research institutes belong to the corresponding ministries and commissions, it has formed a distant "independent relationship" with the local government. In the actual reform exploration, without the full support of local Party committees and governments, many reform measures will be utopian ideas, and it is difficult to carry out even as planned. For example, in 2019, a provincial department of Human Resources and Social Security changed the advance approval of the introduction of high-level talents to the post-filing of "delegating power and service" to "management and pressure", which is a typical phenomenon of local governments's lack of initiative in higher education reform. Secondly, "the separation of responsibility and rights relations and the imbalance of internal and external power". Although the higher-education reform is implemented in a top-level design, the separation of "responsibility and rights" in the system and mechanism has always existed and is inevitable. For a typical example, the examination and approval authority of the above talents belongs to local human resources and social security departments and local financial departments, as well as deep-seated problems such as "running conditions, enrollment and training, and limited autonomy in running schools". In particular, the reform of higher education can neither bring "direct dividends" to local development, nor highlight the achievements of local governments and their relevant departments, which naturally leads to the lack of the external impetus of higher education reform. Higher education reform has become the exclusive show of relatively embarrassing higher education institutions, but it is difficult to change it.

1.2 Single channel of education investment

Investment in education has always been one of the bottlenecks to support and restrict higher education reform. For public higher education institutions, it is mainly government investment, which is presented as national investment, local government investment, special investment from ministries and other national enterprises and institutions, as well as multi-subject investment from multiple supporting institutions, which all have common dependence on the government. For private higher education institutions, independent financing is generally adopted. For two different types of higher education institutions, the distinct way of investment are relatively single investment channels. First of all, the reform of higher education is a revolution that leads to the whole body, and it is difficult to fully support the progress of the reform with a single investment. Any kind of investment method is a key point, for higher education reform should not be comprehensive. In particular, the way of government investment, due to more laws, regulations and disciplines of supervision, and the lack of flexibility in the

actual investment and use, which restricts the reform process to a certain extent. Secondly, the public higher education institutions have insufficient initiative in diversified financing. There are both the rigid system and mechanism of financial management, and the lack of specific operation of relevant professionals. In particular, the use of financing, use supervision and performance evaluation, the lack of operational, forward-looking and stable scientific planning. For example, in the innovation incubation base jointly established by universities and enterprises, once the financial support of enterprises is lost, many innovation experiments will become a mere formality.

1.3 The autonomy of professional setting and discipline construction in higher education institutions are empty

Although higher education institutions are given autonomy in professional setting and discipline construction from the level of national education regulations and policies, it has become a castle in the sky in its implementation. First of all, the professional establishment and the right of diploma certification examination and approval belong to the education administrative department, which greatly restricts the enthusiasm and creativity of higher education institutions. the more prominent contradiction lies in the existence of the approval cycle. Compared with the rapidly developing and changing talent market demand, the speed and accuracy of the professional setting are directly related to the success or failure of the professional reform of higher education institutions. Especially for some non-985 and 211 universities, able to accurately create one or more new majors that lead or adapt to the market demand is the key to ensure their rapid development and even survival. Secondly, discipline construction is not corresponding to the system and mechanism reform of teacher qualification certification and professional title promotion, which restricts the enthusiasm of curriculum development and discipline construction. Because the relevant certification system cannot be updated in time, it directly restricts the enthusiasm of higher education institutions and their teachers and other staff, and even leads to the embarrassing situation that no reform is no way out and the "way" is blocked.

2. PATH OF SUPPLY-SIDE REFORM IN HIGHER EDUCATION

2.1 Market-oriented investment in education to create diversified financing channels for the development of higher education

Since the 18th National Congress of the (C_P) of China, the Party and the state have continued to advance reform in the field of education, planned for the development of higher education, and made historic achievements and changes taking place. Inspired by the "British Government Higher Education and Research Act", the establishment of a "diversified channel" "financing" mechanism for higher education institutions is one of the keys to building a "systematic and rigorous education quality assurance system". First of all, establish investment channels for public welfare education to ensure the stability of higher education reform. the donations of enterprises, social welfare funds and individuals (alumni) are mainly made to provide the necessary support for the reform of the relevant higher institutions being donated. In practice, it cannot only be comprehensive public welfare support, such as the comprehensive reform of the donor according to the agreement, but also targeted public welfare support, such as special high-end talent introduction funds or scientific research fund, which is an effective, flexible and powerful supplement to the government investment. Secondly, establish the channel of operational education investment, to drive the self-improvement of higher education institutions. That is to words, higher education institutions according to the nature of the reform projects to the market through public bidding, and carry out cooperation within the scope of the contract. Generally, other institutions or units invest funds to support higher education institutions to carry out targeted reform to obtain a win-win investment model. For example, the education mode reform of college students 'entrepreneurship and incubation base under the school-enterprise cooperation mode is a multi-win market investment in cultivating college students' innovation ability, the transformation of innovation achievements and the reform of college talent training. In addition, higher education institutions can also carry out some for-profit activities to earn funds within the scope permitted by laws and regulations, such as accepting enterprises or other institutions to carry out patent research and development.

2.2 Simplify the examination and approval procedures for the independent development of higher education institutions, and stimulate the drive of reform to foster strengths and circumvent weaknesses

With the gradual establishment of a high-quality higher education system, reform structures such as "improving quality as the strategic theme" and "optimizing the structure as the main direction" have also gradually taken shape. Streamlining various examination and approval procedures concerning the development of higher education has become the basic measure of the national reform of "delegating power, delegating power and service" and the main driving force for delegating power to higher education institutions. First of all, "dilute the rigid regulation" and establish an orderly higher education system. According to the current prominent constraints on the development of higher education, to retain the principle and fundamental elements to ensure the national dominance of higher education, not only to establish and maintain the system and mechanism of higher education development, but also to maximize the vitality of the development of higher education institutions themselves. For example, as long as the hardware meets the talent introduction, we can "avoid one style"; for the loan approval of financial support for college students, as long as the project is feasible and prospective, we can simplify the simplified method of college students to solve the bottleneck problem restricting college students' entrepreneurship and innovation. Secondly, "strengthen flexible guidance" to "prevent and control the malignant convergence of institutions of higher learning".

2.3 Build an open talent training system and unleash the

vitality of running schools with higher education characteristics

With the establishment of the status of socialist market economy with Chinese characteristics and its rapid development, the pressure of employment, employment and career development is increasing, forcing students and parents to choose higher education more to high-quality famous schools, which virtually causes the difficulty and survival of some ordinary colleges and universities. We will build a multi-level and diversified higher education enrollment system, and on the basis of giving full play to the existing resources of various higher education institutions, stimulate the potential of running schools with distinctive features to win more market space. An open talent training system should be built within the current system, to ensure the survival of higher education institutions at various levels with the number of students at different score levels. That is, on the basis of the basic college, undergraduate degree and their professional talent training, higher education institutions carry out the training of second education, elegant interests, expertise and creative inventions, not only cultivate solid professional foundation, professional skills skilled professionals, but also cultivate "multi-potent" innovators. For example, the construction of interest associations, research groups and research groups in some universities has broken the professional limits in a certain sense and laid a solid foundation for the independent employment and entrepreneurship of college students.

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At present, China is in a period of major historical opportunity in two centuries. Building a high-quality development system is an important part of China's high-quality development, and the implementation of supply-side reform is the first exploration of China's higher education and even China's education development. As a national level, the top-level design for higher education should lead the future development, and upgrade the relevant systems and mechanisms to achieve flexible and unity of decentralization and rigid management; as a higher education institution, it should observe the current safe and stable development order, and integrate resources to stimulate potential and explore the path of specialty development, characteristic development and innovative development.

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The Active Construction of the Precision Employment Service System for College Students in Higher Vocational Colleges

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Abstract: This paper analyzes the implementation of accurate employment service for higher vocational college students in the new era, and puts forward the active construction strategy of accurate employment service system for higher vocational college students, aiming to provide a theoretical reference for the construction of accurate employment service system for higher vocational college students. Research that: In the new era of development situation actively build vocational college students accurate employment service system, should combine the college employment service status, develop scientific and feasible accurate employment service guidance strategy, and under the guidance of the government to mobilize vocational college accurate employment service system construction enthusiasm, in the government, universities, social service organizations and other forces to strengthen technical cooperation, to provide good career development services for higher vocational college students.

Keywords: Higher Vocational College Students; Accurate Employment; Service System; Active Construction

1. IMPLEMENTATION OF PRECISE EMPLOYMENT SERVICES FOR COLLEGE STUDENTS IN HIGHER VOCATIONAL COLLEGES IN THE NEW PERIOD

In the report of the 19th National Congress of the (C_P) of China, the importance of employment priority was clearly proposed, and a series of favorable and positive employment policies were issued to guide college students to achieve high-quality employment has become an inevitable choice [1] to conform to the development trend of the new era. Higher vocational college students employment service as an important intersection of education priority and employment priority strategy, played a good supporting role in the construction of public employment service system, and big data, cloud computing and other new technologies, but also for higher vocational college students accurate employment service system construction provides technical support, greatly improve the employment rate of college graduates and the efficiency of public employment service.

Under the background of development in the new era, when carrying out the employment service of college students in higher vocational colleges, we must actively meet the growing employment service needs of students and their parents and conduct an objective analysis based on the implementation of the employment service of higher vocational college students in the new era, so as to explore a scientific development path.

1.1 Organization and market are changing more and more rapidly

At the present stage, China's socialist economy has ushered in a period of rapid development, and various industries and fields have also entered a new period of rapid development and change, which has greatly promoted the improvement of China's opening up to the outside world in [2]. the innovation and development of modern scientific and technological means have also promoted the upgrading and transformation of China's economic organizations and social organizations to a certain extent, and the traditional organization mode has gradually transformed into a learning organization mode, which also makes the current market competition trend more and more fierce. Under the premise of rapid change in the organization and market demand, the fierce market competition not only put forward higher requirements for the allocation of human resources, the universities in the construction of talent training mechanism is also facing severe problems and challenges, virtually increased the difficulty of college students employment service in the new era.

1.2 The employment needs of higher vocational college students tend to be personalized

Under the background of accelerating economic and cultural reform process, contemporary higher vocational college employment demand more and more rational and objective, when considering the employment choice no longer pay excessive attention to the problem of survival, but focus on the long-term development of future employment, it also makes the contemporary higher vocational college students face employment choice, widespread "slow employment" "slow employment" phenomenon. In order to pursue higher education and better employment treatment, some graduates also choose to suspend employment. the traditional job-hunting values are no longer applicable to the development needs of the new era. In addition, when the parents of the students view the employment problem, they are no longer limited to their immediate economic interests, and their employment expectations are becoming more and more diversified and comprehensive, and even hope that the graduates can effectively balance the development space [3] in career, life and resources. This differentiation of family background and career tendency also makes the personalized employment service demand of contemporary higher vocational college students more

and more urgent.

1.3 Traditional employment services are inefficient

In the new period, new contradictions and under the influence of new changes, the traditional employment service system inefficient, especially in the graduates choose suitable jobs, employers of choose and employ persons recruitment than required personnel, etc., in the long term makes employment structural contradictions intensified [4], many college graduates through network or enterprise recruitment website to achieve employment probability is very low, and through the large campus recruitment, campus recruitment, WeChat platform, mentor recommended mainstream school employment access to employment rate will be higher.

1.4 Employment quality evaluation is increasingly improved

Under the background of the new era, our country attaches great importance to college students employment, especially in the college graduates employment quality evaluation is more and more perfect on this hand, on the employment evaluation method is no longer limited to the traditional single employment rate, but from multiple angles of college graduates have a comprehensive evaluation of the employment quality [5-6]. At present, the employment quality evaluation system of Chinese college graduates not only includes students' personal satisfaction, but also covers the objective employment situation, social recognition, enterprise recognition and family life balance. In fact, the improvement of the employment quality evaluation system cannot be separated from the support provided by the society, universities and public employment service agencies, that is, to provide more high-quality employment services for college graduates.

2. ACTIVE CONSTRUCTION STRATEGY OF PRECISE EMPLOYMENT SERVICE SYSTEM FOR COLLEGE STUDENTS IN HIGHER VOCATIONAL COLLEGES

In the process of modern development society, the smooth development of the employment of college graduates has laid a solid material and cooperation foundation for the construction of the accurate employment service system for higher vocational college students in the new era. In fact, the employment problem faced by college graduates makes the construction of the employment service system for college students in higher vocational colleges must meet the requirements of fine and personalized under the development background of the new era. Based on this, in the process of building the accurate employment service system for higher vocational college students, we must grasp the following key factors, and effectively improve the effectiveness of the construction of the accurate employment service system for college students in higher vocational colleges.

2.1 With the government as the lead, all colleges and universities will work together

Higher vocational college students employment service system of accurate employment as an important part of the public employment service system, it must effectively integrate the existing resources, such as the original market resources, employment service teacher resources, public employment service market resources, enterprise resources and resources provided by other organizations. However, it should be noted that the integration of these resources must be government-oriented, and the scientific resource integration and docking work should be carried out with the strong support of the government, which is also an important measure [7] to ensure the effectiveness of the construction of accurate employment service system for college students in higher vocational colleges. At the same time, the active construction of the accurate employment service system for college students in higher vocational colleges cannot be separated from the mutual cooperation and joint promotion of various universities. Higher vocational college students employment service precision is not only reflected in the efficient collection of graduates' personal information, employment demand information, etc., also need to fully track and detection of college graduates during the study, work, life data, and will obtain data for scientific analysis and objective expression, this is also the premise of higher vocational college students employment service precision.

2.2 Encourage graduates to contribute to society

The fundamental purpose of the construction of the precise employment service system for higher vocational colleges is to provide high-quality employment services for higher vocational college students, and to train a large number of outstanding talents [8] for the construction of (SWCC). Therefore, in the process of higher vocational college students accurate employment service system construction, not only need to provide accurate employment information and services, also need to accurate career development, encourage contemporary vocational college students actively invest in the jobs of the motherland, make higher vocational college students give full play to their self-worth at the same time, contribute to the construction of modern socialism, further promote the sustainable development of (SWCC).

2.3 Build an information-sharing platform to protect students' personal information

The key to higher vocational college students to correctly judge the employment situation is that they have enough employment information. Therefore, colleges and universities should make full use of the existing resources to provide accurate employment service information [9] for higher vocational college students, so that college students in higher vocational colleges can dynamically adjust their employment plan according to their own actual needs. Accurate release of employment information to some extent can be regarded as the entry point for the construction of accurate employment service system for higher vocational college students, while colleges and universities can make full use of QQ, WeChat, Weibo and other new media platforms to release employment information in real time for students to receive all kinds of information efficiently and accurately. In addition, create information sharing platform also helps employment instructors fully understand students 'views of employment, and according to the feedback provided by students to master the employment trends, and provide

targeted employment guidance services, effectively promote the sharing and dissemination of all kinds of information, and provide basic security for students' personal employment information.

In the process of building the precise employment service system for college students in higher vocational colleges, it is also necessary to lay a good foundation for information sharing, and start to meet the needs of information sharing from many perspectives, such as personal basic information, personal characteristics, employment needs and academic level. However, it should be noted that information sharing must be based on the personal wishes of college graduates to avoid excessive prying into the personal privacy of college graduates. At the same time, in terms of employment service information sharing, it mainly involves college employment information, quality employment service information, project information provided by public employment service departments, and enterprise information. For the sharing of policy information, colleges and universities should actively popularize favorable policies such as encouraging employment policy, difficult assistance policy, entrepreneurship policy, small loan application, subsidies enjoyment and other favorable policies to students.

2.4 Optimize the entry matching and promote the personalized development of students

Build higher vocational college students accurate employment service system, should follow the basic principle of entry matching, in accordance with higher vocational college students employment intention and recruitment intention to effective docking, while fully considering the character characteristics of job seekers, job motivation, and the enterprise job demand, future development and other dynamic elements of effective integration, to stand in the perspective of supply and demand and deeper mining entry matching demand. In addition, the employment service personnel also need to combine the future development plan of the job seekers and the enterprise planning, to point out the future employment direction for the college graduates, and effectively ensure the personalized development of the college graduates.

In the process of building the accurate employment service system for college students in higher vocational colleges, we must support the rich teachers to ensure that the employment instructors have the basic professional quality. However, in the process of practice, due to the extremely large number and scale of college graduates, most college graduates cannot accept comprehensive and accurate employment services. Therefore, colleges and universities must implement precise individual guidance services, which is also an important entry point for the construction of accurate employment service system for higher vocational college students. First of all, colleges and universities should fully understand each student's individual development status, development potential, for the problem of limited teachers to take other survey methods and means, such as through professional assessment, questionnaire to understand the actual situation of each student, and accurately evaluate the students' development status and development potential, help students make suitable career planning. Secondly, to ensure the effectiveness of the construction of the accurate employment service system, to establish dynamic electronic files from the aspects of students' professional expertise, job intention and regional selection, so as to effectively improve the fine level of the employment service system for college students in higher vocational colleges.

2.5 Strengthen technological innovation and optimize the employment service model

Under the background of development in the new era, major higher vocational colleges have achieved certain results in the construction of a precise employment service system for college students, and have also laid a solid technical foundation. For example, in the process of smart campus construction, higher vocational colleges integrate hardware-and software facilities and technologies based on big data analysis and processing, so that the construction of accurate employment service system for college students in higher vocational colleges has obtained technical support in data collection, classification, analysis and processing. Under the existing technical conditions to build higher vocational college students accurate employment service system, also need under the leadership of the government to universities, public service institutions, social organizations to provide effective integration, to create a good technical cooperation platform, optimize higher vocational college students accurate employment service mode, truly reflect the advantages of various technical resources, effectively promote the equal development of higher vocational college students accurate employment service.

2.6 Provide precise and classified guidance, and implement employment and learning tasks

In the process of building the precise employment service system for college students in higher vocational colleges, the entry point should be accurately grasped, under the guidance of the "42 Five" classification standard, the individual differences of students at different stages should be fully considered, and the targeted precise employment service guidance work should be implemented. According to the school year distribution standard, provide higher vocational college students accurate classification guidance task, specific can start from the following aspects: first, for the freshman school students, should guide its correct view of the employment situation, make freshmen fully realize the future employment pressure, regular enlightenment guidance education work, at the same time students real-time grasp of the future employment situation. To sum up, the colleges and universities should guide the students to correctly understand the employment in the first stage of their freshman year, actively infiltrate the enlightenment employment guidance and the situation education to the students, and guide the students to establish a good employment consciousness from the ideological level. Second, in the sophomore year to carry out accurate employment services, should focus on the cultivation of

students 'employment consciousness, combined with students' personalized demand scientific employment planning, as far as possible to help each student make suitable career planning, and effective docking with the talent market, promote the second stage students have the ability of independent analysis of self-development intention. Thirdly, for students in the junior academic year, because they have basically understood their own career planning and life planning, they can choose a suitable path for personal development according to their own actual situation, such as choosing to start their own business, invest in social positions or continue further study. Therefore, at this stage, the students should be helped to establish the correct development intentions, and combined with the individual intentions selected by the students to carry out precise guidance services. For example, students who tend to continue their education can be offered academic guidance if they choose to work after graduation. In short, in the last stage of systematic education for higher vocational college students, higher vocational colleges should timely provide accurate information feedback for students, and improve the effectiveness of accurate employment services for higher vocational college students by doing a good job in information management.

3. EPILOGUE

There is a close correlation between the construction of the fine employment guidance and service system for higher vocational college students and the long-term development of education. To meet the growing demand of employment quality, in the new era, must optimize the college students accurate employment service system, guide college graduates career planning at the same time, actively contribute to self value of modern society, and promote higher education, public employment service education to achieve synchronous development, to meet the needs of modern society in talent training, and fine employment guidance service system construction advantage feedback to higher vocational college students, to better serve the construction of modern socialism.

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Evaluation of Mental Health Status of Minors Based on Improved Analytic Hierarchy Process

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Abstract: According to statistics, at present, the number of minors with psychological problems has increased sharply across the country, which has become an important public health problem related to the future of the country and the nation. In this paper, we establish a mathematical model of minors' mental health evaluation system to better understand minors' mental health. Firstly, we issued a questionnaire and collected 1500 mental health data of middle school students in Tangshan. We selected 11 items in the data, such as gender, obsessive-compulsive symptoms, paranoia, hostility, interpersonal tension and sensitivity, depression, anxiety, learning pressure, maladjustment, emotional imbalance and psychological imbalance, as evaluation indicators, and then combined with K-means clustering to cluster these 11 indicators into five categories. Finally, the improved analytic hierarchy process is used to calculate the relative weight of each index, sort the obtained weight, delete the four indexes with the smallest weight, and update the weight of the remaining seven indexes that have a great impact on the mental health of minors, Respectively P_1 =0.4380, P_5 =0.0240, P_6 =0.0406, P_8 =0.0252, P_9 =0.2449, P_{10} =0.1136, P_{11} =0.1136, Establish the mental health evaluation system model of minors. Among them, we assume that the scores of the minors surveyed can truly reflect their psychological status, and that their environment is not a major disaster.

Keywords: K-Means Clustering; Improved Analytic Hierarchy; Process Mental Health

1. BACKGROUND

Today, we are in an era of rapid development and volatility. In daily life, minors may be due to their own immaturity, or received the influence of family, society and other external environment, in the psychological formation of unhealthy factors. Teenagers are often mentally immature and unable to deal with problems rationally on their own, which leads to their inability to know how to solve psychological problems when they arise. If society, school and family do not give correct and reasonable guidance to minors, their mental health may be affected. Therefore, we must strengthen the attention to the mental health of minors, to eliminate their psychological problems to the greatest extent, it is particularly important to build a reasonable evaluation system for the mental health of minors.

2. K-MEANS CLUSTERING TO DETERMINE INDEX CLASSIFICATION

We use this formula to calculate the Euclidean distance from each object to each cluster center:

$$dis(X_i, C_j) = \sqrt{\sum_{t=1}^{m}(X_{it} - C_{jt})^2}$$

Where X represents the data sample containing n objects, where each object has attributes of M dimensions.

Next, we will use SPSS software to K-means [1] cluster the data: first, standardize the data, and then use the K-means [2] clustering function in classification to import all data into variables. the number of clusters is 5 and the maximum number of iterations is set to 10 to obtain the number of cases in each cluster, as shown in table 1. [3] According to table 1 and the operation results of SPSS, we divide the variables into five categories.

Table 1 number of cases in each cluster

Number of cases in each cluster		
	1	*4.000*
	2	*1.000*
	3	*3.000*
	4	*2.000*
	5	*1.000*
Effective		*11.000*
defect		*. 000*

3. IMPROVING ANALYTIC HIERARCHY PROCESS AND ESTABLISHING EVALUATION SYSTEM

3.1 ESTABLISH A HIERARCHY MODEL:

Combined with the above K-means clustering results, we established a hierarchical model [4], as shown in Figure 2:

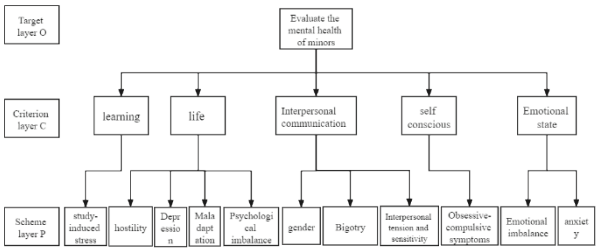

Figure 1 hierarchical structure model for evaluating the mental health status of minors

The hierarchy model is divided into three layers: target layer o, criterion layer C and scheme layer P. Among them, the target level O is the highest level, that is, to evaluate the mental health status of minors; Criterion layer C is the middle layer, Including learning C_1, lifeC_2, interpersonal communication C_3, self-consciousness C_4, emotional stateC_5these five indicators; scheme layer P is the lowest layer, including learning pressure P_1, hostile P_2, depressed P_3, maladjustment P_4, psychological imbalance P_5, gender P_6, paranoid P_7, interpersonal tension and sensitivity P_8, obsessive compulsive symptoms P_9, emotional imbalance P_{10}, anxious P_{11}

these 11 indicators.

3.2 CONSTRUCT JUDGMENT MATRIX [6]

Firstly, we construct the O-C three scale judgment matrix: here, we improve the traditional analytic hierarchy process. the traditional analytic hierarchy process uses the 1-9 scale to construct the judgment matrix, and this time we will use the 0, 1 and 2 scales to construct the judgment matrix, which will reduce the operation difficulty and make the analytic hierarchy process known for its strong subjectivity more objective. the O-C three scale judgment matrix is obtained by comparing the five indexes ofC_1, C_2, C_3, C_4, C_5as shown in the table below:

Table 2 O-C three scale judgment matrix

O	C_1	C_2	C_3	C_4	C_5
C_1	1.0000	2.0000	2.0000	1.0000	1.0000
C_2	0.0000	1.0000	2.0000	0.0000	1.0000
C_3	0.0000	0.0000	1.0000	1.0000	0.0000
C_4	1.0000	0.0000	1.0000	1.0000	1.0000
C_5	1.0000	1.0000	2.0000	1.0000	1.0000

Then, we construct a C_x-p (x = 2, 3, 5) three scale judgment matrix:

Table 3$C_2 - P$ three scale judgment matrix

$C_5 - P$	P_2	P_3	P_4	P_5
P_2	1.0000	1.0000	1.0000	1.0000
P_3	1.0000	1.0000	1.0000	1.0000
P_4	1.0000	1.0000	1.0000	1.0000
P_5	1.0000	1.0000	1.0000	1.0000

Table 4 $C_3 - P$ three scale judgment matrix

C_3	P_6	P_7	P_8
P_6	1.0000	2.0000	0.0000
P_7	0.0000	1.0000	2.0000
P_8	2.0000	0.0000	1.0000

Table 5 $C_5 - P$ three scale judgment matrix

C_5	P_{10}	P_{11}
P_{10}	1.0000	1.0000
P_{11}	1.0000	1.0000

3.3 HIERARCHICAL SINGLE RANKING AND ITS CONSISTENCY TEST

For O-C: firstly, we use the eig () function of MATLAB software to obtain the maximum eigenvalue of O-C three-scale judgment matrix λ_1 and the maximum eigenvector corresponding to maximum eigenvalue V_1 (i. e. relative weight vector of 5 indicators), λ_1=3.99, V_1=(0.4065, 0.0734, 0.0820, 0.2273, 0.2108)^T, Then, the consistency index CI is -0.2536 obtained, and then the average random consistency index RI is 1.12. Then, the consistency ratio Cr is calculated, Cr = -0.0871 < 0, which passes the consistency test. [7]

The formula used is as follows.

$$CI = \frac{\lambda_m - n}{n - l}$$

$$CR = \frac{CI}{RI}$$

Table 6 average random consistency index RI

n	1	2	3	4	5	6	7	8	9	10	11	12	13
RI	0	0	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49	1.52	1.54	1.56

Note: when n = 1 or n = 2, the judgment matrix is the consistency matrix, so Cr is 0.

About $C_2 - P$ (x=2, 3, 5):We use the same method to obtain the relative weight vector and the maximum eigenvalue of the three judgment matrices λ_j, consistency index CI_j, consistency ratio CR_j (j=2, 3, 5).

Table 7 $C_2 - P$ relative weight and consistency judgment index

P_2	P_3	P_4	P_5	λ_2	CI_2	CR_2
0.2296	0.2033	0.2631	0.3040	4.0000	0.0000	0.0000

Table 8 $C_3 - P$ relative weight and consistency judgment index

P_6	P_7	P_8	λ_3	CI_3	CR_3
0.4595	0.2558	0.2848	3.0000	0.0000	0.0000

Table 9 $C_5 - P$ relative weight and consistency judgment index

P_{10}	P_{11}	λ_5	CI_5	CR_5
0.5000	0.5000	2.0000	0.0000	0.0000

From the values in tables 7, 8 and 9, $C_2 - P, C_3 - P, C_5 - P$ the three scale judgment matrices passed the consistency test. [8]

3.4 HIERARCHICAL TOTAL RANKING AND ITS CONSISTENCY TEST:

According to formula (4), combined with the relative weights of C_1, C_2, C_3, C_4, C_5, the consistency index CI and average random consistency index RI of C-P judgment matrix obtain the consistency ratio of total ranking, = 0 < 0.1, which passes the consistency test.

$$CR = \frac{a_1 CI_1 + a_2 CI_2 + \ldots + a_m CI_m}{a_1 RI_1 + a_2 RI_2 + \ldots + a_m RI_m} \quad (4)$$

Evaluating indicator $P_1 \sim P_{11}$ the relative weights of are 0.4065, 0.0169, 0.0149, 0.0193, 0.0223, 0.0377, 0.0210, 0.0234, 0.2273, 0.1054, 0.1054. We ranked the relative weights of these 11 indicators from large to small, and found that the relative weights ofP_2, P_3, P_4, P_7 were very small, so we eliminated these four indicators to simplify our evaluation system. Finally, the relative weights of the seven indicators are shown in the table below:

Table 10 relative weights of seven indicators

Index	P_1	P_5	P_6	P_8	P_9	P_{10}	P_{11}
Relative weight	0.4380	0.0240	0.0406	0.0252	0.2449	0.1136	0.1136

The final mental health evaluation system for minors is shown in Figure3:

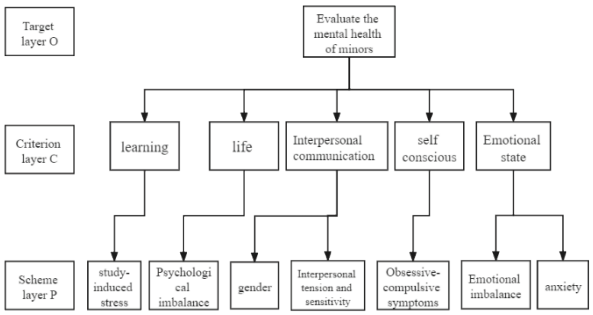

Figure 2 mental health evaluation system of minors

4. TO ANALYZE THE MENTAL HEALTH STATUS OF MINORS IN TANGSHAN

For the analysis of the mental health of minors in our region, we need to analysis the region of each surveyed the mental health of minors, which calculated the area of

each of the mental health of minors evaluation index, and then sum, average, get the area of the mental health of minors evaluation indexes, As a representative of the mental health of all minors in the area.

In order to evaluate the mental health status of every minor in this area, we established an evaluation model for the mental health status of minors.

Based on TOPSIS method and combined with improved analytic hierarchy process, the relative weight of 7 indicators is obtained, and the mental health score of minors to be evaluated is calculated by using the data of 7 indicators. the specific process is as follows [9]:

Firstly, the data of 7 indicators in the data were extracted as the pending data of TOPSIS, and then they are forward normalized and standardized. the maximum value of each indicator is the positive ideal solution, and the minimum value is the negative ideal solution, the positive distance of each juvenile is calculated by combining the relative weights of 11 indicators. the negative distance of each juvenile is calculated by combining the relative weights of 11 indicators, the formula used is as follows. Finally, the evaluation index value of each juvenile's mental health is obtained. [11]

$$\overline{x_i} = \frac{1}{x_i}, \quad z_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} x_{ij}^2}}$$

$$D_i^+ = \sqrt{\sum_{j=1}^{m} W_j \left(Z_j^+ - z_{ij}\right)^2}, \quad D_i^- = \sqrt{\sum_{j=1}^{m} W_j \left(Z_j^- - z_{ij}\right)^2}$$

$$S_i = \frac{D_i^-}{D_i^+ + D_i^-}$$

Then, we use the mean() function of the array of MATLAB software to obtain the mean value of the mental health evaluation index of 1456 minors, which is 0.5582, as the representative of the mental health status of all minors in this area.

Through the analysis of the final score of 0.5582 < 0.6, we believe that the mental health status of the minors in the region as a whole did not achieve the pass mark, so we came to the conclusion that the mental health of minors in the region, there are some problems, we should pay attention to the region's schools and students' parents, pay more attention to the mental health of minors, Remove their psychological barriers, so that minors can better grow up.

5. MODEL TEST

(1) Sensitivity analysis of mental health status assessment model

Here, we will conduct sensitivity analysis on the assessment model of juvenile mental health status composed of improved analytic Hierarchy Process +TOPSIS. Through literature review, we know that in the process of establishing the evaluation model, the weight of indicators plays a very important role in the evaluation result, so we will adjust the index with the maximum weight among the 7 indicators in the model.

First of all, we adjusted the weight of the index from 43.80% to 45.00%, while the weight of the remaining 6 indexes was reduced by 0.20%. Then, we used the adjusted weight and the pre-processed data of 7 indicators, combined with TOPSIS method, to evaluate the mental health status of minors, summing up and averaging, and the result was reduced by 3.21%.

Then, we adjusted the weight of the index from 43.80% to 42.00%, and increased the weight of the other 6 indexes by 0.30%. Then, we used the adjusted weight and the pre-processed data of 7 indicators, combined with TOPSIS method, to evaluate the mental health status of minors again, and the result increased by 2.52%.

Therefore, we can conclude that the evaluation model has strong stability.

(2) Model testing of mental health status assessment model

In the process of solving the second problem, we established the evaluation model of minors' mental health status: Based on TOPSIS method, combined with the improved analytic hierarchy process to draw seven indicators weight, calculated each minor mental health score and, in turn, sum, average, the final result is 0.5582, as the region all the minor mental health levels of reflection, thus we analysis, minor mental health status in the region.

We carried out an evaluation test on the above evaluation model: we used the data obtained from the questionnaire survey to take average values of offline grades and total grades, and the results were 3.57 and 28.02 respectively. It can be seen that when the offline score is 28.02 and the total score is 3.57, the corresponding grade is C, indicating that the minors in this area have certain psychological pressure and are vulnerable to external factors, and their overall mental health status is average. the results are consistent with the above model, and the model is verified.

6. OUR ADVICE

In the current society, teenagers suffer from less life training, it is difficult to accept pressure from life, and they lack certain coping ability. Their psychological construction mainly comes from three support systems: teachers, parents and peers.

For the school, we think, first of all, we should organize as many as possible for students to organize some mental health classes and group activities, strengthen the communication between students and teachers and classmates, pour out their hearts, relieve mood, relax body and mind; Secondly, appropriate for students to reduce learning pressure, let students have a relaxed and happy learning environment, to avoid class comparison, grade volume, vicious competition, etc.; Finally, I hope schools can open more classes for parents to teach correct family education views, so as to reduce the distance between parents and students, pay more attention to students' mental health, and fundamentally laugh out students' psychological disorders.

For parents, we believe, the best thing to do is to understand. It is inevitable that minors and adults have different perspectives and ways of looking at things. We hope that parents can sincerely listen to what their children want to say, tolerate their children's mistakes and troubles, manage their emotions as much as possible, reduce contrast, increase encouragement, respect their children's ideas, and consider problems from their perspective.

The above are our suggestions on the protection of minors' mental health. We believe that as long as we work together, minors will have a better living and learning environment!

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Value Analysis of Users' Consumption Behavior Based on Stepwise Logistic Regression Model

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Abstract: In the era of Internet big data, major companies have been able to widen customer acquisition channels by discerning the value of users and formulating specialized marketing strategies for them to achieve small cost marketing to improve user conversion rates. In this paper, based on the behavioral information data of a company's users, a stepwise logistic regression model is used to predict the consumption behavior of users. First, we visualize the distribution of users' cities and logins, and analyze that the users of this enterprise are mainly concentrated in new first-tier cities and mainly new users. After that, a stepwise logistic regression model was used to eliminate insignificant user information and build a prediction model of user consumption behavior to effectively determine the value of users. Finally, using the prediction model of user consumption behavior and the behavior data of already consumed users, the value analysis of user consumption behavior was conducted. the difference percentage pile-up chart of each information between purchased users and all users is used to visualize the factors affecting users' decisions, and a point system incentive system is proposed to enterprises to achieve the goal of improving user conversion rate.

Keywords: Stepwise logistic regression model; User value judgment; Visualization presentation; Point Incentive System

1. THE BACKGROUND OF THE PROBLEM

Today, with the continuous development of the Internet, companies in all fields are expanding their Internet customer acquisition channels to bring in fresh and active users for their products, increase their desire to buy products, and enhance their brand influence. However, how to identify high-quality users and channels and optimize marketing costs has always been a pain point for companies [1]. This requires analysis of user behavior data to identify the value of users, and then develop special marketing strategies for users to achieve small cost promotions and increase user conversion rates.

2. VISUAL PRESENTATION OF USER INFORMATION

2.1 USER CITY DISTRIBUTION

According to the "2019 City Business Attractiveness Ranking" published by the First Financial New Tier Cities Research Institute, cities are divided into five categories: "first-tier cities, new first-tier cities, second-tier cities, third-tier cities, and cities below the third tier", and the existing user the cities of users in the existing user information data are aggregated and classified to obtain the city distribution of users in Figure 1. We can see the weight of the users in each city of the company. From Figure 1, it can be seen that the users of the enterprise are mainly distributed in the new first-tier cities and the cities below the third tier, and the users in the second-tier cities and the third tier cities are equal. Among them, the distribution of users in Tier 1 cities is the least, and the user stickiness of this enterprise in Tier 1 cities is low, and the user stickiness in new Tier 1 cities is higher.

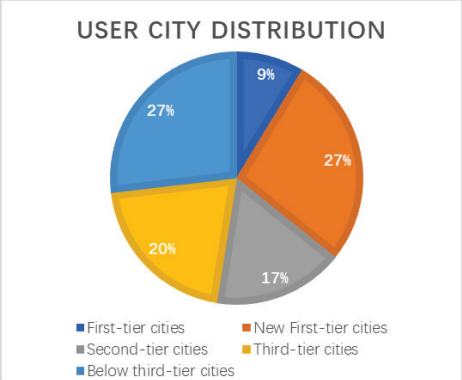


Figure 1. User city distribution

In addition, the bar chart and heat map presented by the 3D map can visually show the distribution of users in each city, and it can be seen from Figure 2 that the users of the enterprise are distributed in all provinces, but the city with the most users is Chongqing and the users are mainly distributed in the central and eastern regions and coastal cities in China. It shows that the users of the enterprise have strong regionalism.

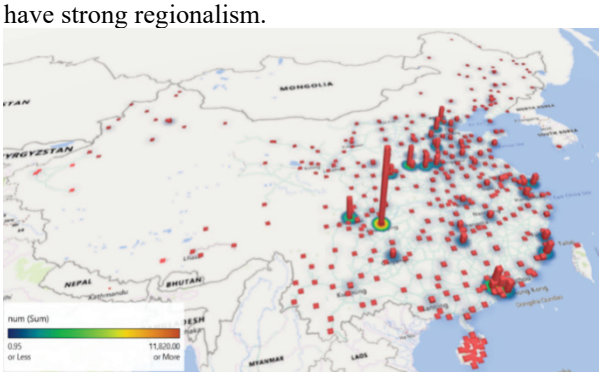


Figure 2. Three-dimensional maps

2.2 USER LOGIN STATUS

From Figure 3, we can see that the most users logged in for 5 consecutive days, accounting for 15.85%, and the amount of users logged in for 3 and 6 consecutive days is comparable, accounting for 14.50% and 14.98% respectively, with very few users logged in for more than

8 consecutive days. It can be analyzed that the users of this enterprise have a certain degree of activity, but the amount of loyal users is small.

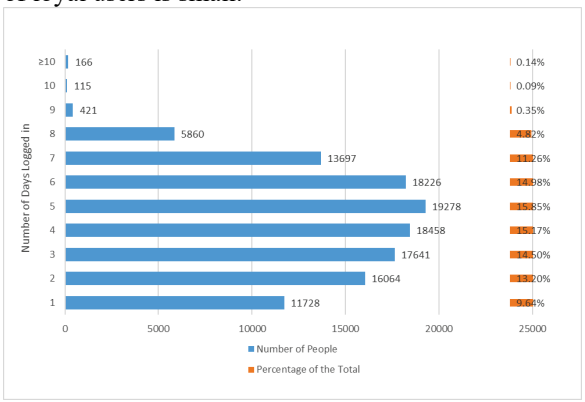


Figure 3. User Login Status

3. BUILD A STEPWISE LOGISTIC REGRESSION MODEL

3.1 BRIEF DESCRIPTION OF LOGISTIC REGRESSION MODEL

Logistic regression is a generalized linear regression, which is often used in dichotomous problems and contains two types of variables: dependent variable and independent variable, where the dependent variable is a binary categorical variable, and the dependent variable in this paper is whether the user buys or not, and the independent variable presents the information and behavior of the user [2].

Let the logistic regression have r independent variables, denoted by x_1, x_2, ⋯, x_r, and the dependent variable $y \in \{1, 0\}$ denotes the event that the user buys or does not buy, $y = 1$ means the user buys and $y = 0$ means the user does not buy. $y = 1$ practice is expressed in terms of probability p, and its formula is:

$$p = \frac{\exp(\beta_0+\beta_1 x_1+\cdots+\beta_r x_r)}{1+\exp(\beta_0+\beta_1 x_1+\cdots+\beta_r x_r)} \quad (1)$$

Where, $\beta_0, \beta_1, \cdots, \beta_r$ are the model parameters, β_0 is the intercept term, and the simplified formula by conversion is:

$$p = \frac{1}{1+e^{-z}} \quad (2)$$

Where, $z = \beta_0 + \beta_1 x_1 + \cdots + \beta_r x_r$.

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_r x_r$$

Where, $1 - p$ is the probability that the user does not buy, p is the ratio of the likelihood of a user not purchasing an event to the likelihood of purchasing an event, known as $odds$. the linear function is obtained by taking the logarithm of $odds$, and logistic regression is used to optimize the model by finding the best parameters $\beta_0, \beta_1, \cdots, \beta_r$.

The maximum likelihood estimation function is used to measure the $\beta_0, \beta_1, \cdots, \beta_r$ model parameters.

model parameters, with m sets of observations, the maximum likelihood function is:

$$L(\beta) = \prod_i^m p\left(y^{(i)}\middle|x^{(i)};\ \beta\right) = \prod_i^m h_\beta(x^{(i)})^{y(i)}\left[1 - h_\beta(x^{(i)})\right]^{(1-y^{(i)})} \quad (3)$$

Where, $h_\beta(x^{(i)}) = \frac{1}{1+e^{-\beta^T x^{(i)}}}$, model predictions for the i-th sample; $\beta_0, \beta_1, \cdots, \beta_r$, the set of parameters consisting of $\beta_0, \beta_1, \cdots, \beta_r$, to facilitate the calculation of the derivative, the log-likelihood function is established:

$$lnL(\beta) = \sum_i^m y^{(i)} ln\left[h_\beta(x^{(i)};\ \beta)\right] + \left\{1 + y^{(i)} ln\left[1 - h_\beta(x^{(i)};\ \beta)\right]\right\} \quad (4)$$

where, the estimates of the logistic regression coefficients that maximize the log-likelihood function are obtained by finding the partial derivatives of the parameters k, re spectively.

3.2 STEPWISE LOGISTIC REGRESSION MODEL

Wald is the value of the statistic for the regression coefficient test:

$$Wald = \left(\frac{B}{S.E.}\right)^2 = \left(\frac{B}{\sqrt{D(\beta_j)}}\right)^2 \quad (5)$$

$Sig.$ is the probability of significance of the $Wald$ test. In the logistic regression model, if the coefficient of an independent variable does not pass the significance test, i. e., the p-value corresponding to that independent variable is greater than 0.1, the independent variable is considered to have insignificant influence on the model building process, and the variable will not be included in the final model. Based on this, the stepwise logistic regression model can generate fewer explanatory variables [3].

In this paper, a backward stepwise logistic regression model is chosen to model all regression independent variables and perform the Wald coefficient test, and if it passes the test, the independent variable is introduced into the regression model, which is recorded as the set of selected variable indicators. If the significance of the independent variable does not pass the Wald test, the independent variable is excluded. With the elimination of the less significant independent variables, smaller AIC values can be obtained and the model is simplified, and the error of the simplified model on the validation set is smaller than that of the full-variable model, and the stepwise logistic regression model is finally obtained.

Variable selection was performed using stepwise logistic regression to generate a simplified model with fewer explanatory variables according to the AIC criterion, and a new model with 29 explanatory variables was obtained. Twenty regression coefficients with p-values that did not contribute significantly to the equation were excluded and the model was refitted, and each coefficient of the new model was highly significant ($p<0.05$), and the independent variables of the fitted model are shown in Table 1.

Variables in the equation

		B	Standard Error	Wald	Degrees of freedom	Significance
Step 1	login_day	-. 292	. 022	169.323	1	. 000
	login_diff_time	. 070	. 009	64.309	1	. 000
	distance_day	-. 015	. 001	847.232	1	. 000
	login_time	. 003	. 000	49.130	1	. 000
	chinese_subscribe_num	1.065	. 053	400.688	1	. 000
	math_subscribe_num	. 330	. 075	19.327	1	. 000
	add_friend	5.285	1.754	9.077	1	. 003
	camp_num	-. 087	. 032	7.300	1	. 007
	learn_num	-. 353	. 032	122.775	1	. 000
	finish_num	. 158	. 032	24.730	1	. 000

	study_num	1.318	. 063	443.254	1	. 000
	coupon	1.382	. 031	1935.025	1	. 000
	course_order_num	. 761	. 032	572.284	1	. 000
	first_order_time	. 000	. 000	58.317	1	. 000
	first_order_price	. 021	. 004	30.384	1	. 000
	age_month	. 005	. 002	10.046	1	. 002
	main_home	. 005	. 002	8.389	1	. 004
	main_home2	. 003	. 001	8.342	1	. 004
	mainpage	. 035	. 005	42.208	1	. 000
	schoolreportpage	. 021	. 007	8.633	1	. 003
	lightcoursetab	-. 060	. 016	14.891	1	. 000
	evaulationcenter	-. 024	. 007	11.206	1	. 001
	coupon_visit	-. 538	. 015	1274.470	1	. 000
	task	. 025	. 005	24.785	1	. 000
	video_read	. 009	. 002	19.003	1	. 000
	answer_task	-. 024	. 003	64.969	1	. 000
	chapter_module	-. 015	. 003	23.710	1	. 000
	share	. 016	. 006	8.448	1	. 004
	constants	892.466	14861.800	. 004	1	. 952

Table 1. Variables in the equation

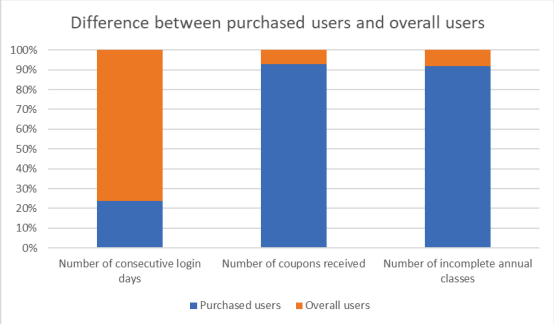
The stepwise logistic regression model built using some of the independent variables was 99.6% correct in predicting user non-purchase events and 47.6% correct in predicting user purchase events, with a model accuracy of 97.9%. the correct rate of 47.6% can be agreed because the data of purchasing users in the user behavior data set is too small compared with the data of non-purchasing users. the prediction classification table of the model is shown in Figure 2.

Classification table					
			Predicted		
			result		
	Real measurement		0	1	Percent correct
Step 1	result	0	86889	332	99.6
		1	1583	1438	47.6
	Overall percentage				97.9

Table 2. Classification table

4. SOUND ADVICE FOR COMPANY

Through the established stepwise logistic regression model, the variables with high significance were screened and presented visually to plot the percent difference pile-up of purchased users versus all users, as shown in Figure 3.



From Figure 3, we can see that the purchased users generally have fewer consecutive login days, more coupons and more users who have not completed their annual classes [4]. Therefore, enterprises can appropriately increase the number of coupons issued and set up point incentive rules at the same time. For users who have logged in for more consecutive days and completed the annual course, coupons can be issued to increase users' stickiness to the course.

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NCFA: Networks Correlations Forecast and Assessment of Music Evolution

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Abstract: Musicians' styles, genres and musical characteristics may be influenced by the times, environment and other musicians. Firstly, Spelman correlation coefficient was used to analyze the correlation between different genre to determine the degree of similarity between genre and within genre. At the same time, the representative musicians who choose to distribute more songs calculate correlation coefficient to analyze the correlation between them. In the study of different types over time, the factor analysis model is used to analyze 14 evaluation indexes into two-dimensional evaluation index models, and then analyzed 2 new evaluation indexes corresponding to 20 genres over time. Finally, the passion vitality index of each genre is rising and the elegant positive index is decreasing. Moreover, with the help of ARIMA model, We explored the changes of music characteristics of Pop/Rock genre in the evolution of music, established a ARIMA model, and better described the changes of four evaluation indexes of Pop/Rock genre from 1928 to 2020. Finally, pop/rock school's energy index, dance, popularity index, growing, enthusiasm has declined conclusion. We finally conduct sensitivity analysis, dissect pros and cons of our model and present a memo of our work to the ICM Association.

Keywords: ARIMA model; Correlation Analysis; Factor analysis; Networkx

1 TNTRODUCTION

Music is a part of human society and an important part of cultural heritage, while musicians are an important carrier to create music and integrate it into human society. the style, genre and musical characteristics of a musician may be influenced by the times, environment and other musicians. These factors which may affect the style, genre and musical characteristics of musicians are the important basis for judging the development and evolution of musical genres. By reasonably quantifying these data, we can better understand how music evolves in society over time.

In this work, we propose a novel framework, named NCFA (Networks, Correlations, Forecast and Assessment of Music Evolution), to fill in the gap above. the framework of NCFA is shown in Figure 1.

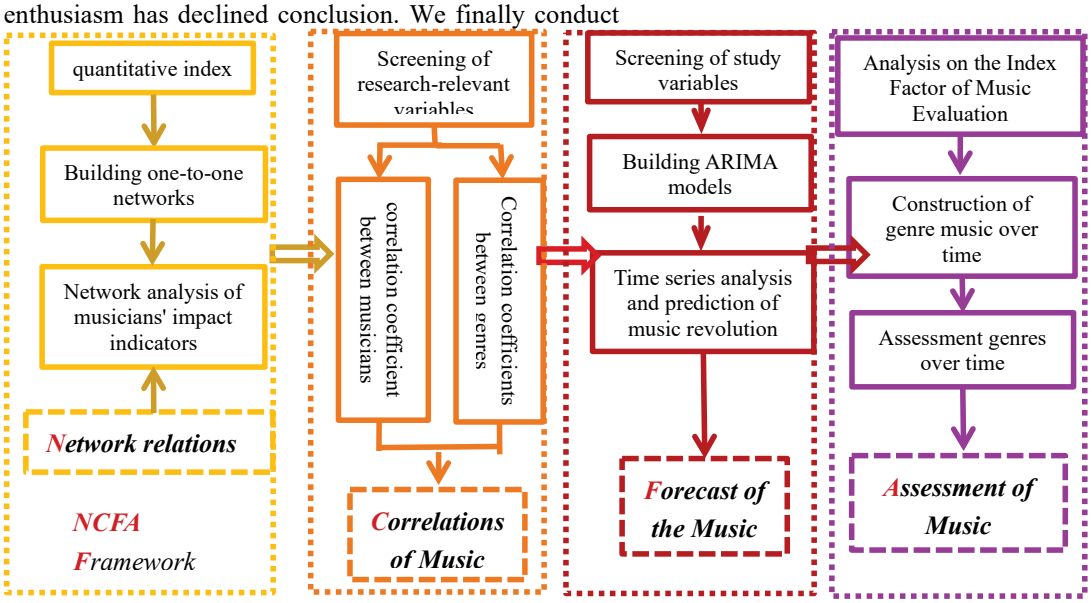

Figure 1: Framework of CAFE

2 MODELING AND PROBLEM HANDLING

A total of 20 genres, 9 genres of musicians and active time were provided in influence_data. the data given from the data set can show that the genre choice of the follower is influenced by the music genre of the influence to a certain extent. In this regard, we screened and analyzed the genres of influence of 20 genre musicians given by the data set, except for the genres whose results were not universal because of the small number of genre musicians. Finally, 5 musicians were retained in more than 1, 000 genres for statistical analysis.

The change trend of the proportion of musicians of

different genres at any time is as follows:

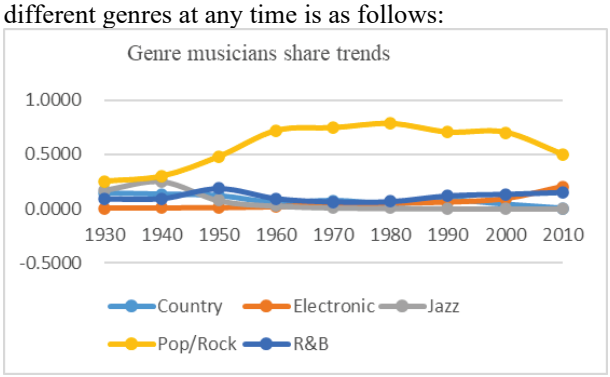

Figure 2 Genre musicians share trends

In addition to the times can be an important factor affecting musicians' genres, the music genres in which they are influenced will also have a profound impact on musicians' own genres. In this regard, we made a statistical analysis of the selected five typical musical genres and their influencers, and obtained the following quantitative results:

we can see that most of the followers are influenced by their influence genres. There is an anomaly in the followers of Electronic genres, and it is preliminarily concluded that the reason is that their genres Electronic out of Pop/Rock,, so the development of their own genres is deeply influenced by the Pop/Rock genres, and in the later Vacal genres, This phenomenon also shows obvious similarities.

Because the original data set contains 13 music evaluation indicators, and there is a correlation between these music evaluation indicators. [3] Therefore, the 13 music evaluation indicators are analyzed by factor analysis, that is, dimension reduction.

The existing n samples, p indicators, can form a sample matrix of n *p size:

$$x=\begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1p} \\ x_{21} & x_{22} & \cdots & x_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \cdots & x_{np} \end{bmatrix}=(x_1,x_2,...,x_p)$$

$x_1,x_2,...,x_p \Rightarrow f_1,f_2,...,f_p(m \le p)$ Among them, and they meet:

$$\begin{cases} x_1=u_1+a_{11}f_1+a_{12}f_2+...+a_{1m}f_m+\varepsilon_1 \\ x_{21}=u_2+a_{21}f_1+a_{22}f_2+...+a_{2m}f_m+\varepsilon_2 \\ \vdots \\ x_p=u_p+a_{p1}f_1+a_{p2}f_2+...+a_{pm}f_m+\varepsilon_p \end{cases}$$

$x=u+Af+\varepsilon$ As a result, it is assumed that:[4]

$$\begin{cases} E(f)=0 \\ E(\varepsilon)=0 \\ Var(f)=I \\ Var(\varepsilon)=D=diag(\sigma_1^2,\sigma_2^2,...,\sigma_p^2) \\ \mathrm{cov}(f,\varepsilon)=E(f\varepsilon')=0 \end{cases}$$

By using the spss25 software to analyze the factors, the gravel map corresponding to the eigenvalues of each factor is first drawn, as shown in figure 3.

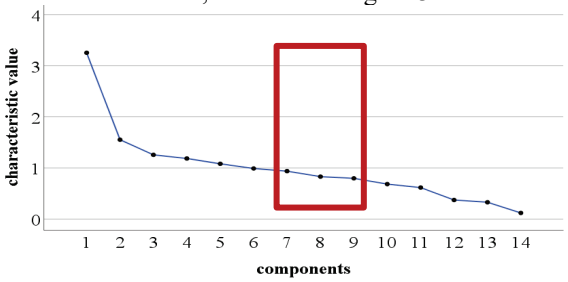

Figure 3 Gravel map

It can be seen from figure 6 that the curve between component 1 and component 2 is steep, while the curve after component 2 is relatively smooth, so the retention component 1 and component 2 are analyzed.

After determining the retention of two components, multiply the original component matrix with the rotation matrix k,

$$k=\begin{bmatrix} 0.945 & 0.328 \\ 0.328 & -0.945 \end{bmatrix}$$

The composition matrix after rotation is obtained, as shown in table 5:

Table 1 Composition matrix after rotation

	component	
	1	2
danceability	. 156	. 769
energy	. 888	. 107
valence	. 238	. 776
tempo	. 330	-. 033
loudness	. 828	. 183
mode	-. 086	. 130
key	. 053	-. 010
acousticness	-. 838	-. 056
instrumentalness	-. 345	-. 365
liveness	. 192	-. 287
speechiness	. 184	-. 067
explicit	. 317	-. 154
duration_ms	. 143	-. 480
popularity	. 619	. 016

table 5 shows that, energy, of component 1 High loudness and popularity, Hence the interpretation of component 1 as Passionate Power; danceability, corresponding to simultaneous component two High valence, As a result, component 2 is interpreted as Graceful and positive.

Each factor weight is obtained by factor analysis, the original component matrix X is multiplied by the weight matrix, and the corresponding values of the new evaluation indexes of each genre are obtained:

$$New\ X=\begin{bmatrix} \alpha_1 & \beta_1 \\ \alpha_2 & \beta_2 \\ \vdots & \vdots \\ \vdots & \vdots \\ \alpha_{14} & \beta_{14} \end{bmatrix}*\begin{bmatrix} x_{11} & x_{12} & \cdots & x_{114} \\ x_{21} & x_{22} & \cdots & x_{214} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \cdots & x_{n14} \end{bmatrix}$$

The value of the new evaluation index corresponding to each genre is obtained, and the change of the value of the two new components of each genre with time is analyzed respectively. the following six new evaluation indexes are listed as follows: Country, Folk, Jazz, Latin, Pop/Rock

and R&B. respectively.

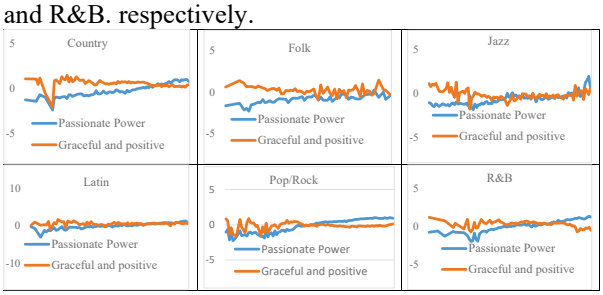

Figure 4 Changes of genres over time

With the passage of time, the Passionate Power of each genre has increased obviously, while the Graceful and positive of each genre has declined over time, especially between 1960s and 1970s

It is concluded that with the passage of time, the energy index, popularity index and passion power index of each genre have all increased, and the dance and enthusiasm of each genre have decreased with time. According to the relevant literature [5], the corresponding events in the 1960s and 1970s include the assassination of Kennedy, the failure of the Vietnam War, the Cuban missile crisis, and the assassination of Martin Luther King. Therefore, We determined that the negative enhancement of music in this era may be related to these events, and in order to find comfort from these negative events, musicians began to create music with passionate power to alleviate their negative emotions. Therefore, the passion of this era, strength indicators are still increasing.

3 STUDIES OF GENRES OVER TIME

3.1 Selection of research objects and variables

To analyze the evolution of music genres over time, Pop/Rock genres are selected to study because of the large proportion of Pop/Rock genres in the full_music_data data set. Among the 14 music evaluation indexes, some music evaluation indexes such as explicit, duration_ms are fixed at each time point, or cannot describe the music changes, so there is no research significance. Based on this method of selecting music evaluation index, this paper studies 4 of 14 music evaluation indexes, namely: danceability, energy, valence, popularity.

3.2 Establishment of difference autoregressive moving average model

The four variables are classified and summarized in the full_music_data data set, and the average values of these four indexes in each year of the Pop/Rock genres from 1928 to 2020 are obtained.

x is the time series data to be studied x1, x2.. xt. The covariance is assumed to be stationary, that is, to satisfy the stationarity of the time series. Based on this assumption, We uses the expert modeler in the SPSS 25 to model the time series. the expert modeler automatically finds the best fit model for each dependent sequence. If an independent variable is specified, the expert modeler selects those models that have a statistically significant relationship with the dependent sequence for the content in the ARIMA model. When appropriate, use difference, square root or natural logarithmic conversion to transform model variables. By default, the expert modeler considers both exponential smoothing and ARIMA models. **[7]** the four time series model types corresponding to the four evaluation indexes established by the expert modeler are shown in the following table:

Table 2Type of model

			T ypes of models
M odel ID	D anceability	Model 1	ARIMA(0, 0, 2)
	E nergy	Model 2	ARIMA(2, 1, 0)
	V alence	Model 3	ARIMA(0, 1, 1)
	P opularity	Model 4	ARIMA(1, 1, 0)

ARIMA model parameters given are shown in the following table:

Table 3 ARIMA model parameter

			estimate	standard error	T	conspicuousness
D anceability	quantity		. 375	. 010	35.912	. 000
	MA	delay 1	-. 420	. 091	-4.620	. 000
		delay 2	-. 315	. 092	-3.415	. 001
E nergy	quantity		. 006	. 002	3.906	. 000
	AR	delay 1	-. 579	. 130	-4.466	. 000
		delay 2	-. 334	. 120	-2.774	. 007
	difference		1			
V alence	difference		1			
	MA	delay 1	. 756	. 036	21.250	. 000
P opularity	quantity		. 656	. 096	6.844	. 000
	AR	delay 1	-. 428	. 084	-5.093	. 000
	difference		1			

First, the original time series model is established:**[8]**

$$(1-\sum_{i=1}^{p}\alpha_i L^i)(1-L)^d y_t = \alpha_0 + (1+\sum_{i=1}^{q}\beta_i L^i)\varepsilon_t$$

The L is the y lag operator, which satisfies: $L^i y_t = y_{t-i}$

Take the Danceability model for example, because Danceability isARIMA(0, 0, 2) the model, the p, d is 0, so the model expression is:

$$y_t = \alpha_0 + (1+\beta_1 L+\beta_2 L^2)\varepsilon_t$$

Simplified: $y_t^2 - \alpha_0 y_t = \alpha_0\varepsilon_t\beta_1 y_{t-1} + \alpha_0\varepsilon_t\beta_2 y_{t-2}$

Similarly, the time series ARIMA models corresponding to Energy, Valence, Popularity three evaluation indexes are obtained:

$$y_t = \frac{\alpha_0+\varepsilon_t}{1-d} + \alpha_1 y_{t-1} + \alpha_2 y_{t-2}$$

$$y_t - \beta\varepsilon_t\frac{y_{t-1}}{y_t} = y_{t-1} + \alpha_0\varepsilon_t$$

$$y_t + \frac{\alpha y_{t-1}^2}{y_t} = (\alpha+1)y_{t-1} + \alpha_0 + \varepsilon_t$$

After inserting the parameters, we can gain:

$$y_t = 0.375 + (1+\beta_1 L+\beta_2 L^2)\varepsilon_t$$

$$y_t = \frac{0.006+\varepsilon_t}{1-d} - 0.579y_{t-1} - 0.334y_{t-2}$$

$$y_t - \beta\varepsilon_t\frac{y_{t-1}}{y_t} = y_{t-1} + 0.756\varepsilon_t$$

$$y_t - \frac{0.428y_{t-1}^2}{y_t} = (-0.428+1)y_{t-1} + 0.656 + \varepsilon_t$$

3.3 Analysis of time series models

According to the predicted value, draw outdanceability, energy, valence, popularityEffect diagram of actual value

and predicted value corresponding to 4 indexes:

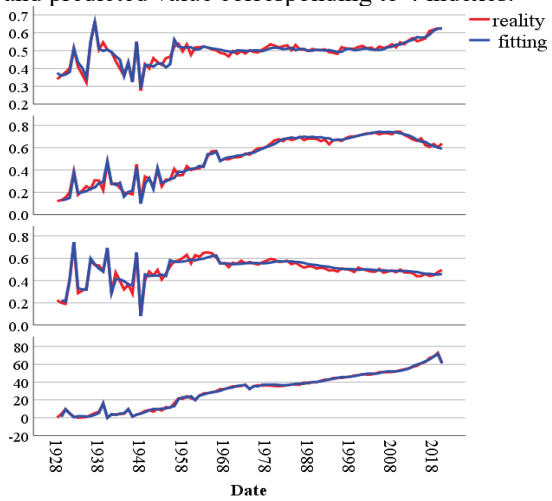

Figure 5 Results of the forecast

It can be found from the diagram that the ARIMA model fits well with the actual value and can reflect the changing trend of the four indexes with time in most Pop/Rock genres.

Synthesizing above analysis, from time series change trend chart, we can see that the dance sex of Pop/Rock song has been increasing steadily since 1960, especially from 2010 to now Pop/Rock the dance sex of music has increased obviously; at the same time, in energy aspect, from 1928 to 2010, the energy index of Pop/Rock has been increasing significantly, and from 2010 to now, the energy index has decreased; on the positive side, the enthusiasm of Pop/Rock grew slowly from 1928 to 1968, decreasing slowly from 1968 to present, and the trend was relatively stable; compared with other indicators, the popularity of Pop/Rock increased significantly from 1928 to 2018. However, from 2018 to now, the popularity of Pop/Rock has a significant downward trend.

3.4. Use of networks to identify social and political impacts

From the 4.1 link, We has established a networkx network based on influencers and followers genres and linked influencers and followers. As can be seen from figures 1 and 9, the evolution of musicians' music genres in the data set, as well as the changes in musical characteristics, took place near 1960. the corresponding events in the 1960s and 1970s include the assassination of Kennedy, the failure of Vietnam War, the Cuban missile crisis, and the assassination of Martin Luther King. Therefore, We determined that the negative enhancement of music in this era may be related to these events, and in order to find comfort from these negative events, musicians began to create music with passionate power to alleviate their negative emotions. Therefore, the passion of this era, strength indicators are still increasing.

The above contents have proved that the network established by We can reflect the trend of social development and the degree of social unrest through the quantitative form of the change of musical characteristic index of musicians in music evolution. Therefore, the network can identify the influence of society and politics on music evolution in this way.

3 Time series model tests

To test the accuracy of 4 ARIMA models, the self-correlation ACF and partial autocorrelation coefficients PACF: calculated

$$ACF = r_s = \hat{\rho}_s = \frac{\sum_{t=s+1}^{T}(x_t - \bar{x})(x_{t-s} - \bar{x})}{\sum_{t=1}^{T}(x_t - \bar{x})^2}$$

$$PACF = x_t = \phi s_1 x_{t-1} + \phi s_2 x_{t-2} + \ldots + \phi s_s x_{t-s} + e_t$$

The results are shown in Figure 6:

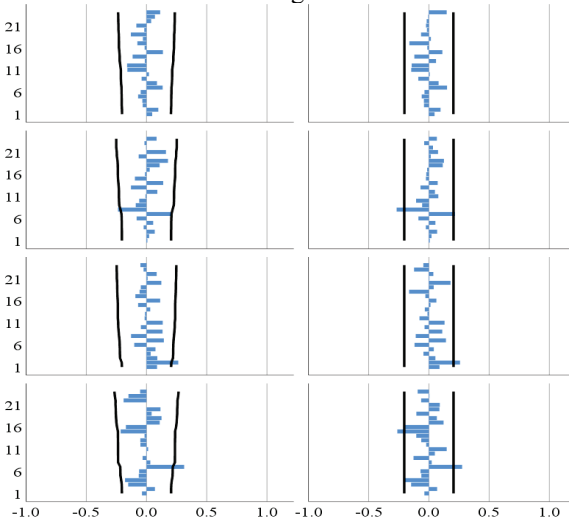

Figure 6 ACF and PACF of residuals

We can see from the ACF of the residuals and the PACF figure that the self-correlation and partial autocorrelation coefficients of most of the lag orders are within the significant level, which indicates that there is no significant difference between them and 0.

In addition, it can be seen from the following table that the values obtained from the residual error detection are all greater than 0.05, which indicates that all the predicted data accept the original hypothesis at 95% confidence level, that is, the residual error is a white noise sequence. As a result, the ARIMA model can well identify the time series data in this problem.

Table 4ARIMA model testing

Model	Model fit statistics R smooth	Yang -Box Q(18) statistics	DF	conspicuousness	Number of outliers
danceability-Model 1	. 922	14.939	16	. 529	10
energy-Model 2	. 891	20.325	16	. 206	10
valence-Model 3	. 951	21.285	17	. 214	10
popularity-Model 4	. 878	29.176	17	. 303	11

4 CONCLUSION

From the network established, we is committed to exploring the influence of follower genres. We conclude that the development of followers is influenced by the corresponding genres and times, and the development of similar genres also has a certain impact on followers. At the same time, we determine the correlation in the study. the musical characteristics of genre musicians are the main factors that affect the evolution of music and lead to the

evolution of music. When we further explore the model, we combine the social environment background with the comprehensive development trend of musicians' musical characteristics, which adds variables of social and political factors to our model. the evolution of music reflects the change of social environment, and the change of music characteristics reflects the change of political theme.

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Catalytic Experimental Study on Preparation of C4 Olefin from Ethanol

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Abstract: Ethanol is a key renewable compound. It is of great value to study the relationship between ethanol conversion and C4 olefin selectivity and temperature, and to design a reasonable combination of catalysts to improve the yield of C4 olefin. In this paper, the effects of different catalyst combinations and reaction temperatures on ethanol conversion and C4 olefin selectivity were studied. the experimental data were preprocessed to obtain relatively complete experimental data. Python software was used to perform linear and nonlinear regression fitting for the relationship between ethanol conversion, C4 olefin selectivity and temperature.

Keywords: Olefin Preparation From Ethanol; Regression Model; Fitting Curve

1. BACKGROUND

Ethanol is a key renewable compound. It is a hot research topic to synthesize other chemical products with ethanol as raw material. C4 olefin is one of the important petrochemical basic raw materials, and ethanol is the raw material for the production and preparation of C4 olefin. At present, there are few specific studies on improving the selectivity of the gas product propylene in this reaction. It is of great theoretical significance and application value to explore the technological conditions for the preparation of C4 olefin by ethanol catalytic coupling. According to a chemical laboratory for different catalysts at different temperatures to do a series of experimental data.

2. PROBLEM ANALYSIS

We preprocessed the experimental data and obtained relatively complete experimental data. Python software was used to perform linear and nonlinear regression fitting on the relationship between ethanol conversion rate, C4 olefins selectivity and temperature, and comparative analysis of the relationship between ethanol conversion rate, C4 olefins selectivity and temperature. Establish a regression fitting model for data changing with time to explore the relationship between variables and time.

3. ASSUMPTIONS OF THE MODEL

In order to establish a simplified model, the team simplified each participant of the model as follows during the modeling process:

1. In the process of preparing C4 olefin by ethanol coupling, all the experimental processes are legal and standardized, and no safety accidents will occur.
2. It is assumed that the density of materials does not change during the preparation of C4 olefin by ethanol coupling.
3. It is assumed that there are no other side reactions during the preparation of C4 olefin by ethanol coupling, and the utilization rate of carbon atom is 100%.
4. It is assumed that the reaction vessel used in the preparation of C4 olefins by ethanol coupling is of the same size and quality.
5. the quality changes before and after the reaction of preparing C4 olefin by ethanol coupling are not considered.

4. DEFINITION AND NOTATION

In order to simplify problem analysis and data processing, symbols are stipulated as follows:

symbol	define
α	Ethanol conversion
β	C4 olefins selectivity
T	Reaction temperature
t	The reaction time
s_i	Catalyst combination variable

5. THE ESTABLISHMENT AND SOLUTION OF MODEL

5.1 DATA PREPROCESSING

The data table shows the experimental information of catalysts numbered A1 ~ A14 and B1 ~ B7. First of all, through our preliminary study, the catalyst combination of GROUP A9 and group B5 and group A12 and group B1 is the same. However, due to the different charging methods of ⅰ and ⅱ, there are only a few experimental groups, so it is temporarily impossible to determine the influence of charging methods on products. Consider them as different catalyst groups. Secondly, for the data in these information, data cleaning is essential, and it is necessary to eliminate useless information and outliers.

Step 1: remove the abnormal data, according to annex 1, finishing all 21 different combination of catalyst solution found that A11 catalyst composition compared with other groups, catalyst carrier for quartz sand, without the presence of HAP, ethanol conversion rate and selectivity of C4 olefin is lower, the problem of the whole inquiry no larger value, thus eliminating.

Step 2: Complete the missing data -- after screening out the worthless data, we found that in the experimental data, the temperature setting interval was different under different catalyst combinations. In order to simplify the problem, we set 25℃ as the setting interval to study the data within the range of 250 ~ 400℃. For intermediate data missing, we use the before and after average method to complete the median; for data missing before and after, we use the third order exponential smoothing method to complete the value.

Before and after average method: the numerical average of the former and the latter of the missing data is used as the compensating data of the missing value.

Third-order exponential smoothing method: Given the smoothing coefficient U =0.4, the calculation formula of

cubic exponential smoothing is as follows:

$$\begin{cases} S_t^{(1)} = ux_t + (1-u)S_{t-1}^{(1)} \\ S_t^{(2)} = uS_t^{(1)} + (1-u)S_{t-1}^{(2)} \\ S_t^{(3)} = uS_t^{(2)} + (1-u)S_{t-1}^{(3)} \end{cases} \quad (1)$$

Predict the value of future TD period. the calculation formula ofx_{t+TD} is:

$$x_{t+TD} = A_{TD} + B_{TD}TD + C_{TD}TD^2 \quad (2)$$

Among them:

$$A_t = 3S_t^{(1)} - 3S_t^{(2)} + S_t^{(3)}$$

$$B_t = \left(\frac{u}{2(1-u)^2}\right)\left[(6-5u)S_t^{(1)} - 2(5-4u)S_t^{(2)} + (4-3u)S_t^{(3)}\right] \quad (3)$$

$$C_t = \left(\frac{u^2}{2(1-u)^2}\right)\left[S_t^{(1)} - 2S_t^{(2)} + S_t^{(3)}\right]$$

5.2 MODEL PREPARATION

The relationship between Y and X is a correlation, that is, when the independent variable X changes, the dependent variable Y changes roughly in accordance with a certain law. the relationship between the two cannot be seen intuitively and needs to be determined by statistics. Regression analysis is a mathematical statistical method to study the relationship between variables in random phenomena.

Let's use the least square method to solve the regression equation

$$b = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^{n}(x_i - \bar{x})^2} \quad (4)$$

After the linear regression of the model, the goodness of fit of coefficients of regression model is evaluated by determination coefficient to check whether the regression equation has practical significance.

$$R^2 = \frac{\text{Return to the sum of squares}}{\text{The total sum of squares}} = 1 - \frac{\text{Sum of squares of residuals}}{\text{The total sum of squares}} \quad (5)$$

The closer $R^2$is to 1, the better the regression fit of x and y is.

5.3 ANALYZE THE RELATIONSHIP BETWEEN VARIABLES BASED ON REGRESSION FITTING

Table 1. Data table of fitting graph in A method

Catalyst combination number	A1	A2	A3	A4	A5	A6	A7
b	0.32		0.48	0.58	0.41	0.5	0.38
R^2	0.966	0.958	0.973	0.995	0.873	0.966	0.999

Catalyst combination number	A8	A9	A10	A11	A12	A13	A14
b	0.34	0.25	0.18	0.2	0.28	0.25	0.33
R^2	0.947	0.82	0.823	0.782	0.913	0.853	0.916

The fitting diagram of ethanol conversion rate and temperature for each catalyst in charging mode II (B1 ~ B7) is as follows (B2 ~ B4), and see appendix for details.

Table 2. Data table of fitting graph under B methods

Catalyst combination number	B1	B2	B3	B4	B5	B6	B7
b	0.28	0.27	0.13	0.21	0.27	0.38	0.42
R^2	0.911	0.837	0.792	0.809	0.832	0.883	0.876

As can be seen from the fitting diagram of the relationship between ethanol conversion rate and temperature, for all catalyst combinations given in Annex I, the change rule of ethanol conversion rate is always increasing with the increase of temperature, and the fitting degree is good according to the determination coefficient R2.

Table 3. Data table of fitting graph in different ways A

Catalyst combination number	A1	A2	A3	A4	A5	A6	A7

5.3.1 RELATIONSHIP BETWEEN ETHANOL CONVERSION RATE AND TEMPERATURE

The fitting diagram of ethanol conversion rate and temperature for each catalyst in charging mode I (A1~A14) is as follows (A1~A3)

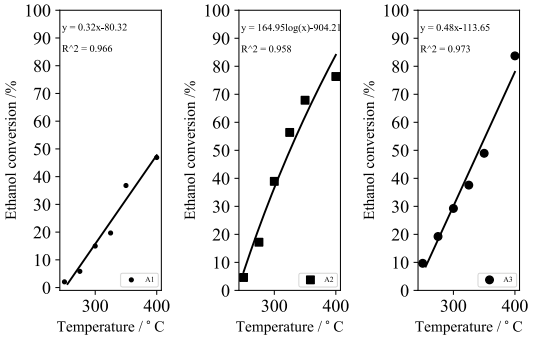


Figure 1. Fitting diagram of the relationship between ethanol conversion rate of A1~A3 and temperature

Among them, A2 catalyst combination simulates the nonlinear regression equation.

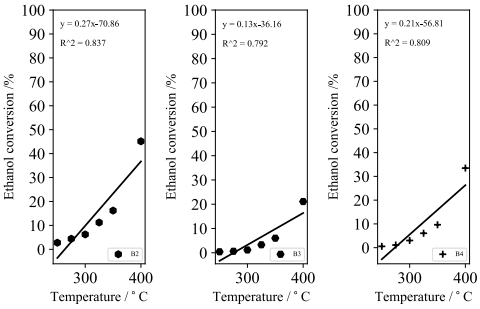


Figure 2. Fitting diagram of b2-B4 ethanol conversion rate and temperature

The slope and determination coefficient of the fitting straight line diagram of each catalyst in charging mode I (A1~A14) are as follows:

5.3.2 RELATIONSHIP BETWEEN C4 OLEFINS SELECTIVITY AND TEMPERATURE

For each catalyst in charging mode I (A1~A14), the relationship between the selectivity of C4 alkenes and temperature is illustrated as follows (A1~A3).

b		0.23	0.34	0.23	0.23	0.2	0.19
R^2	0.59	0.926	0.986	0.917	0.94	0.747	0.926
Catalyst combination number	A8	A9	A10	A11	A12	A13	A14
b	0.24	0.25	0.05	0.05	0.2		0.14
R^2	0.981	0.995	0.703	0.974	0.961	0.98	0.904

Among them, A1 and A13 catalysts were combined to simulate the nonlinear regression equation.

The fitting diagram of ethanol conversion rate and temperature for each catalyst in charging mode II (B1 ~ B7) is shown in appendix, with examples (B2 ~ B3).

Table 4. Data table of fitting graph under B methods

Catalyst combination number	B1	B2	B3	B4	B5	B6	B7
b	0.24	0.24	0.12	0.1	0.15	0.19	0.23
R^2	0.968	0.965	0.943	0.801	0.956	0.965	0.989

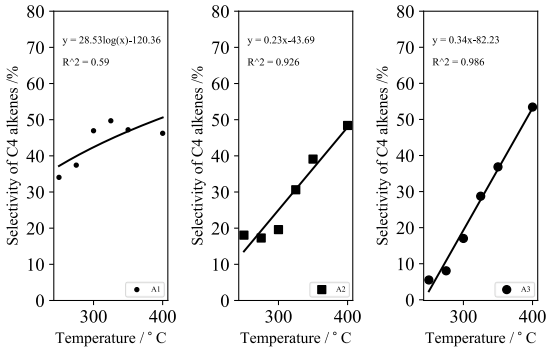


Figure 3. fitting diagram of A1~A3 C4 olefins selectivity and temperature

As can be seen from the fitting diagram of the relationship between the selectivity of C4 olefin and temperature, for all catalyst combinations given in Annex I, the selectivity of C4 olefin keeps increasing with the increase of temperature, which can be seen from the determination coefficient R2 that the fitting degree is good.

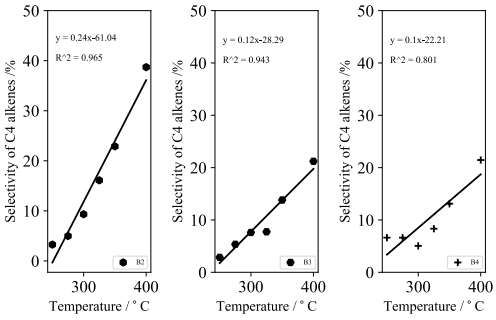


Figure 4. B2 ~ B4 C4 olefin selectivity and the relationship between temperature fitting chart

5.3.3 ANALYSIS OF RELATIONSHIP BETWEEN REACTION PRODUCTS AND TIME

The regression fitting analysis of the test results of a given catalyst combination at 350 degrees at different times in an experiment is as follows:

As can be seen from the figure, when the temperature is 350 degrees, the conversion rate of ethanol decreases slowly with the increase of time under the catalysis of a given combination of catalysts. the selectivity of ethylene, C4 olefin, acetaldehyde, fatty alcohols with carbon number 4-12, methylbenzyl alcohol and other products gradually reached a state of dynamic equilibrium over time.

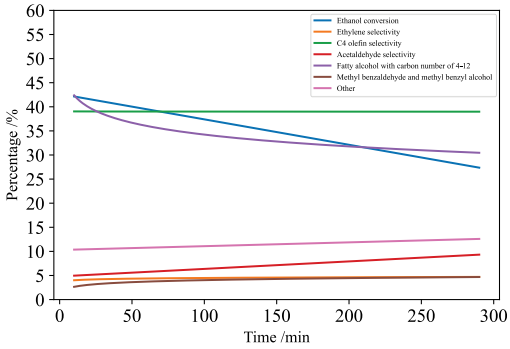
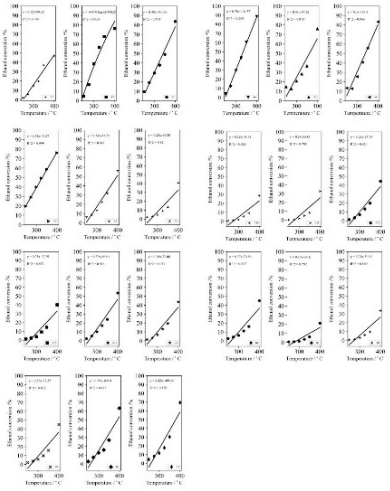


Figure 5. Fitting diagram of test results of a given catalyst combination at 350 degrees at different times in an experiment

6. THE APPENDIX

The fitting figure of ethanol conversion rate and temperature for each catalyst (A1~B7) is shown below:

The fitting figure of the relationship between the selectivity of C4 alkenes and temperature for each catalyst (A1~B7) is shown as follows:



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Airport Taxi Driver Decision-Making and Taxi Management Model

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Abstract: Renting a car is a means of transportation that saves social resources and is extremely convenient for people's life. In order to maximize profits, airport taxi drivers often face two choices. Based on this, this paper puts forward some decision-making suggestions. First, taxi drivers can choose to pick up passengers at the airport queuing area, or go directly to the city to pick up passengers. Thus, determine the factors that affect the two choices, contains the paying passengers, airport traffic, the number of the taxi, airport and the distance of the city, taxi price, fuel, etc., and the problem that the taxi driver priority is to maximize profits, so discuss respectively the taxi driver under the two options of revenue function, the driver follow the principle of great benefits to the final decision, the final return is $M_{total} = \max\{M_1, M_2\}$. After that, Shanghai Pudong Airport was selected as the research site and relevant data were collected. the monthly passenger throughput of Shanghai Pudong Airport in 2018 was analyzed, and it was found that the passenger throughput in June was closest to the mean value. In order to ensure the universality of the decision, a day in June was selected as the research time. Then, according to the change diagram of one day, it was found that there were significant differences in the number of passengers between daytime and night. In addition, the number of passengers and the number of taxis in question 1 are decision variables. Therefore, the benefits of the two choices in daytime and nighttime are studied respectively. Finally, the concrete decisions under four conditions are obtained.

Keywords: Decision model; the maximum income; Selection strategy

1. INTRODUCTION

After sending passengers to the airport, taxi drivers often make the decision to empty their vehicles and return to downtown or queue up for passengers to return to downtown according to their personal experience. If too many cars are already parked in the parking lot, the waiting time of taxi drivers will be prolonged. If the number of flights arriving at a certain time is dense, the number of passengers returning to the city by taxi will also increase. Therefore, important influencing factors are selected in the process of establishing the revenue model of airport taxi drivers.

Combining with the specific airport and taxi situation, this paper gives the taxi driver's decision scheme and discusses the rationality of the model and its dependence on factors. In China, due to the difficulty and inaccuracy of sample data collection of small airports and the large sample data of large airports, it is difficult to conduct statistical analysis. Therefore, Shanghai airport with domestic passenger flow and moderate advanced degree is comprehensively considered to select and analyze taxi drivers' alternative schemes. In the actual situation, taxi drivers will be affected by various determinations and uncertainties, so it is necessary to select the most representative data for analysis. Therefore, in data collection, Shanghai Pudong Airport in 2018, one year before the epidemic, is selected as the research object of the decision-making model., based on the change of the actual monthly and daily traffic in the region, the payment for passenger car, fuel consumption, the average for the driver and the plane arrived at the airport of time interval and a taxi from the parking lot to line up the time interval as the dependent variable yields formula, established for the taxi driver out of options. Finally, the simulation results are compared with the real situation, the rationality of the model is discussed, and the dependence analysis of the influence of some factors on income is conducted.

2. EXPERIMENTAL

2.1 TAXI DRIVER'S CHOICE DECISION MODEL

Combined with the revenue of airport taxi drivers and the change rule of the number of passengers, the influencing mechanism of factors related to taxi drivers' decision is analyzed and studied, and a choice decision model is established to provide a reasonable choice strategy for taxi drivers.

This paper selects the relevant data of taxi arrivals and deparments at the airport in a certain city in China to provide taxi drivers with options, and analyzes the dependence of relevant factors and the rationality of the model.

According to the actual situation, drivers mainly consider the problem of income when carrying passengers, because taxi drivers at the airport are faced with two choices: 1. To the airport queuing area to pick up passengers to the city; 2. Go directly to the city to pick up passengers. Therefore, starting from the income of taxi drivers, the income of the two choices are discussed respectively, and the driver selection decision model is established.

Step1: go to the airport queuing area to pick up passengers to the city. In the waiting area, the total revenue of each vehicle comes from the payment of passengers, minus the

revenue of the time spent waiting in the waiting area, that is, the following formula is satisfied:

$$M_1 = m_{\text{pay}} - m_T \quad (1)$$

Wherein, the payment per passenger is the product of the unit price of the taxi and the distance of the passenger, namely:

$$m_{\text{pay}} = m_0 L_1 \quad (2)$$

The revenue of the time spent waiting in the queuing area is the product of the average revenue per minute of each vehicle and the time spent waiting in the queuing area, namely:

$$m_T = T_0 m_1 \quad (3)$$

The waiting time of a taxi in the queuing area consists of two parts: the time interval between the arrival of an airplane at the airport and the time interval between the arrival of a taxi from the parking lot at the queuing area, namely:

$$T_0 = \omega_1 t_1 + t_2 \quad (4)$$

Parameter ω_1 represents the size of the number of passengers waiting in the queuing area and the number of taxis, namely:

$$\omega_1 = \begin{cases} 0 & \frac{\text{passenger}}{2} > t\text{axis waiting} \\ 1 & \frac{\text{passenger}}{2} \le t\text{axis waiting} \end{cases} \quad (5)$$

Step2: Go directly to urban areas to select passengers. the total revenue of each vehicle is the difference between the revenue of seeing off each guest and the cost of delay when unloaded, i. e., the following formula is satisfied:

$$M_2 = m_{\text{pay}} - m_{\text{empty}} \quad (6)$$

Among them, the cost delayed when there is no load is the fuel cost per minute of the taxi, the product of the distance from the airport to the urban destination and the unit price of the taxi, namely:

$$m_{\text{empty}} = LSm_{\text{single}} \quad (7)$$

Step3: When the taxi driver makes a choice, the total revenue meets:

$$M_{total} = \max\{M_1, M_2\} \quad (8)$$

The final choice of taxi depends on the size of the total revenue of the two ways, namely, the total revenue is the total revenue of carrying passengers from the queuing area to the airport to the urban area and the maximum value of selecting passengers directly to the urban area. Therefore, the final decision model of taxi driver satisfies Equation (8).

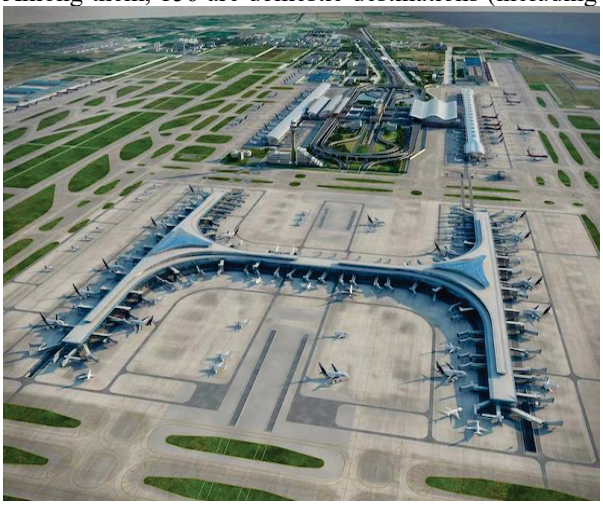
2.2 THE ESTABLISHMENT AND SOLUTION OF MODEL

1. Selection of airports

This question needs to select the taxi data of a specific domestic airport and the corresponding city, select a reasonable plan for taxi drivers according to the obtained model, and verify the dependence of relevant factors. At home because of the small airport sample size is small, the data collection difficult and inaccurate, large sample data is relatively large, at the airport is not convenient to statistics and analysis, therefore, to comprehensively consider the traffic of domestic airports and advanced level, select the data reliable and easy to handle the Shanghai airport taxi driver selection and analysis of alternatives. Shanghai is a relatively developed city with sufficient taxi flow and sample space.

Figure 1 Shanghai Pudong Airport

Shanghai Pudong International Airport (IATA code: PVG, ICAO code: ZSPD) is a class 4F civil Airport located in Pudong New Area of Shanghai, China. the airport serves 49 international and regional flights to 280 destinations. Among them, 156 are domestic destinations (including 6



from Hong Kong, Macao and Taiwan) and 124 are international destinations. By 2018, the passenger throughput of Shanghai Pudong Airport reached 74 million, up 5.7 percent year on year. There are rail transit, airport bus, and taxi in the airport. Among them, the development of Shanghai taxi industry is stable and the traffic flow is large, which is very suitable for the study of the passenger selection of airport taxi.

2. Conditions and data related to shanghai pudong airport

(1) Monthly data changes.

In practice, taxi drivers' decision-making is subject to many deterministic and uncertain factors, such as the impact of the epidemic on airport taxi drivers' decision-making. Therefore, in data collection, Shanghai Pudong Airport in 2018 was selected as the research object to collect the monthly passenger throughput of the airport in 2018, as shown in Table 1:

Table 1 Monthly throughput and average value of Shanghai Pudong Airport in 2018

time	Passenger	difference	time	Passenger	difference
Jan	288.19	-16.34	Jul	316.56	12.03
Feb	277.88	-26.65	Aug	319.45	14.92
Mar	308.03	3.5	Sep	300.7	-3.83
Apr	318.14	13.61	Oct	324.86	20.33
May	306.42	1.89	Nov	285.35	-19.18
Jun	305.44	0.91	Dec	292.25	-12.28

(2) Daily data changes

Taxi drivers are considered in the decision problem in the general case should do what kind of choice, so the number of passengers for 12 months averaging, a value of 3.0453 million people, found in June of passenger throughput and average relatively close, so choose one day in June, data from the airport as a decision-making data, detailed in table 2:

Table 2 Data changes of Pudong Airport within 24 hours

Time	Passenger	cars	taking taxis	Time	Passenger	cars	taking taxis
1	0.19	400	870	13	0.55	501	828
2	0.15	231	666	14	0.64	472	954
3	0.02	92	97	15	0.87	479	1309
4	0.00	0	0	16	0.75	575	1129
5	0.05	24	75	17	0.70	795	1051
6	0.09	42	131	18	0.67	797	1000
7	0.07	150	107	19	0.67	660	998
8	0.26	201	384	20	0.65	634	972
9	0.16	215	240	21	0.76	590	1147
10	0.67	249	1000	22	0.58	716	868
11	0.84	274	1262	23	0.60	931	906
12	0.52	458	773	24	0.35	734	1570

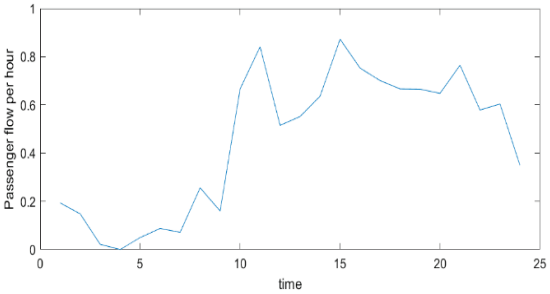


Figure 2 Schematic diagram of one-day passenger flow

Distribution of passenger flow per hour is shown in Figure 2, and it is found that the passenger flow is the smallest at 4 am and 12 PM. the passenger flow is the largest at 11 am and 3 PM, which is in the peak period of work, and between 10 and 21 PM, except 12 noon, the passenger flow is higher at other times; After 21 o 'clock is in a downward trend, 5 to 11 o 'clock is in an upward trend.

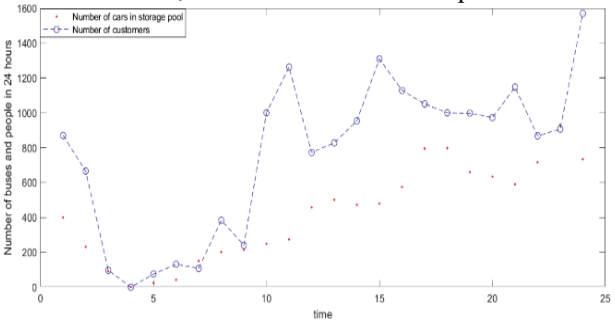


Figure 3 Changes in the number of people in storage pools and taxis

According to Table 2, the changes of the number of cars in the car storage pool and the number of people taking taxis are drawn. As shown in Figure 3, the number of cars in the car storage pool shows an increasing trend from 5 to 23 and a decreasing trend from 23 to 5 in the next day. In addition, the number of people taking taxis shows a decreasing trend from 0 to 5 and an increasing trend from 5 to 24. Therefore, 5-23:00 is the daytime, and 23:00-5:00 is the night, respectively, to discuss the income of daytime and night taxi drivers.

(3) Guest pays the fee m_{pay}

There are differences between daytime and nighttime taxi fare. the conditions of m_{pay} of daytime taxi fare in Shanghai are as follows: when the distance from the airport to the urban destination is not more than 3 kilometers, the taxi fare is 14 yuan; When it is more than 3 km but less than 10 km, the excess part will be charged 2.5 yuan for each kilometer. When L is greater than 10 km, the excess part will be charged 3.6 yuan per km, that is:

$$\begin{cases} 14 & L \in (0,3] \\ 14 + 2.5(L-3) & L \in (3,10] \\ 31.5 + 3.6 * (L-10) & L \in [10, \infty) \end{cases} \quad (9)$$

When the distance from the airport to the urban destination is not more than 3 kilometers, the taxi fare is 18 yuan; When it is more than 3 km but less than 10 km, the excess part will be charged 3.1 yuan for each kilometer. When L is greater than 10 km, the excess part will be charged 4.7 yuan per km, that is:

$$\begin{cases} 18 & L \in (0,3] \\ 18 + 3.1(L-3) & L \in (3,10] \\ 39.7 + 4.7 * (L-10) & L \in [10, \infty) \end{cases} \quad (10)$$

(4) Average revenue per minute m_1, time interval t_1 of aircraft arriving at the airport.

It is known that the daily operating income of taxis in Shanghai is 1050 yuan, including 350 yuan of miscellaneous fees (taxi repair, etc.) and 250 yuan of fuel for driving 400 kilometers, namely, the total revenue of a day is 1050-350-250=450 yuan, and since taxis work 8 hours a day, the average revenue per minute is 0.9 yuan/minute. According to the analysis of all flights in Shanghai, it is found that the table between two flights shall not be less than 13min. In order to ensure that the taxi can receive customers to the maximum extent, t_1 =15min is selected.

(5) Time interval between taxi from parking lot to queuing area t_2, fuel consumption.

According to the road map, it is about 1km from the taxi parking lot to the queuing area, while the speed limit at this time is 20km/h, so the time interval $t_2 = \frac{1}{20} * 60 = 3min$. It is known that the unit price of gasoline $m_{dan} = 7.25$ yuan, and the fuel cost for traveling 400 kilometers is 250 yuan, so the fuel consumption is S=250/7.25/400=0.09L/km.

2.3 SOLUTION OF TAXI DRIVER DECISION MODEL

To the airport queuing area to pick up passengers to the city

In daytime, the distance from the queuing area to the downtown area is more than 10km, that is, the guests pay the fee and choose the third tier. Based on the known conditions, figure out what the guest should pay [2]:

$$m_{pay} = 14 + 2.5 * 7 + 3.6 * (L-10) \quad (11)$$

Delay cost:

$$m_T = (\omega_1 * 15 + 3) * 0.9 \quad (12)$$

The final total revenue and the cost payable by the guest and the cost of delay shall meet:

$$M_1 = m_{pay} - m_T \quad (13)$$

Thus, the total daytime return is

$$M_1 = 3.6L - 13.5\omega_2 - 7.2 \quad (14)$$

Similarly, at night, the distance from the queuing area to the downtown area is more than 10km, that is, the guests pay the fee and choose the third gear. Figure out what the guest should pay:

$$m_{pay} = 18 + 3.1 * 7 + 4.7 * (L - 10) \quad (15)$$

Delayed expenses:

$$m_T = (\omega_1 * 15 + 3) * 0.9 \quad (16)$$

The final total revenue and the cost payable by the guest and the cost of delay still meet Figure 4. Thus, the total nightly revenue is

$$M_1 = 4.7L - 13.5\omega_2 - 10 \quad (17)$$

Go directly to the city to pick up passengers.

In daytime, the distance from direct to downtown is more than 10km, that is, the guests pay the fee and choose the third tier. Figure out what the guest should pay:

$$m_{pay} = 14 + 2.5 * 7 + 3.6 * (L - 10) \quad (18)$$

Cost when no load:

$$m_{empty} = L * 0.09 * 7.25 \quad (19)$$

The final total revenue and the fee payable by the guest and the fee when no load:

$$M_2 = m_{pay} - m_{empty} \quad (20)$$

Thus, the total daytime return is

$$M_2 = 2.95L - 4.5 \quad (21)$$

Similarly, the total night cost is

$$M_2 = 4.05L - 7.3 \quad (22)$$

2.4 RESULTS

Considering the two choices of taxi drivers and the situation of daytime and night [5] comprehensively, the total income is obtained as follows:

$$Daytime: \begin{cases} M_1 = 3.6L - 13.5\omega_2 - 7.2 \\ M_2 = 2.95L - 4.5 \end{cases} \quad (23)$$

$$The\ night: \begin{cases} M_1 = 4.7L - 13.5\omega_2 - 10 \\ M_2 = 4.05L - 7.3 \end{cases} \quad (24)$$

In the above formula, when in the daytime, if $\frac{n_{\text{people}}}{2} > n_{\text{car}}$, no matter how big is the distance L of the guest from the airport to the urban destination, it satisfies$M_1 > M_2$, the choice of $M_1$where, when $L = 4km$, we get $M_1 = M_2$, Both can be; If $\frac{n_{\text{people}}}{2} < n_{\text{car}}$, when the distance L from the airport to the urban destination is $L < 25km$, find $M_1 < M_2$, Select the M_2, when $L > 25km$, find $M_1 > M_2$, the choice of M_1; Similarly, when at night, if $\frac{n_{\text{people}}}{2} > n_{\text{car}}$, when $L < 4km$, get $M_1 < M_2$, Select the M_2, when $L > 4km$, get $M_1 > M_2$, the choice of M_1; If $\frac{n_{\text{people}}}{2} < n_{\text{car}}$, Distance of guest from airport to downtown destination find $M_1 < M_2$, Select the M_2, when $L < 25km$; when $L > 25km$, find $M_1 > M_2$, the choice of M_1.

The model is based on the airport taxi service problems in planning process, can be used in other types of large transport hub at the same time, because they belong to the same kind of problem, difference as long as the traffic and traffic hub itself and some parameters, such as a large train stations and hohai port, etc., can be applied to this model solve the problem of passenger station of transhipment.

In practice, there are a lot of certainty and uncertainty factors influence the decision, make the taxi driver to judge correctly, so the airport taxi management according to the actual situation of reasonable "quantitative" batch release a taxi into the "bus" area and arrange a certain number of passengers, to provide reasonable selection strategy for taxi drivers, It is of substantial significance to increase and balance the income of taxi drivers.

3. MODEL EVALUATION

3.1 ADVANTAGES OF MODEL

Considering a variety of deterministic and random factors that affect drivers' decision-making, the model is put in the position of the driver to think about the problem and establish the model from the perspective of the driver's personal thoughts, and at the same time, the selection mode of the driver is directly explained from the economic level, which is highly practical and reliable.

Analyze and discuss the driver's decision-making strategy on various environmental conditions, and verify the rationality and reliability of the model.

Through specific and reasonable determination of airport taxi pick-up mechanism, the taking efficiency under the number of pick-up points is calculated, and the influence of various environmental parameters on the number of pick-up points is analyzed and discussed, which has suggestions for the overall arrangement of airport management department.

3.2 MODEL SHORTCOMINGS

In the process of establishing the model, the time spent in some connection processes, such as the time from the starting point to the storage pool, was ignored, which had a slight impact on the results.

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Air-Conditioning Model for Car Sharing Based on Kmeans-Dijkstra

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Abstract: With the development of shared cars, in order to solve the problems of a single shared car model and high operating costs, and increase corporate profitability, a Kmeans-Dijkstra-based air conditioning model for shared cars is proposed. the kmeans clustering algorithm is used to divide car parking spots into four types of shared car demand areas, and analyze the use of shared cars in each area from the perspective of time and space. Based on this, with regional shared car utilization rate and car dispatching routes as constraints, the company's profit amount is the objective function to establish a linear programming model to guide the hourly air conditioning of shared cars. Among them, the Dijkstra algorithm is used to solve the distance between the cluster centers and plan the optimal vehicle dispatching route. It is of great significance to increase corporate profitability.

Keywords: Dijkstra; K-means clustering; Car sharing; hourly air conditioning

1. INTRODUCTION

As an important form of the sharing economy, car-sharing has been closely watched by people and is regarded as one of the important trends in the development of the automobile industry in the future. Since 2015, the car-sharing industry has been "a hundred flowers blooming", and many projects have received huge financing. However, due to problems such as overweight models, high operating costs, and inability to make profits, car-sharing companies have successively closed down because of the broken capital chain. However, due to problems such as overweight models, high operating costs, and inability to make profits, car-sharing companies have successively closed down because of the broken capital chain.

Consumers have the desire to use cars and the desire to upgrade their consumption, but companies have not stopped, constantly seeking lighter and better ways to use cars. the "time-sharing lease" model of shared cars has solved this problem a lot [1]. However, there are too many cost control links in this way, which makes profit very difficult [2]. Looking at the global development of shared cars, there is no very successful operation model and management example [3]. However, the market demand for shared cars is real, and its development still needs to continue to explore new directions.

For this reason, in order to solve the problem that the operation and scheduling mode of shared cars is too single, and to make reasonable use of idle resources, reduce operating costs, and increase business turnover, a local Kmeans-Dijkstra model of air conditioning in shared cars is proposed. It is of great significance to the formulation of shared car scheduling strategies.

2. BASIC ALGORITHM PRINCIPLE

2.1 K-MEANS CLUSTERING ALGORITHM

The elbow-shaped graph can roughly estimate the optimal number of clusters. This paper uses the degree of distortion to choose the optimal number of clusters [4].

Define the degree of distortion of each class = the sum of the squares of the distance between the center of gravity of the class and the position of its internal members.

Suppose that n samples are divided into classes ($2 \le K \le n-1$, that is, there are two elements in at least one class, and there are at most $n-1$ elements), denote the k-th class by C_k $(k=1,2,...,K)$, and mark the position of the center of gravity of this class as u_k

The degree of distortion of the class is:

$$\sum_{i \in C_k} |x_i - u_k|^2 \qquad (1)$$

Define the total distortion degree of all classes:

$$J = \sum_{K=1}^{K} \sum_{i \in C_k} |x_i - u_k|^2 \qquad (2)$$

The K-means clustering algorithm uses the Euclidean distance to measure the distance between the sample data. First, first randomize the cluster center points, calculate the Euclidean distance of the remaining sample data points to the cluster center, and assign this object to the closest distance in the center cluster, calculate the average value of the data objects in each cluster as the new cluster center, and iterate until the position of the cluster center no longer changes [5].

2.2 DIJKSTRA ALGORITHM

Dijkstra algorithm is an effective algorithm for solving the shortest path of a single source point. the breadth-first search is used to relax the edges to solve the single source shortest path in a directed graph or an undirected graph. the algorithm steps are as follows [6-8]:

Step1:Divide all vertices into two parts, the vertex set P of the known shortest path and the vertex set Q of the unknown shortest path. the set D represents the minimum distance between two vertices, and d_{ij} represents the shortest distance from vertex i to vertex j Initialization: P set only includes source point p ; Q set includes all vertices except source point p . The distance between two vertices that are not directly connected is infinite.

Step2:In the set Q, select a vertex closest to the source point and add it to the set P, and update the minimum distance D set. Get the current minimum distance d_{pj} from the source point to the remaining vertices

$$d_{pj} = \min\{d_{pj}\} \quad (3)$$

Step3:Repeat Step2 until the set Q is empty. At this time, the updated d_{pj} is the shortest distance from the source point p to the remaining vertices j.

3. SPATIAL AND TEMPORAL DISTRIBUTION CHARACTERISTICS OF SHARED CARS

In order to rationally mobilize the existing car resources, this paper combines the data given in the certification cup modeling contest and analyzes the temporal and spatial distribution characteristics of shared cars based on the K-means clustering results. the overall flow chart is shown in Figure 1 below:

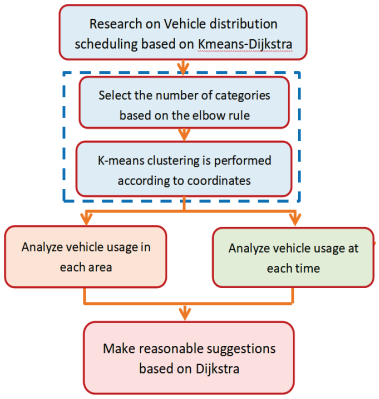

Figure 1 Algorithm flow chart

3.1 DIVISION OF PARKING SPOTS BASED ON K-MEANS

Calculate the aggregation coefficient and solve the reasonable cluster K. According to the aggregation coefficient line graph, when the number of categories is 4, the downward trend of the line will slow down, so the number of categories can be set to 4. It can be seen from the figure that the distortion degree changes the most when the K value is from 1 to 4. After more than 4, the degree of distortion is significantly reduced, so the elbow is K=4, so the number of categories can be set to 4. Where J is the aggregation coefficient. As shown in Figure 2 below:

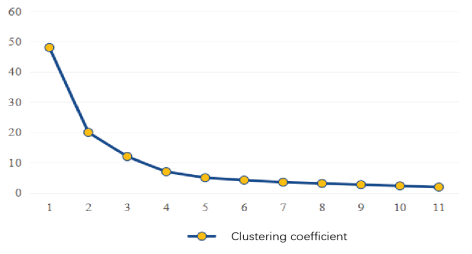

Figure 2 Clustering coefficient graph

According to this, perform K-means clustering:

Step 1:Calculate the distance between samples

First initialize the k initial cluster centers, and then calculate the distance between each point and the cluster center. In this paper, the Euclidean distance is used to calculate the distance between samples. the expression of Euclidean distance is:

$$d(\vec{x}_1\vec{x}_2) = \sum_{k=1}^{p} |x_{1k} - x_{2k}| \quad (4)$$

Construct a sample distance matrix of 1048575×1048575:

$$D_0 = \begin{bmatrix} 0 & & & & \\ G_1G_2 & 0 & & & \\ G_1G_3 & G_2G_3 & 0 & & \\ \vdots & \cdots & \cdots & 0 & \\ G_1G_{1048575} & G_2G_{1048575} & \cdots & G_{1048574}G_{1048575} & 0 \end{bmatrix} \begin{matrix} G_1 \\ G_2 \\ G_3 \\ \vdots \\ G_{1048575} \end{matrix} \quad (5)$$

Step 2:Use the latitude and longitude coordinates of each store to classify the closer points into one category.

Regard each sample as a class, namely $G_1, G_2, G_3 \cdots G_{1048575}$, observe that the two classes G_i and G_j with the smallest Euclidean distance are grouped into one class, denoted as $G_{1048576}$, and calculate the distance between the new class and the other classes except G_i and G_j, Get a new distance matrix D_i.

$$\begin{aligned} D(G_{1048576}, G_1) &= \min\{D(G_i, G_1), D(G_j, G_1)\} \\ D(G_{1048576}, G_1) &= \min\{D(G_i, G_2), D(G_j, G_2)\} \\ &\vdots \\ D(G_{1048576}, G_1) &= \min\{D(G_i, G_{1048576}), D(G_j, G_{1048576})\} \end{aligned} \quad (6)$$

Update the 1048574×1048574 distance matrix d according to the calculated Euclidean distance between classes D_1

The vehicle information of longitude and latitude is selected to classify according to the optimal number of categories obtained by the elbow rule, and 4 kinds of distribution clustering information scatter plots are obtained, as shown in Figure 3.

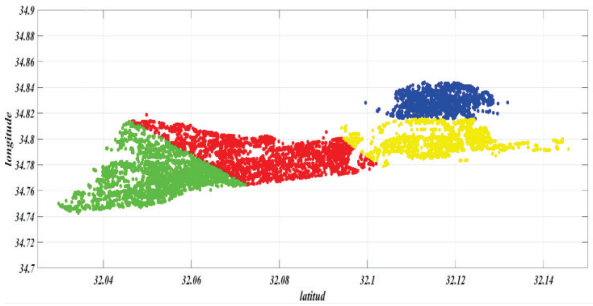

Figure 3 Clustering figure

From bottom to top, the four cluster centers correspond to the vicinity of the tourist attraction Suspended Orange Tree; the vicinity of Dubonov Park; the vicinity of Ramat Aviv Mall; and the vicinity of Revivm Road. According to the relevant information, these 4 locations are all densely distributed locations, so it is reasonable to divide all vehicle distribution areas into 4 categories and analyze them separately.

3.2 SPATIAL DISTRIBUTION OF PARKING SPOTS

Based on the K-means clustering results and the heat map of the corresponding area, the team can preliminarily determine the approximate distribution of vehicles in different areas. Based on the K-means clustering results and the heat map of the corresponding area, the team can preliminarily determine the approximate distribution of vehicles in different areas.

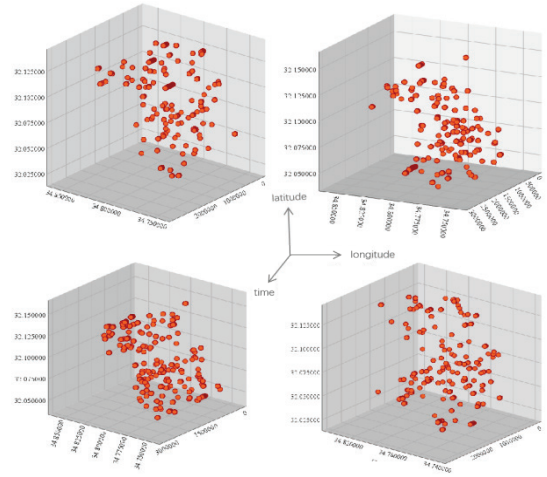

Figure 4 Scatter diagram of vehicle changes over time in category 4

The three-dimensional scatter chart shown in the figure above can very intuitively show the changes in the spatial position of shared cars over time, and the high-frequency overlap at a fixed latitude and longitude position, and can judge the size of the demand for shared cars.

From the scatter diagram, it can be seen that for some areas, the scatter diagram shows a high degree of overlap. In reality, it shows that some shared cars are parked in certain areas for a long time without moving. Therefore, it can show that the area is more effective for shared cars. the demand for shared cars is small; on the contrary, the scatter plots in some areas are denser but do not show overlap. It shows that shared cars often appear in different locations in this area. Therefore, it can be judged that the demand for shared cars in this area is relatively high. high. After classifying and summarizing the latitude and longitude changes of the shared car samples studied, the team screened out the three longitude and latitude coordinates with the longest parking time for shared cars in each category, as shown in Table 1 below:

Table 1 The time and coordinates of vehicles parked for longer periods in each class

latitude	longitude	Parking time (seconds)
32.12666	34.80831	49014
32.12673	34.8083	49283
32.09674	34.80412	87170
32.05178	34.805	68362
32.05177	34.80497	25129
32.12612	34.83551	71474
32.12616	34.83523	74536
32.11831	34.84284	29255
232.11285	34.82127	41517
32.058374	34.77573	64165
32.0421	34.77948	56663
32.04612	34.80288	58745

3.3 TIME DISTRIBUTION OF PARKING SPOTS

It is considered that the data with the same license plate number at different latitudes and longitudes can indicate the flow of the vehicle. If the vehicle is at the same latitude and longitude position, it means that the vehicle has not moved. Therefore, only the data with the closest date to today is the final parking time of the vehicle. Use Excel and Python to perform related processing, compress the time of the vehicle that is at the same latitude and longitude but the time has changed into the time at the last position, and finally obtain the time data sample of each license plate number at different latitude and longitude, and use this as an analysis the basis of vehicle usage in each time period.

Draw the frequency distribution of the above-mentioned processed vehicle flow in different regions and different time periods into a frequency distribution diagram, as shown in Figure 5 below:

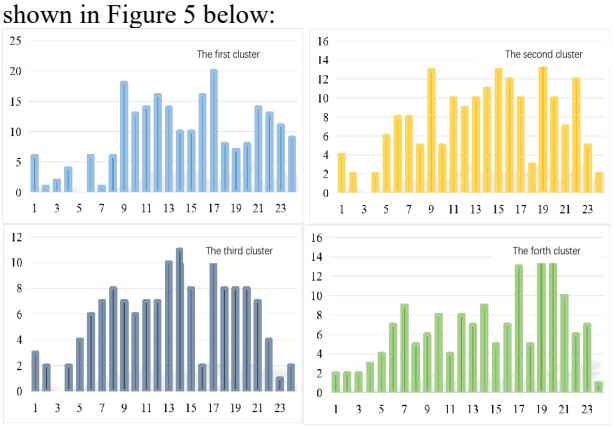

Figure 5 Vehicle flow in different areas at different time periods

The abscissa in the figure represents each time period in a day, and the ordinate represents the review of vehicle flow. From the graph analysis, we can see that the peaks and valleys of local vehicle flow corresponding to different regions are different. For example, the morning and evening peaks of shared car usage near Ramat Aviv Mall in the first type of area are 9 am and 5 pm; the second type of area represents the peak of vehicle use near the Bloodfield Stadium at 9 am and afternoon respectively. 3 o'clock and 7 o'clock in the evening, and at a time different from the first type of areas, there are fewer vehicles from 5 o'clock in the evening to 6 o'clock in the evening; The peak hours of vehicle usage in the areas near Revivim Street represented by the third type of area are 2 pm and 5 pm respectively; the peak hours of vehicles near Dubnov Park represented by the fourth type of area are 5 pm and 7 pm to 8 pm.

From an overall point of view, the overall shared vehicle usage time in the area ushered in a peak from 8 to 9 in the morning, and then declined; it will usher in a peak again from 13 to 14 in the afternoon, and the use of vehicles in the area will usher in from 15 to 17 o'clock. Come to the trough, and then there will be a peak of vehicle usage from 19 to 20 o'clock.

Due to the different functions corresponding to different regions, there will be differences in the time period of

shared car usage between regions and regions. the representative areas are the area around Ramat Aviv Mall represented by the first type of area and the second type of area. In the area near the Bloodfield Stadium, the two places ushered in the peak of car use at 9 a. m., and the use of shared cars from 11 to 3 p. m. declined. However, the second type of area was between 7 p. m. and 8 p. m. the frequency of car use is higher than in the first category. Due to the different functions corresponding to different regions, there will be differences in the time period of shared car usage between regions and regions. the representative areas are the area around Ramat Aviv Mall represented by the first type of area and the second type of area. In the area near the Bloodfield Stadium, the two places ushered in the peak of car use at 9 a. m., and the use of shared cars from 11 to 3 p. m. declined. However, the second type of area was between 7 p. m. and 8 p. m. the frequency of car use is higher than in the first category.

4. BASED ON DIJKSTRA'S AIR-CONDITIONING SCHEME BETWEEN PARKING SPOTS

Based on K-means clustering, the position and coordinates of the cluster center points are obtained as shown in Table 2 below:

Table2 Coordinates of Cluster Center points

Cluster center point	longitude	latitude
Suspended Orange Tree	34.79723	32.11364
Dubonov Park	34.76511	32.05107
Ramat Aviv Mall	34.83206	32.11597
Revivm Road	34.78412	32.07666

Using these four clustering center points as the node positions of shared car scheduling, according to the geometric knowledge of the sphere and the Pythagorean theorem, the arc length between any two points A and B can be obtained as:

$$A\overset{\frown}{B} = R \times arccos(\cos\theta_i \cos\theta_j \cos(\varphi_i - \varphi_j) + \sin\theta_i \sin\theta_j) \quad (7)$$

Where R is the radius of the earth, θ_i , θ_j are Latitude of point A, B, φ_i , φ_j are Longitude of point a, b. A, B .

Therefore, the distance between each cluster center node can be calculated as shown in Figure 6 below;

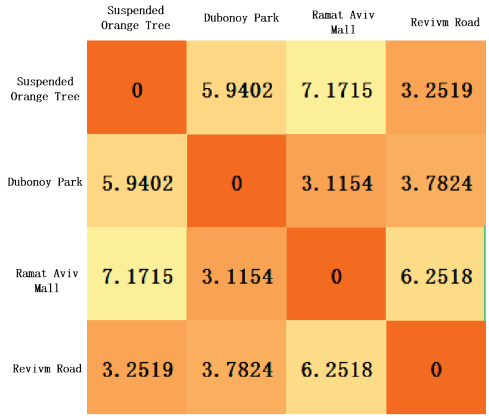

Figure 6 Distance chromaticity

Consider the company's profitability requirements, select the optimal car scheduling plan, and construct a linear objective function, that is, take the company's maximum profit as the objective function, and the profit is the rental car rental minus the cost of car purchase, and the cost of vehicle scheduling and transportation.

$$\max W = \sum_{i=1}^{4}\sum_{i=1}^{4}(\lambda - d_{ij} * \omega_d - \alpha) * N_{ij} \quad (8)$$

Among them, λ is the average user renting a car and paying the fee, d_{ij} is the distance from area i to area j , ω_d is the transportation cost per kilometer for each shared car, α is the unit price of each shared car, and N_{ij} is from the area the number of vehicles dispatched from i to area j .

Calculate the weight of the route between the two points according to the profit of the objective function. Among them, according to the actual traffic route and traffic conditions, the direct path between Suspended Orange Tree and Dubonov Park is discarded, and the direct path between Ramat Aviv Mall and Dubonov Park is stored in the form of an adjacency matrix, which is a matrix, By adopting Dijkstra algorithm, the optimal route for car scheduling between any cluster centers is obtained.

5. CONCLUSION

This paper divides shared cars into 4 clusters through K-means clustering, analyzes the temporal and spatial distribution of the four regions, uses Dijkstra algorithm, combined with the most profitable objective function, and finds the optimal route for car dispatch between regions. and put forward reasonable suggestions.

(1) The areas near the Schuster Center, near the entrance to the sea, major hotels in the south, and nearby government agencies are areas with high demand for shared cars, and the initial locations of shared cars are scattered, so shared cars can be placed as much as possible. the above area.

(2) The number of shared cars distributed in the west and south of Tel Aviv Central Railway Station is large and scattered, but the demand for shared cars in this area is not high, and the shared cars in this area can be put into high demand Area.

(3) In some areas, such as the historic landmarks of Afeka Caves, Darom Park, and Hayarkon Park Lake, although the flow of people may be dense, the demand for shared vehicles is not large, so the number of cars placed in the area can be reduced.

(4) Strengthen the supervision of shared cars to avoid long-term parking of some cars in places where the demand for shared cars is small and the flow of people is small, such as Kadmoni Asa Street, Leviski Street, etc.

(5) Make full use of the flexibility of shared car scheduling in time and space, give different scheduling plans for different regions and different time periods, fully consider the functions of each region, and dispatch vehicles in the region according to their functions, thereby reducing costs, Expand income.

(6) From an overall point of view, the peak vehicle usage in this area is from 8 to 9 in the morning, 13 to 14 in the afternoon, and 19 to 20 in the evening. the

company should reasonably consider the time period when consumers use the vehicle, and use the time period when the vehicle is less used to do maintenance and other work for the shared car.

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Credit Decision Optimization Model Based on Linear Programming

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Abstract: Credit risk assessment and decision optimization problem is a focus in the study of bank credit Aiming at this problem, this paper has established the two mathematical models One for the enterprise credit risk assessment based on entropy weight TOPSIS evaluation model, another for bank credit decision planning optimization model based on linear programming First of all, the credit problem is divided into two parts in this paper Credit risk assessment and credit strategy optimization Then, the data preprocessing for Banks, that is, remove the invalid invoice in enterprise's profit income growth rate and the annual rate of growth of output of the upstream company number number downstream company traded with the upstream company and deal with the downstream company number Finally, training the model with data processed.

Keywords: Entropy weight method; TOPSIS; multiple linear regression; linear programming credit; decision making

1. INTRODUCTION

Financial innovation and the change of personal consumption concept promote the rapid development of domestic bank credit business, especially personal credit business. the scale enlargement of loan business at the same time, however, also brought huge risks to the bank, if borrowers unable or unwilling to repay principal and interest according to the credit agreement, there will be the loss of bank management, how to expand at the same time, effective control and guard against personal credit risk is an important problem of the big Banks need to solve. Therefore, the construction of personal credit risk assessment system, timely detection of dangerous loan applications, effectively deal with the possible personal credit risks, both for the commercial banks themselves, as well as for the regulatory authorities, has important practical significance [1].

Recently, the Central bank announced a comprehensive RRR reduction, one of its intentions is to guide financial institutions to actively use the RRR reduction funds to increase the support for small and micro enterprises, which shows the central government attaches importance to small, medium and micro enterprises. the biggest problem of financial support for micro, small and medium-sized enterprises is that the risk is difficult to determine, and risk management is the focus of the financial industry. At present, the credit risk of micro, small and medium-sized enterprises is determined by the transaction bill information and the influence of upstream and downstream enterprises. Therefore, at present, a bank credit risk assessment model for small and medium-sized enterprises is particularly important.

2. DATA PROCESSING

2.1 DATA ACQUISITION

First of all, the financial data of previous years disclosed by the bank was obtained through the web crawler, and the information of input invoice and output invoice was deleted as invalid invoice. Then calculate the profit of each enterprise, the annual growth rate of input and output, the number of upstream companies, the number of transactions with upstream companies, the number of downstream companies and the number of transactions with downstream companies, the corresponding data of seven indicators. Finally, the enterprise strength evaluation data set is obtained.

Each enterprise's profit, annual growth rate of income and annual growth rate of sales are used to describe the profitability of the enterprise, and the number of upstream companies, the number of transactions with upstream companies, the number of downstream companies and the number of transactions with downstream companies are used to describe the influence of upstream and downstream companies.

Finally, the data set obtained is shown in Table 1.

Table 1. Enterprise evaluation data set

Profits	Entry growth rate	Sale growth rate
-1939308588	5.443962412	1.056589537
463807677.3	1.648907527	2.336769368

Upstream companies Number	Downstream	Upstream times	Downstream times
436	352	3249	7886
3625	1579	31435	11665

2.2 DATA STANDARDS AND WEIGHT PROCESSING

The dimension of the data in this paper has a great impact and should be standardized first. the annual growth rate of sales items is distributed around 1, while the total number of downstream is distributed around 1000 and up to more than 20000. Therefore, it can be seen that dimensionality exists between data, which has a great influence on the results.

In this paper, the following formula is used to standardize the values of each indicator:

$$Y_{ij} = \frac{X_{ij} - \min(x_i)}{\max(x_i) - \min(X_i)}$$

Information entropy is the probability of occurrence of discrete random events. Its calculation formula is as follows:

$$E_j = -\ln(n)^{-1} \sum_{i=1}^{n} p_{ij} \ln p_{ij}$$

Where, $p_{ij} = Y_{ij} | \sum_{i=1}^{n} \overline{Y}_4$, if $p_{ij} = 0$, $\lim_{p_{11} \to 0} p_{iv} \ln p_{ij} = 0$ is defined.

The weight of each index is calculated by information entropy, and the formula is as follows:

$$W_i = \frac{1 - \varepsilon_i}{k - \sum E_i} (i = 1, 2, \ldots, k)$$

2.3 TOPISS SCORE

Define the distance between the i th evaluation index and the maximum value as follow:

$$D_i^+ = \sqrt{\sum_{j=1}^{m} \omega_j \left(Z_j^+ - z_{ij} \right)^2}$$

Define the distance between the i th evaluation index and the minimum value as follow:

$$D_i^- = \sqrt{\sum_{j=1}^{m} \omega_j \left(Z_j^- - z_{ij} \right)^2}$$

Therefore, the normalization score is as follow:

$$S_i = \frac{D_i^-}{D_i^+ + D_i^-}$$

3. EVALUATION MODEL BASED ON MULTIPLE LINEAR REGRESSION

3.1 ESTABLISHMENT OF EVALUATION MODEL

In this paper, multiple linear regression is adopted to establish an evaluation model to predict each index coefficient. $f_1, f_2 f_3, f_4, f_5, f_6, f_7$ is the independent variable, y is the dependent variable, and the function of the model is expressed as follows:

$$\beta_0, \beta_1, \ldots, \beta_P = \arg\min_{\beta_0, \beta_1 \ldots \beta_P} \left(\sum_{i=1}^{n} (y_i - y_i)^2 \right) = \arg\min_{\beta_0, \beta_1 \ldots \beta_P} \left(\sum_{i=1}^{n} \left(y_i - \beta_0 - \sum_j \beta_j f_{ij} \right)^2 \right)$$

$$y_i = \beta_0 + \sum_j \beta_j f_{ij} + u_i, i = 1, 2, \ldots n, j = 1, 2, \ldots P$$

3.2 QUANTITATIVE STANDARDS

Based on the above scores, this paper formulated the following quantitative standards. Grades A, B, C and D are 4, 3, 2 and 1, respectively.

$$\begin{cases} 4, & y \geq 0.04 \\ 3, & 0.02 \leq y \leq 0.04 \\ 2, & 0.008 \leq y \leq 0.04 \\ 1, & y \leq 0.008 \end{cases}$$

3.3 OPTIMIZATION OF THE MODEL

In this paper, the linear programming algorithm is used to optimize the credit strategy. the linear programming model is established under the constraint conditions that the maximum bank income is the objective function, the credit limit of a single enterprise is 1~100 million yuan, the annual interest rate is 4 ~15%, and the total amount of enterprise loans is constant.

$$\max Z \ s.t. 10 \leq b \leq 100 \ 4\% \leq c \leq 15\% \ \sum_{i=1}^{n} A_i = C$$

Where, Z is bank income, S is bank risk, and C is constant.

$$Z = \sum_{i=1}^{3} A_i (1 - I_i) r_i$$

Where, A_i is the amount of bank loans to enterprises, I_i is customer churn rate, and r_i is the interest rate of enterprise loans.

4. MODEL RESULTS AND DISCUSSION

4.1 MODEL CALCULATION RESULTS

The score results calculated in this paper are as shown in Figure 1

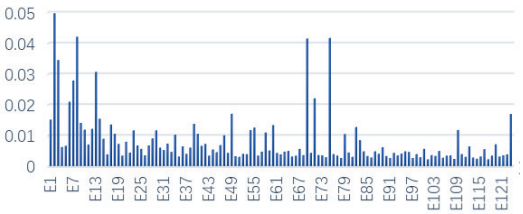

Figure 1. Score bar chart

4.2 RESULTS OF SIGNIFICANCE TEST

The results of significance test are as shown in Table 2.

Table 2. Table of significance test results

Source	**SS**	**df**	**MS**	**Number of obs=123 F(7, 115)=1598.19**
Model	0.008926594	7	0.001275228	Prob>F=0.0000
Residual	0.000091761	115	7.9792e-07	R-squared=0.9898
Total	0.009018355	122	0.000073921	Root MSE=0.00089

It can be seen from the above table that 0.008<0.05 corresponds to F test, that is, the regression equation is considered meaningful within 95% confidence interval. Where, R^2 and R^2_{adjust} are close to 1, indicating that the regression model has a high goodness of fit.

4.3 SOLUTION OF MULTIPLE LINEAR REGRESSION EQUATION

The regression coefficient is shown in Table 3.

Table 3. Regression coefficient table

score	Coef	Std. Err	t	p>|t|	[95%conf. Interval]	
profit	1.67e-13	3.13e-13	0.53	0.595	-4.53e-13	7.86e-13
Annual growth rate of entries	0.0000386	9.30e-07	41.49	0	0.0000367	0.0000404
Annual growth rate of sales	0.0002094	6.20e-06	33.78	0	0.0001971	0.0002217
Number of upstream companies	5.27e-06	7.02e-07	7.51	0	3.88e-06	6.66e-06
Number of downstream companies	3.90e-06	1.20e-07	32.45	0	3.66e-06	4.13e-06
The total number of upstream times	3.34e-07	8.56e-08	4.00	0	1.73e-06	5.12e-07
The total number of downstream times	1.12e-06	3.37e-08	30.18	0	1.05e-06	1.20e-06
_cons	0.0011503	0.0001228	9.37	0	0.0009071	0.0013934

After solving the index coefficient, the regression equation is as follows:

$$y = 1.67e-13f_1 + 0.0000386f_2 + 0.0002094f_3 + 5.27e-06f_4$$
$$+3.90e-06f_5 + 3.34e-07f_6 + 1.12e-06f_7 + 0.0011503$$

4.4 Model integration

In this paper, the relationship between the loss rate of different types of enterprises and the interest rate of bank loans is solved by interpolating and fitting methods, and the relationship between bank loan interest rates and annual interest rates is as follows:

$$I_j = a_i \sin(b_i r_i + c_i)$$

The fitted result is shown in Figure 2.

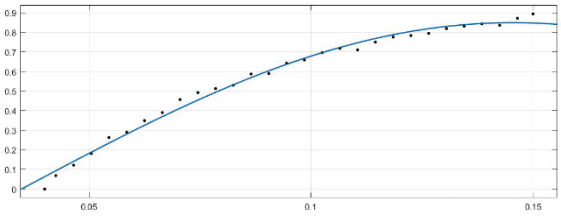

Figure 2. Fitting diagram of the relationship between the attrition rate of Class A enterprises and the interest rate of bank loans

The final result is shown in Table 4.

Table 4. Coefficient table

category	a	b	c
Class A	0.8834	14.89	-0.4991
Class B	0.848	14.49	-0.49451
Class C	0.85	14.19	-0.4934

Since both the interest rate and the loan amount are unknown quantities, the maximum quantity of 1 million yuan will be fixed when solving the interest rate to solve the loan interest rate. the loan interest rates A, B and C are 0.0400.

Put customer churn rate I_i and corporate loan interest rate r_i into the target function to obtain the loan amount as shown in Table 5.

Table 5. Table of Loan Amounts

category	Amount
Class A	1000000
Class B	900000
Class C	600000

This paper also attempts to limit the total amount of loans to 100 million yuan for the whole year, so based on the original model, this paper changes the credit strategy for enterprises and introduces a new bank interest function, as follows:

$$S = n_A A(1 - a_1 \sin(b_1 r_i - c_1)) + n_B A(1 - a_2 \sin(b_2 r_i - c_2)) + n_C A(1 - a_1 \sin(b_3 r_i - c_3))$$

And Where n_A, n_B, n_c and correspond to the number of enterprises with different credit rating, and the corresponding distribution was 26 in Class A, 141 in class B, 83 in class C and 51 in class D. Figure 3. Distribution map of corporate reputation score

And give the corresponding constraints as follows:

$$n_A A + n_B B + n_c C \in [9900, 10000] \quad A \in [10, 100]$$
$$B \in [10, 90] \; C \in [10, 60]$$

Finally, through the solution of the other side, it is concluded that for each credit rating enterprise to give different credit lines, the loan amount of Class A enterprises is 600, 000 yuan, the loan amount of Class B enterprises is 335, 000 yuan, and the loan amount of Category C enterprises is 100, 000 yuan. the corresponding lending rate is 4%.

4.4 DISCUSSION OF MODEL RESULTS

Firstly, the model is divided into two parts: credit risk assessment and credit strategy optimization. Then, the data is preprocessed, that is, the invalid invoice is removed, the profit of the enterprise is calculated, the annual growth rate of input and output, the number of upstream companies, the number of transactions with upstream companies, the number of downstream companies and the number of transactions with downstream companies are calculated. Finally, two models are trained by using the processed data.

Credit risk assessment model: First, the entropy weight method is used to calculate the weight of the 7 indicators. Then, a weighted TOPSIS method was used to score each firm. Finally, with 7 indicators as independent variables and scores as dependent variables, A multiple linear regression equation is established, and quantification standards are set to divide enterprises into four levels: A, B, C and D.

Optimization model of credit strategy: firstly, with the maximum bank income as the objective function, a linear programming model is established to calculate the loan interest rate and the loan amount of a single enterprise with the loan amount of 100 ~1 million yuan, the loan interest rate of 4%~15%, and the total loan amount of constant as the constraint conditions. Then, the loan amount is fixed at the maximum to solve the loan interest rate. Finally, the loan interest rate is substituted into the target function to obtain the loan amount.

The model proposed in this paper analyzes the loan risks of small and medium-sized enterprises from various aspects, and gives classification, so that the bank can have a tailored loan plan for each enterprise, and can accurately control the actual situation of each enterprise, so as to maximize the bank's income.

Between the production and operation of enterprises and economic benefits could be affected by some factors, corresponding to on-time delivery of loan interest, in order to common development of enterprises and the Banks, can consider introducing enterprise anti-risk ability index, to evaluate each enterprise in the face of the sudden and unexpected circumstances, such as new crown outbreak to the enterprise is difficult to produce income situation, Through the study of the enterprise's own capital and daily operating costs, this paper finally obtains the anti-risk capability function of the corresponding enterprise:

$$T = \frac{M_j - N_j}{N_j} D_j$$

Wherein, the annual input amount is M_j, the annual output amount is N_j, and the annual consumption date is D_j.

By inserting the data of each enterprise into the formula, this paper obtains the score of each enterprise's anti-risk

ability, classifies the final score through K-means clustering, and finally obtains the rating standard of enterprise's anti-risk ability, the result is shown in Table 6.

Table 6. Enterprise anti-risk ability score

classification	Enterprise anti-risk ability score
Class A	$1078 \le T$
Class B	$100 \le T \le 1078$
Class C	$0 \le T \le 100$
Class D	$T \le 0$

Finally, preferential loan policies are implemented for category A, B and C enterprises, while for Category D enterprises, considering the loan risks of the bank itself, this paper does not provide loans to Category D enterprises. the corresponding loan policies are shown in Table 7.

Table 7. Loan interest rate after policy change

classification	Loan interest rate based on policy change
Class A	3.5%
Class B	3.0%
Class C	2.5%

For enterprises with poor risk resistance, this paper provides more preferential policies to reduce the loan interest rate, so as to help enterprises tide over difficulties without excessive losses for banks.

4.5 APPLICATION OF THE MODEL

In 2020, the outbreak of COVID-19 hit the whole country. Small, medium and micro enterprises have the characteristics of little self-owned capital, small asset scale, weak risk resistance, short life cycle, relatively single operation, high market elimination rate and high business risk, making it difficult for them to survive in the epidemic environment. Most enterprises did not get enough financial support in time and were forced to close down.

Due to the instability of small, medium and micro enterprises themselves, domestic banks dare not lend, or even refuse to borrow, most enterprises cannot get financing. Most domestic credit institutions have less credit capital, extensive regulatory means and imperfect institutional mechanisms, making it more difficult for small, medium and micro enterprises to survive. Many enterprises have already been "struggling to survive" due to the impact of the epidemic.

However, the credit risk assessment model in this paper is a good solution to the current plight of smes and banks. the model can extract more key credit data features of small and medium-sized enterprises, so as to provide banks with visual data display and correlation analysis, and the results are more consistent with real life, so as to facilitate the subsequent management of banks and ensure the long-term stability of loan business. At the same time, our model also tends to pay more attention to the development of small and medium-sized enterprises, which fills the gap in capital supply and demand structure caused by the characteristics of different industries and prevents banks from investing too much loans into industries already saturated with capital.

Improving the assessment of credit risks of commercial banks can promote the development of credit loans for small and micro enterprises by commercial banks, so as to help small and micro enterprises obtain sufficient financial support from commercial banks. Commercial banks small and micro enterprise credit loan risk assessment system, in the commercial banks small and micro enterprise loan risk assessment application, can play an effective role in stabilizing China's financial environment, promote the development of China's financial cause. [2]

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Analysis and Description of Oxygen Saturation based on Pearson Correlation Coefficient and Multiple Minear Regression

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Abstract: Oxygen saturation is the percentage of the oxyhemoglobin bound by oxygen in the blood hemoglobin volume, which is an important physiological parameter of the respiratory circulation. The functional oxygen saturation is the ratio of HbO2 concentration to HbO2+Hb concentration, which is different from the percentage of oxygenhemoglobin. Therefore, monitoring the arterial oxygen saturation allows for the estimation of the oxygenation and hemoglobin oxygen-carrying capacity of the lungs. Considering the inter-individual variability and the possible interference of individual activity and environmental differences with the experimental data, the noise reduction of the experimental data is required first. After the processing, the obtained optimal data is processed for dimensionality reduction, and the correlation coefficient matrix of the indicators and the original index after the dimension reduction is calculated to obtain the correlation between the indicators, so as to obtain the specific meaning of the indicators after the dimension reduction. Next, a regression analysis was conducted on the indicators after dimension reduction and the mean blood oxygen saturation of the experimental individuals, and the regression results were hypothesis tested to obtain the reasonable regression results satisfying the hypothesis test, so as to comprehensively evaluate the influencing factors of blood oxygen saturation.

Keywords: Pearson Correlation Coefficient; Multiple Linear Regression; Principal Component Analysis; Descriptive Statistic

1. INTRODUCTION

In order to indicate the origin of Oxygen Saturation, the following background is worth mentioning. Oxygen saturation(SpO_2) is oxygenated hemoglobin (HbO_2) in the blood. It is an important physiological parameter of respiratory circulation. and the functional oxygen saturation is HbO_2Concentration and HbO_2+Hb concentration ratio is different from the percentage of oxygenated hemoglobin. Accordingly, arterial oxygen saturation (SaO_2) was monitored Oxygenation and hemoglobin oxygen-carrying capacity in the lungs can be estimated.

It is an important physiological parameter of respiratory circulation, and monitoring arterial oxygen saturation can evaluate lung oxygenation and hemoglobin oxygen carrying capacity. on the other hand, oxygen saturation can also reflect human health to some extent. The oxygen saturation of normal human arterial blood is about 98%. At present, photoelectric pulse wave detection method is mainly used to detect blood oxygen saturation.

2. THE DESCRIPTION OF THE PROBLEM

Pulse oximetry is routinely used for monitoring patients oxygen saturation levels. During continuous monitoring, maybe there is a way can be able to describe the patterns of oxygen saturation using a model.

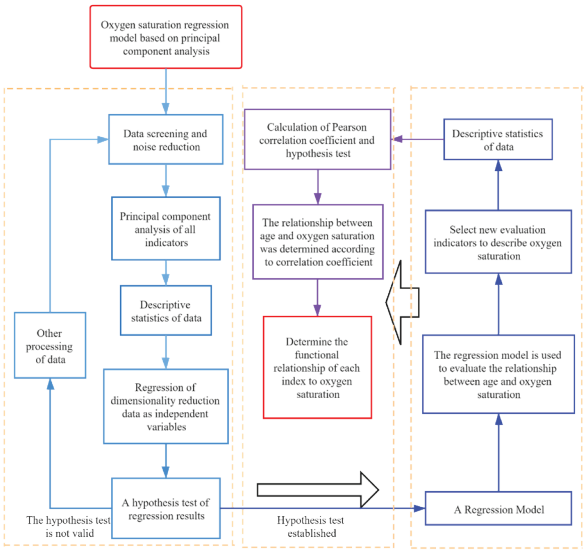
It have the data of 36individuals, each subject was tested the oxygen saturation continuously for approximately 1hour at a frequency of 1Hz. It also recorded the following information about the participants, including age, BMI, gender, Smoking history and current smoking status, and any signifificant medical conditions that could affffect reading.

Now want to use these data to fifind typical patterns of variability in oxygen saturation so that we could use several parameters to characterize an individual. It would also like to know whether the pattern of oxygen saturation series is related to age, i. e., which characteristics change in older people compared to younger people.

3. MODELS

3.1 ANALYSIS OF ISSUES

3.1.1ANALYSIS OF ISSUES



First of all, the differences between individuals and the changes of individual activities and environment may interfere with the experimental data. In order to eliminate or minimize this interference, the experimental data need

to be de-noised before the model is established. Considering the advantages and disadvantages of different data processing methods, a series of methods such as variance, square, logarithm and square are used to process the data. After noise reduction, the meaningful data are PCA dimension reduction, and the correlation coefficient matrix between each index and the original index is calculated to obtain the correlation between the original index and the dimension reduction index.

3.1.2TERMS, DEFINITIONS AND SYMBOLS

Symbols	Implications
y1	Mean Oxygen Saturation
y2	Standard deviation of oxygen saturation
x1	Body Mass Index
x2	Body Health Index
x3	Body Mass Index
x4	The Square of the age
P	Hypothesis test
β	Correlation

In order to obtain the specific meaning of each index after dimension reduction. the index after dimension reduction and the average oxygen saturation of 36 experimental individuals were analyzed by multiple regression analysis, and the regression results were tested by hypothesis test, and the reasonable regression results satisfying the hypothesis test were obtained. the influencing factors of blood oxygen saturation were evaluated synthetically.

3.1.3ASSUMPTIONS

Assume that the patient data are accurate.

Assume that all patients have no abnormal condition at the time of detection.

It is assumed that the individual singular data detected have no significant effect on the overall change of their data.

3.1.4 MODEL ESTABLISHMENT AND SOLUTION

Before using multiple regression, the mean value of oxygen saturation was calculated by descriptive statistics on its variance and body evaluation index, and its minimum, maximum, mean, median, skewness, kurtosis and standard deviation were calculated respectively. The following table is available:

Table I: Descriptive statistical results of indicators

Descriptive statistics	Sex (male)	Sex (female)	Non-smoker	Pre-smoking	Smoking	BMI	age	average	standard deviation
minimum value	0.000	0.000	0.000	0.000	0.000	17.900	19.000	93.748	0.342
maximum value	1.000	1.000	1.000	1.000	1.000	28.400	70.000	99.508	1.292
mean value	0.472	0.528	0.778	0.139	0.083	23.136	33.889	97.787	0.702
median	0.000	1.000	1.000	0.000	0.000	23.400	23.000	98.174	0.688
bias angle	0.111	-0.111	-1.336	2.088	3.015	-0.004	0.755	-1.292	0.790
kurtosis	1.012	1.012	2.786	5.361	10.091	2.191	2.194	5.531	3.036
standard deviation	0.506	0.506	0.422	0.351	0.280	2.756	16.099	1.133	0.253

In order to study the relationship between age and oxygen saturation, Pearson correlation coefficient is used to analyze.

General form of selection of correlation coefficients between various samples using Pearson algorithm:

Two sets of data:

$X:\{X_1,X_2,...X_n\}\ \ Y:\{Y_1,Y_2,...Y_n\}$

Then the sample mean of the data:

$$E(X)=\frac{\sum_{i=1}^{n}X_i}{n},E(Y)=\frac{\sum_{i=1}^{n}Y_i}{n}$$

Sample covariance:

$$Cov(X,Y)=\frac{\sum_{i=1}^{n}(X_i-E(X))(Y_i-E(Y)_i)}{n}$$

Coefficient of sample Pearson:

$$\rho_{XY}=\frac{Cov(X,Y)}{\sigma_X\sigma_Y}=\frac{\sum_{i=1}^{n}\frac{(X_i-E(X))}{\sigma_X}\cdot\frac{(Y_i-E(Y))}{\sigma_Y}}{n}$$

σ_x These are x standard deviations and y standard deviations: σ_y

$$\sigma_X=\sqrt{\frac{\sum_{i=1}^{n}(X_i-E(X))^2}{n}},\sigma_Y=\sqrt{\frac{\sum_{i=1}^{n}(Y_i-E(Y))^2}{n}}$$

The scatter plot is drawn from Table I as follows:

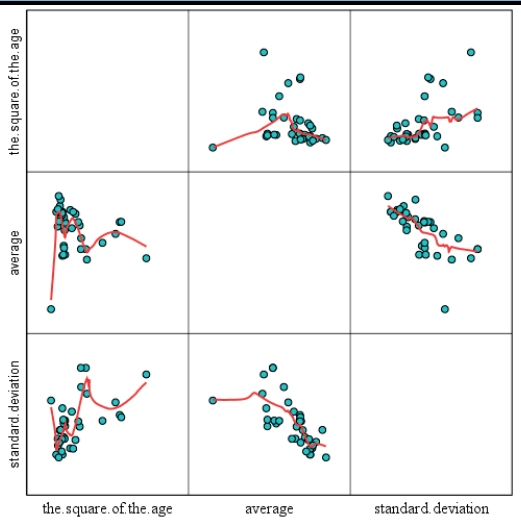


Figure 1: Data scatter plot of oxygen saturation

According to the scatter plot, the average value of age and oxygen saturation is negatively correlated to a certain extent, and the standard deviation of oxygen saturation is positively correlated. Based on this conjecture, the Pearson correlation coefficient is solved:

Sample mean of the data:

$$E(X)=\frac{\sum_{i=1}^{n}X_i}{n},E(Y)=\frac{\sum_{i=1}^{n}Y_i}{n}$$

Sample covariance:

$$Cov(X,Y)=\frac{\sum_{i=1}^{n}(X_i-E(X))(Y_i-E(Y)_i)}{n}$$

Coefficient of sample Pearson:

$$\rho_{XY}=\frac{Cov(X,Y)}{\sigma_X\sigma_Y}=\frac{\sum_{i=1}^{n}\frac{(X_i-E(X))}{\sigma_X}\cdot\frac{(Y_i-E(Y))}{\sigma_Y}}{n}$$

$$\sigma_X=\sqrt{\frac{\sum_{i=1}^{n}(X_i-E(X))^2}{n}},\sigma_Y=\sqrt{\frac{\sum_{i=1}^{n}(Y_i-E(Y))^2}{n}}$$

The following table was calculated:

Table 2: the result of Table 1:

	square of the age	average	standard deviation
square of the age	1.0000	-0.1688	0.5382
average	-0.1688	1.0000	-0.6805
standard deviation	0.5382	-0.6805	1.0000

Table 3: Assumption test results

	square of the age	average	standard deviation
square of the age	1.0000	-0.1688	0.5382
average	-0.1688	1.0000	-0.6805
standard deviation	0.5382	-0.6805	1.0000

Under the condition of obtaining the above results, multiple linear regression is carried out.

The flow chart of multiple regression is as follows:

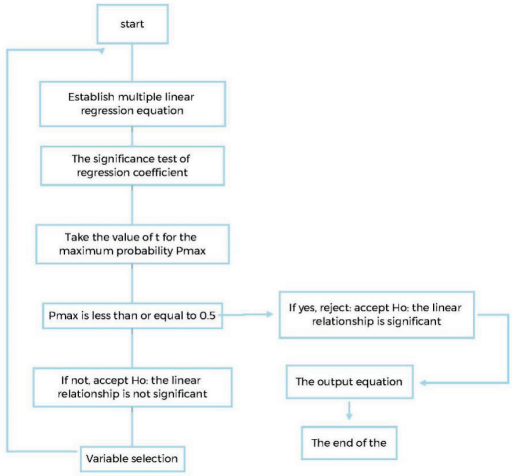


Figure 2: Flowchart of Multiple Regression

Normalization of raw data:

$$z_i=\frac{x_i-x_{\min}}{x_{\max}-x_{\min}}\in[0,1]$$

y Average and variance of oxygen saturation were x, body mass index, body health index, body comprehensive index1x, I2x, I3, Assuming that the mean value of oxygen saturation is multivariate linear regression model with variance and body index, the regression model is constructed below.

Average:

$$y_1=\beta_1x_1+\beta_2x^2{}_2+\beta_3x_3+\varepsilon_i$$

Standard deviation:

$$y_2=\beta_1x_1+\beta_2x^2{}_2+\beta_3x^2{}_3+\varepsilon_i$$

If the original hypothesis is that the average oxygen saturation is independent of body indexes, the P values of body health index and body mass index are less than 0.05, which indicates that the two data reject the original hypothesis at 95% level. There is a correlation between oxygen saturation and the square number of body mass index and body health index.

The mean of oxygen saturation is related to body mass index (β1=0.7120902); hypothesis test: p value =0.000 less than 0.05

The average oxygen saturation was related to the physical health index (β2=0.77531222); hypothesis test: p value =0.000 less than 0.05

The correlation coefficient between oxygen saturation and body mass index is 0.71, which indicates that the body mass index does not increase by one unit, and oxygen saturation will increase by 0.71 percentage points. the correlation coefficient between oxygen saturation and body health index is 0.75, indicating that oxygen saturation will increase by 0.75 percentage points for each unit of square increase of body mass index.

In general, relative to the body mass index, the correlation coefficient between oxygen saturation and body health index is greater than oxygen saturation, which indicates that the body health index has a higher effect on the oxygen saturation of the sample. the oxygen saturation of the sample is mainly determined by its body health index.

Overall regression results were better (prob=0.000<0.05)

If the original hypothesis is that the average oxygen saturation is independent of the body indexes, the P values of the body health index, the body mass index and the body comprehensive index are less than 0.05, which indicates that the three data reject the original hypothesis at 95% level. That is, oxygen saturation is correlated with the three indexes.

The mean of oxygen saturation is related to the body mass index (β1=0.15); hypothesis test: the p value =0.000 is less than 0.05

The mean of oxygen saturation is related to the physical health index (β2=0.12); hypothesis test: the p value =0.000 is less than 0.05

The mean of oxygen saturation is related to the physical health index (β3=-0.0004); hypothesis test: p value =0.005 less than 0.05

The correlation coefficient between oxygen saturation and body mass index is 0.15, indicating that the standard deviation of oxygen saturation will increase by 0.15 percentage points for each unit of body mass index; the correlation coefficient between oxygen saturation and body health index is 0.12, indicating that the standard deviation of oxygen saturation will increase by 0.12 percentage points for each unit of square increase of body mass index; and the correlation coefficient of oxygen saturation with body composite index is 0.0004, indicating that for each unit of square increase of body composite index, the standard deviation of oxygen saturation will increase by 0.0004 percentage points;

In general, compared with the body health index and the body comprehensive index, the correlation coefficient between oxygen saturation standard deviation and body

mass index is larger, which indicates that the body mass index has a higher effect on the oxygen saturation standard deviation of the sample. the oxygen saturation standard deviation of the sample is mainly determined by its body mass index.

Table 2 shows that the correlation coefficient between the square of age and the average oxygen saturation is -0.1688, that is, the average oxygen saturation will decrease by 0.1688 percentage points for each unit of the square of age, and the correlation coefficient between the square of age and the standard deviation of oxygen saturation is 0.5832.

According to the hypothesis test in Table 3, let the original hypothesis be that the average value of age and oxygen saturation is independent of the standard deviation of oxygen saturation. Because the p values of average and standard deviation are less than 0.05, the original hypothesis is rejected on 95% confidence interval.

Through the above analysis, we can know that age has a direct effect on the change of oxygen saturation of the sample. With age, the average oxygen saturation will decrease.

3.1.5 STRENGTH AND WEAKNESS

Advantages:

1. In this paper, the second principal component and the third principal component are squared to make the average value of oxygen saturation and the goodness of fit of variance reach the ideal value.
2. after obtaining the multivariate regression and body index functions, this paper again uses the Pearson correlation coefficient to solve the average value of age and oxygen saturation and the standard deviation. Finally, the conclusion similar to the regression function is drawn and complementary to make the result more objective.

Disadvantages:

Because principal component analysis itself is a screening process for data, although it can effectively reduce variables and achieve dimensionality reduction effect, the accuracy of data after principal component analysis is 81% of the total data. Further improvement is needed in this respect.

3.2 IMPROVED MODEL

3.2.1 MODEL IMPROVEMENT

Because of the OLS regression used in this paper, the following team will use different regression methods to fit it, such as Bayesian ridge regression, elastic network, support vector machine regression and so on, so that the fitting results are better

3.2.2 MODEL EXTENSION

This paper studies the specific correlation between the average value of oxygen saturation and the standard deviation of different body indexes, and provides important technical support for medical researchers. It can also be used to predict the impact of other physical indicators, and provide basic work support for medical and health workers.

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Analysis of C4 Olefins Prepared by Ethanol Coupling

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Abstract: C4 olefins are widely used in medical and chemical fields. In this paper, the effects of 14 types of catalysts with CO/SiO2 and HAP-ethanol concentration at different ratios and temperatures on the selectivity and ethanol conversion of C4 olefins by ethanol coupling were investigated. the trend of change was predicted by univariate analysis and curve fitting. It is concluded that 0.5wt%Co/SiO2 and the ratio between Co/SiO2 and HAP is 1:2, the C4 olefins selectivity and ethanol conversion are higher at ethanol concentration of 1.68 mL /min. the yield of C4 olefin was analyzed based on the data obtained from different catalyst combinations. the optimal catalyst combination under the temperature below 350℃ and the optimal catalyst combination above 350 ℃ were determined by taking 350℃ as the boundary.

Keywords: C4 olefins selectivity; Univariate analysis interpolation

1. THE PROBLEM BACKGROUND

With the rapid development of industry, the lack of resources and environmental pollution, has gradually been paid attention to. Ethanol acts as a cleanerEnergy, can be obtained through straw, corn and other materials fermentation, raw material sources are very wide, the yield increased year by year, production. the cost decreases year by year. Ethanol can be used as raw material for C4 olefin, which is widely used in chemical products, medicine and so on Dabble in all areas. Selection of catalyst, reaction temperature and reaction time in the preparation of olefin by ethanol catalytic coupling the length of the reaction is greatly related to the loss of raw materials and the reaction rate [1]. Therefore, explore the difference between temperature and no the optimal conditions under the combination of catalysts and different time are particularly important.

2. DATA PREPROCESSING AND ANALYSIS

Code name	A1	A2	A3	A4	A5
	200mg 1wt%Co/ Sio2-200mg HAP-ethanol concentration 1.68 mL /min	200mg 2wt%Co/ Sio2-200mg HAP-ethanol concentration 1.68 mL /min	200mg 1wt%Co/ Sio2-200mg HAP-ethanol concentration 0.9 mL /min	200mg 0.5wt%Co/ Sio2-200mg HAP-ethanol concentration 1.68 mL /min	200mg 2wt%Co/ Sio2-200mg HAP-ethanol concentration 0.3 mL /min
Code name	A6	A7	A8	A9	A10
species	200mg 5wt%Co/ Sio2-200mg HAP-ethanol concentration 1.68 mL /min	50mg 1wt%Co/ Sio2-50mg HAP-ethanol concentration 0.3 mL /min	50mg 1wt%Co/ Sio2-50mg HAP-ethanol concentration 0.9 mL /min	50mg 1wt%Co/ Sio2-50mg HAP-ethanol concentration 2.1 mL /min	50mg 5wt%Co/ Sio2-50mg HAP-ethanol concentration 2.1 mL /min
Code name	A11	A12	A13	A14	
species	50mg 1wt%Co/SiO2 90mg quartz sand-ethanol concentration 1.68ml/min without HAP	50mg 1wt%Co/ Sio2-50mg HAP-ethanol concentration 1.68 mL /min	67mg 1wt%Co/ Sio2-33mg HAP-ethanol concentration 1.68 mL /min	33mg 1wt%Co/ Sio2-67mg HAP-ethanol concentration 1.68 mL /min	

First, set codes for various catalysts as shown in Table1 belowTable1. Category number

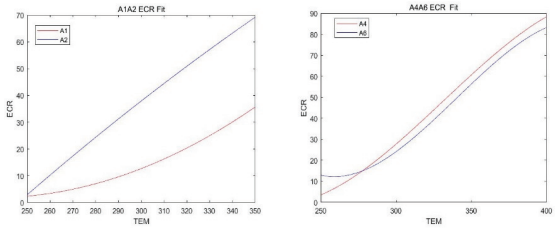

Figure1. Ratio of Co/SiO2 weight to ethanol and C4 olefin conversion

In the experiment, the method of controlling single variable was used to divide the catalysts into four categories. Firstly, A1, A2, A4 and A6 were divided into one category to explore the influence of the weight ratio of Co/SiO2 on the conversion of ethanol and C4 olefin. As shown in Figure1.

According to the observation of Figure1, it can be clearly seen that under any conditions of weight ratio of Co/SiO2, the ethanol conversion rate has an obvious trend of increase with the increase of temperature. However, under the catalytic condition of A1, the growth rate of ethanol conversion rate is relatively slow compared with the other three groups, only reaching 35% at 350℃, far lower than other groups. At the same time, taking 350℃ as the boundary, we can see that at 350 ℃, the ethanol conversion rate of A2 is the maximum, and the curve has a trend of slowing down. Therefore, we can infer that

under 350℃, the optimal catalyst combination of A2: Co/SiO2 ratio is 2:100, i. e. 2wt%Co/SiO2. However, according to the curve fitting, it can be observed that the ethanol conversion under the condition of A2 catalyst has a trend of slowing down. Under the condition of A4 and A6 catalyst, the ethanol conversion rate under the conditions of A4 and A6 catalyst continues to increase to 400℃ at a rapid rate. At the same time, the ethanol conversion rate under the condition of A4 combined catalyst is greater than that under the condition of A6, and the curve of A6 shows a trend of slowing down. Therefore, at 400℃, the optimal catalyst ratio of Co/SiO2 is 1:2000, that is, 0.5wt%Co/SiO2, to ensure higher ethanol conversion. This is consistent with the references we consulted. [2] the selectivity growth rate of A1A2A4A6 for C4 olefins was plotted as Figure2.

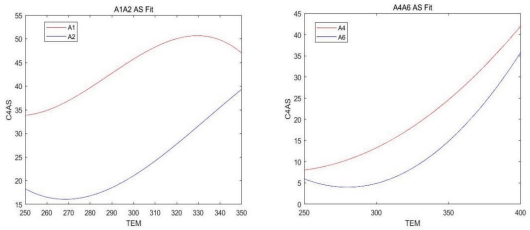

Figure2. Effect of A1A2A4A6 on the growth rate of C4 olefins selectivity

As can be seen from Figure2, with the increase of temperature, the selectivity of C4 olefin increases under different catalyst combinations, but the range is small. Meanwhile, at 320℃, A1 catalyst has a downward trend, which reaches up to about 50%. A4, A6 two types of catalyst temperature makes C4 olefin selectivity of gradually rise, if you can choose when low temperature A1 type of catalyst, to improve the C4 olefin selectivity, indirect improve C4 hydrocarbon output, but if the temperature under the condition of high slope can choose C4 olefin growth larger A6 catalyst make C4 selective enhancement, Thus increasing the output of C4 olefin.

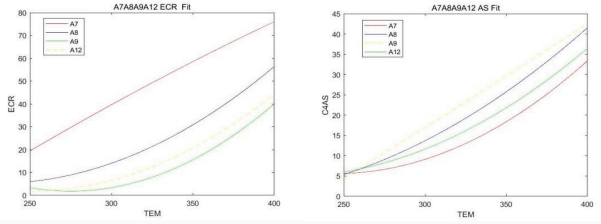

Figure3. Influence of HAP and ethanol concentration on ethanol conversion and C4 olefins selectivity

According to Figure3, we conducted variable analysis on HAP and ethanol concentration, and classified A7, A8, A9 and A12 into one category. According to Figure3, it can be seen that under the conditions of these four catalysts, ethanol conversion rate and C4 olefins selectivity increased with the increase of temperature, and the increase range was large. But compared with other catalysts combination in A9 catalyst under the condition of combination of ethanol conversion rate of growth is relatively flat, but in the process of temperature rise, the C4 olefin selectivity is always higher than other catalysts, so we think: under the condition of high temperature, A9 catalyst composition also has a good C4 hydrocarbon catalytic ability of output.

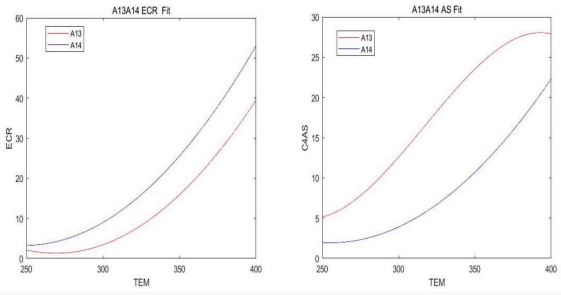

Figure4. Different ratios between Co/SiO2 and HAP affect the results

As can be seen from Figure4, A13 and A14 are finally grouped into one group to explore the influence of different ratios between Co/SiO2 and HAP on the results. According to Figure4, with the increase of temperature, the conversion rate of ethanol and the selectivity of C4 olefin are both on the whole rising. At the same time, according to the fitting curve, we can observe that the influence curve of A13 and A14 catalyst on ethanol conversion is similar. However, the combination of A13 and A14 catalysts has different selectivity effects on C4 olefin. Within 400℃, the selectivity of C4 olefin has been increasing under the condition of A14 catalyst combination, and the growth rate is also increasing, while the combination of A13 catalyst has passed the maximum point of C4 olefin selectivity between 350℃ and 400℃. the trend gradually flattens, and even the C4 olefins selectivity decreases, which is not conducive to the further production of C4 olefins. Therefore, we believe that with the increase of temperature, the A13 catalyst combination, i. e. the ratio between Co/SiO2 and HAP, is 67:33, which is more suitable for the catalytic coupling of ethanol to prepare C4 olefin.

3. YIELD ANALYSIS OF C4 OLEFIN

C4 olefin yield = ethanol conversion *C4 olefin selectivity

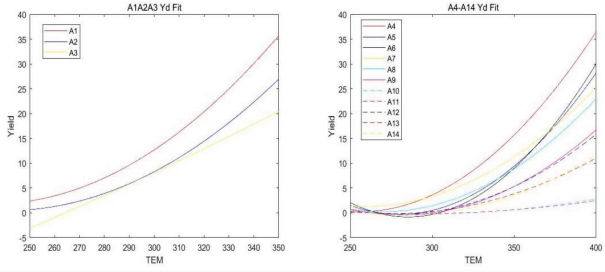

Figure5. Influence of catalyst combination on C4 olefin yield

As the temperature difference is different and the experimental description is scientific, we conduct curve fitting for the data according to different temperature differences. According to the observation and analysis in Figure5, it can be seen that at 350℃, the yield curves of C4 olefin of A1 catalyst combination and A2 catalyst combination do not show a trend of slowing down or decreasing. Therefore, we speculate that the yield of C4 olefin will continue to increase with the temperature continuing to rise. At the same time, it can be seen that after 350℃, the yield of C4 olefin in each catalyst combination still increases with the increase of

temperature. Finally, at 400℃, the yield of C4 olefin in catalyst combination A4: Under the condition of 200Mg0.5 wt%Co/ Sio2-200MgHAP-ethanol concentration of 1.68 mL /min, the selectivity of C4 olefins was significantly higher than that of other catalyst combinations, and with the increase of temperature, the yield span of C4 olefins was the largest under the condition of the A4 catalyst combination, and it can be inferred that within the temperature range of 250℃ to 400℃, the A4 catalyst combination is the most sensitive to temperature. Meanwhile, based on Figure1 and Figure2, the optimal temperature and catalyst combination can be determined as 400℃, 0.5wt%Co/ SiO2-200MgHAP-ethanol concentration: 1.68mL /min.

4. CONCLUSION

In this paper, through the influence of 14 kinds of catalysts on the conversion of ethanol and the yield of C4 olefin, it is found that the selectivity of C4 olefin is greater and the conversion of ethanol is higher under the condition of 0.5wt%Co/SiO2, the ratio between Co/SiO2 and HAP is 1:2, and the ethanol concentration is 1.68 mL /min. We can also determine the optimal temperature and catalyst combination for C4 olefins yield: 400℃, 0.5wt%Co/ Sio2-200mgHAP-ethanol concentration: 1.68 mL /min.

5. OUTLOOK

Based on different kinds of catalyst for C4 olefin selectivity, as well as the effect of ethanol conversion of exploration, we found that the existence of a large number of side effects, we should be on how to improve the ethanol conversion rate at the same time, reduce the side effects, so as to increase the production rate of C4 olefin, this will be our faces a very challenging problem. At the same time, through the above exploration, we found that C4 olefin can be prepared at a lower temperature, so we can apply different catalysts to chemical production according to their catalytic performance and the optimal catalytic temperature. Through the exploration and mining of this experimental data, it opens up new ideas for the utilization of ethanol and the development of clean energy. With the development and modification of more catalyst combinations in the future, we believe that China will gradually achieve the expected goal of energy conservation and emission reduction.

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Optimization Analysis of C4 Olefin Preparation by Ethanol Coupling

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Abstract: Aiming at the problem of coupling ethanol to prepare C4 olefins, the relationship and influence of ethanol conversion, C4 olefin selectivity and temperature were studied based on fitting and classification. Then, the control variable method is used and a regression analysis model is established to determine the optimal catalyst combination and the temperature to maximize the C4 olefin yield. Finally, the experimental process is designed and improved.

Keywords: SPSS Data Processing; Multiple Regression Analysis; Control Variable Method; Random Forest Prediction; Goal Programming

1. PROBLEM RESTATEMENT

1.1 PROBLEM BACKGROUND

The processing and deep processing of C4 olefins have always been paid close attention by the industry [1]. the preparation of C4 olefins is of great significance and value because it is widely used in chemical products, medicine and pharmacy, driving the development of oil refining and chemical industry chain. Catalytic coupling of ethanol to C4 olefins is an important method. the process conditions have high requirements and standards. Catalyst combination and temperature are the main factors affecting the selectivity and yield of C4 olefins. Therefore, the key to solve this problem is to study and design the catalyst combination and the preparation efficiency of C4 olefins at a specific temperature.

The production of C4 olefins from ethanol condensation. the reaction mechanism is different on different catalysts. When the catalyst is mixed metal oxide, the mixed metal oxide has appropriate acid and base sites, catalyzes ethanol dehydration at the acid sites, and the basic sites promote alcohol dehydrogenation and the coupling of intermediates. the surface of SiO2 HAP catalyst is supported with Co metal with dehydrogenation activity. By adjusting the loading amount of Co, the acid and alkalinity of the catalyst surface can be adjusted, so that SiO_2 HAP catalyst has acid and alkali activities at the same time. In the experiment, the catalyst first catalyzes ethanol to produce acetaldehyde and acetone intermediates, and acetaldehyde and acetone produce C4 olefins such as isobutene and butadiene through further coupled dehydration.

1.2 PROBLEM RESTATEMENT

Question 1: the performance data sheet has given the values of ethanol conversion and C4 olefin selectivity at different temperatures corresponding to different loading methods and catalyst combinations. Based on the data in Annex 1 above, the relationship between ethanol conversion, C4 olefin selectivity and temperature is studied respectively. the test results of reaction products corresponding to different times under specific catalyst combination at 350 ℃ in Annex 2 are studied.

Problem 2: analyze the effects of different catalyst combinations and temperatures on ethanol conversion and C4 olefin selectivity.

Problem 3: In order to make the higher the C4 olefin yield under the same experimental conditions, determine the appropriate catalyst combination and temperature conditions; Under the condition that the temperature is lower than 350 ℃, the appropriate catalyst combination and temperature conditions are determined in order to make the C4 olefin yield higher and better.

Question 4: five new experiments are designed to explore the preparation of C4 olefins by ethanol coupling.

For problem 1: Based on the data in Annex I, this topic uses Excel to visualize the data, roughly judge the trend through the broken line diagram, and then establish a data fitting model to study the relationship between ethanol conversion, C4 olefin selectivity and temperature for each catalytic combination. It is concluded that for different catalyst combinations, the graphic trend presented by the functional formula can be treated in groups, that is, with the change of temperature, the change mode of ethanol conversion is three, linear, S-type and progressive type; the selectivity of C4 olefins changes in two ways, S-type and progressive type. Then, a linear regression model is established to fit and analyze the results of Annex II. the relationship between ethanol conversion and time is $y_1 = 42.671 - 0.053t$, the selectivity of C4 olefins with time is. $y_2 = 16.53 - 0.02t$.

Aiming at problem 2: the influence of the composition and temperature of each catalyst combination is obtained by using the control variable method. the conclusions are as follows: 1. the co loading increased from 0.5wt% to 5wt%, the conversion of ethanol decreased first and then increased, and the selectivity of C4 olefins increased first and then decreased. In general, the yield of C4 olefins increased first and then decreased, and reached the highest when the loading was 2wt%. 2. When the ratio of CO/SiO2 to HAP is 200mg: 200mg, the experimental effect is the best. Reducing the dose will reduce the effect. With the increase of HAP ratio (the ratio increases from 1/2 to 2), the selectivity of C4 olefins gradually decreases, and ethanol is more converted to alcohols. 3. the mixing method has little effect. 4. the ethanol conversion decreased with the increase of ethanol flow rate, and the C4 olefin yield was not greatly affected by ethanol flow

rate. the effect is better when the flow rate is 0.9ml/min and 2.1ml/min. 5. HAP is better than quartz sand for catalyst support.

For problem 3: calculate the C4 olefin yield, select the top ten groups with the largest yield, and combined with the analysis of the second question, it is concluded that the best catalyst group is 200mg 1wt% Co/SiO2-200mg HAP ethanol concentration of 0.9ml/min. the optimum temperature is 400 ℃. If the temperature is lower than 350 ℃, arrange and combine the catalyst combination variables to obtain 36 groups of experiments. the yield of C4 olefins in 36 groups of experiments is predicted by using the optimized random forest model. Combined with the original data, it is concluded that the best catalyst group is 200mg 2wt% Co/SiO2-200mg HAP ethanol concentration of 1.68ml/min. the optimum temperature is 350 ℃. At the same time, a nonlinear regression model is established to study the relationship between CO load, ethanol flow rate and temperature and yield. Then, the objective programming model is used to solve it. the results are approximately consistent with the above analysis.

Aiming at problem 4: Based on the above problems, it is analyzed that temperature and catalyst combination are important factors affecting the experiment. Five groups of experiments were added to predict C4 yield by studying random forest algorithm. Among them, two experimental groups with a temperature higher than 450 ℃ are set to explore whether excessive temperature will reduce the catalyst activity. Three experiments are designed near the best catalyst group to explore whether there is a requires dehydrogenation, dehydration and better catalyst combination. the five experimental designs are as follows:

Order	The Proportion of Co/SiO_2 and HAP	Catalyst support	The Load of Co wt%	Ethanol flow rate ml/min	Temperature
1	200mg:200mg	HAP	1	0.9	475
2	200mg:200mg	HAP	0.5	1.68	450
3	200mg:200mg	HAP	1	0.3	400
4	200mg:200mg	HAP	1	2.1	400
5	200mg:200mg	HAP	1	1.68	400

2. PROBLEM ANALYSIS

To solve problem 1: In the process of ethanol coupling to prepare C4 olefins, ethanol accelerates the reaction under the action of catalyst to produce a variety of chemicals, including C4 olefins. Annex I has given 21 catalyst combinations and their corresponding proportions of chemicals at different temperatures. Based on this, the relationship between ethanol conversion and temperature, C4 olefin selectivity and temperature was found through Excel data analysis and mapping. Then, a linear regression model was established by SPSS to study the results of 350 ℃ specific catalyst combination in Annex II. the relationship between ethanol conversion and C4 olefin selectivity at this temperature and different reaction time was found. [1]

For problem 2: each catalyst combination has specific co loading, Co/SiO_2 and HAP loading ratio, HAP and ethanol concentration. and with the change of temperature, the corresponding values of each index also change. Therefore, using the control variable method, 21 combinations were divided into several groups for comparative analysis to study their effects on ethanol conversion and C4 olefin selectivity.

For question 3: Based on the results of the second question, calculate the C4 olefin yield and take out the top ten with the highest yield. If the temperature is lower than 350 ℃, several groups of data of Co loading, ethanol flow rate and temperature are arranged and combined, and the optimized random forest model is used to predict the yield of C4 olefins respectively, taking the top ten groups with the largest value.

Aiming at problem 4: Based on the above problems, it is analyzed that temperature and catalyst combination are important factors affecting the experiment. Five groups of experiments were added to predict C4 yield by studying random forest algorithm. Among them, two groups were set at a temperature higher than 450 ℃, and three groups of experiments were designed near the best catalyst group to explore whether there is a better catalyst combination.

2. MODEL ASSUMPTIONS

It is assumed that all experimental data are completed without human interference.

It is assumed that the instruments of all experiments are exactly the same.

It is assumed that the composition and dosage of the catalyst combination are accurate.

It is assumed that the time record in Annex 2 is accurate and does not include human reaction time

3. SYMBOL DESCRIPTION

The main mathematical operation symbols and their meanings are shown below:

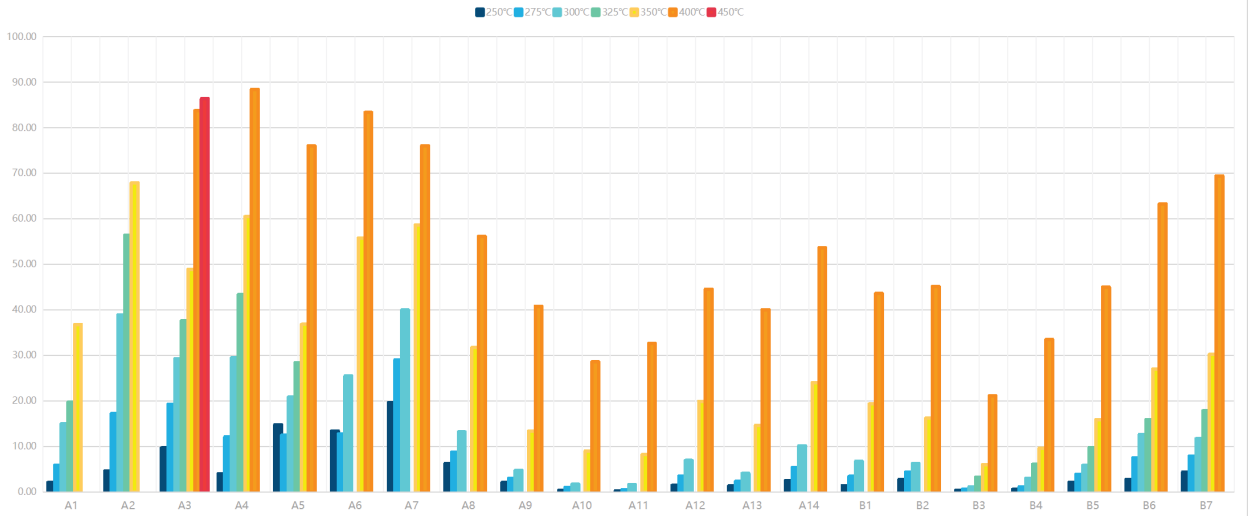
Symbol	meaning
y_1	Ethanol conversion
y_2	The Selectivity of C4 olefin
t	temperature
x_1	The Quality of Co
x_2	The Load of Co
x_3	Ethanol flow rate

4. ESTABLISHMENT AND SOLUTION OF MODEL

5.1 QUESTION 1

Relationship between ethanol conversion and temperature

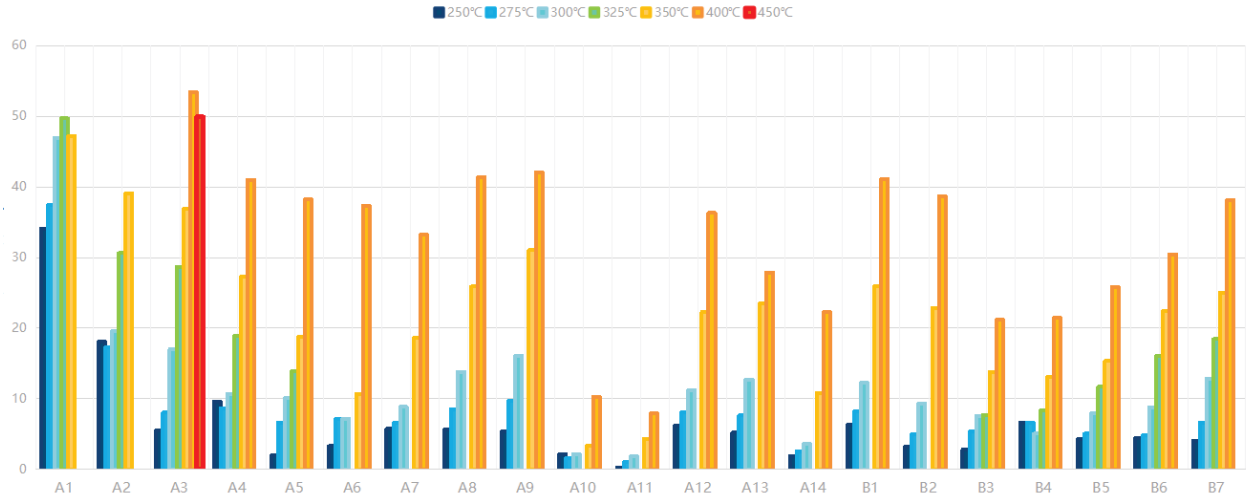
In the process of preparing C4 olefins by ethanol coupling, other products other than C4 olefins are produced, such as ethylene, acetaldehyde, fatty alcohol with carbon number of 4-12 and other chemicals. the ethanol conversion of different catalyst combinations is different at a specific temperature. As shown in the following chart.



As shown in the figure above, the ethanol conversion of different catalyst combinations increases with the increase of temperature. When the temperature increased to 450 ℃, the combination A3 accelerated the reaction, and the ethanol conversion was 86.4%, which was higher than that at 400 ℃.

Temperature dependence of C4 olefin selectivity

The longitudinal comparison is shown in the figure below. With the increase of temperature, the greater the selectivity of C4 olefins under almost every catalyst combination. the catalyst combination A3 has the best experimental effect at 400 ℃, and the temperature further increases. When it reaches 450 ℃, the selectivity of C4 olefins decreases.



Considering the relationship between ethanol conversion, C4 olefin selectivity and temperature, it is found that at 400 ℃, under the action of catalyst combination A3, i. e. 200mg-1wt% Co/SiO_2-200mg HAP ethanol concentration of 0.9ml/min, ethanol coupling has high conversion and high selectivity, which is the best process condition under qualitative analysis. [2]

quantitative analysis

First, observe the approximate relationship between ethanol conversion and C4 olefin selectivity of each group of catalysts and temperature with the data perspective. It is found that the relationship between ethanol conversion and temperature can be divided into three categories:

Linearity, including A1, A2, A4, A7;

Type s, including A3;

Progressive type, including A5, A6, a8 ~ A14 and B1 ~ B7.

Then, A4, A3, A6 and B3 are selected as representatives for fitting analysis according to the broken line diagram to determine the functional relationship.

A4	$f(t) = 0.58t - 144.6$
A3	$f(t) = 46.66 - 15.65\,cos(0.0199t) + 36.35\,sin(0.0199t) + 3.296\,cos(0.0398t) - 9.75\,sin(0.0398t)$
A6	$f(t) = 49.8 - 3.73\cos(0.0187t) + 37.17(0.0187t)$
B3	$f(t) = 424.7\,e^{-(\frac{t-664.6}{152.7})^2}$

Through comparison, it is found that the growth rate of conversion increases rapidly after 350 ℃, but the value of group B is generally small.

The relationship between C4 olefin selectivity and temperature can be divided into two categories:

Type s, including A1 and A3;

Progressive type: including A2, A5 ~ A14 and B1 ~ B7.

Similarly, A1, A3, A2 and A5 are selected as representatives for fitting analysis to determine the functional relationship.

A1	$f(t) = 42.16 + 6.189\cos(0.04t) + 5.48\sin(0.04t)$
A3	$f(t) = 29.57 + 7.831\cos(0.018t) + 23.34\sin(0.018t)$

A2	$f(t) = -1.795\times10^{-6}t^4 + 0.00212t^3 - 0.9342t^2 + 181.2t - 1.307\times10^4$
A5	$f(t) = 194e^{-(\frac{t-668.7}{210.6})^2}$

However, the value of A1 is generally high, the maximum at 325 degrees, and then decreases slowly; A3 has a fast growth rate and a large growth range, which is the largest at 400 degrees, and then decreases rapidly; A2 increases progressively and rapidly after 300 ℃; A5 increased progressively and rapidly after 350 ℃.

Finally, a linear regression model was established with time as the independent variable and ethanol conversion as the dependent variable.

The regression model of ethanol conversion and time is as follows:

$y_1 = 42.671 - 0.053t$

Since the goodness of fit R2 = 0.933, the fitting effect of the regression model is good. That is, the explanation degree of the change of ethanol conversion over time is 93.35%. the result of analysis of variance was p < 0.05, indicating that the model was statistically significant.

The analysis of the change of C4 olefin yield with time is the same. There are no outliers in the data and meet the conditions of simple linear regression. [3]

The regression model of C4 olefin yield and time is as follows:

$y_2 = 16.53 - 0.02t$

Since the goodness of fit R2 = 0.857, the fitting effect of the regression model is good. That is, the explanation degree of the change of ethanol conversion over time is 85.7%. the result of analysis of variance was p = 0.003 < 0.05, indicating that the model was statistically significant.

5.2 QUESTION 2

By analyzing the experimental groups, we classified the experimental catalyst combinations, and discussed the effects of different catalyst combinations and temperatures on ethanol conversion and C4 olefin selectivity from the conditions of Co loading, SiO_2/HAP ratio, mixing mode, reaction temperature and ethanol flow rate.

The Co loading increased from 0.5wt% to 5wt%, the conversion of ethanol decreased first and then increased, and the selectivity of C4 olefins increased first and then decreased. In general, the yield of C4 olefins increased first and then decreased. When the loading was 2wt%, it reached the highest, 26.54%. the co loading amount is 5wt%, which is worse than other effects.

When the catalyst ratio is 1:1, with the increase of HAP content (the dose increases from 50mg to 200mg), the content of basic sites in the catalyst gradually increases, which promotes the coupling conversion of acetaldehyde to olefinic aldehyde. At this time, the catalyst surface has a suitable acid that can promote the conversion of olefinic aldehyde to C4 olefin, so the selectivity of C4 olefin is the highest, 47.21% (200mg: 200mg). When the proportion of HAP is increased, the surface acidity dimension of the catalyst decreases, and the selective hydrogenation of olefinic aldehydes is further coupled to produce alcohols (fatty alcohols with carbon number of 4-12).

When the ratio of Co/SiO_2 to HAP is 200mg:200mg, the experimental effect is the best, and reducing the dose will reduce the effect. With the increase of HAP ratio (from 1/2 to 2), the selectivity of C4 olefins decreases gradually, and ethanol is more converted to alcohols. [4]

Under the same reaction conditions, there is little difference in ethanol conversion and C4 olefin selectivity between the two catalysts, indicating that the loading mode has little effect on the performance of the catalyst.

We can conclude that the ethanol conversion decreases with the increase of ethanol flow rate, and the C4 olefin yield is not greatly affected by ethanol flow rate. the effect is better when the flow rate is 0.9ml/min and 2.1ml/min. When the flow rate is 0.3ml/min and 2.1ml/min, higher temperature will make the effect worse.

Under the same reaction conditions, the effect of using HAP as carrier is better than that of using quartz sand as catalyst carrier, whether for ethanol conversion or C4 olefin selectivity.

5.3 QUESTION 3

The catalyst combination was analyzed separately and the existing experimental data were studied. It was found that the three variables of Co loading, reaction temperature and ethanol flow rate showed a quadratic nonlinear functional relationship with C4 olefin yield, that is, when other conditions were certain, it showed a trend of first increasing and then decreasing. After comparison, it can be reasonably inferred that the combination of Co/SiO_2 and HAP with a charge ratio of 1 and a mass of 200mg is the best. Therefore, the model can be established only by studying the specific functional relationship between Co loading, reaction temperature and ethanol flow rate and C4 olefin yield.

Temperature is closely related to yield, ethanol flow rate is negatively related to the first trip, and the correlation of Co load is small. the corresponding regression analysis model can be established.

Based on the data trend, we select the quadratic nonlinear relationship to establish the regression model, and set the three variables of Co load, reaction temperature and ethanol flow rate as X2, t and X3, from which we get:

$y = 30.06 + 2.52x_2 + 29.34t - 0.4x_3 - 0.17x_2^2 - 4.15t^2 + 0.001x_3^2 - 0.64x_2t - 0.001x_2x_3 - 0.068tx_3$

Establish goal planning model:

$$\max y = f(x)$$

$$s.t.\begin{cases} 0.5 \le x_2 \le 5 \\ 250 \le t \le 450 \\ 0.3 \le x_3 \le 2.1 \end{cases}$$

The calculation results are approximately as follows: Co load $x_2 = 200mg$, temperature T = 400 ℃, ethanol flow rate $x_3 = 0.9ml/\min$.

5.4 QUESTION 4

Five groups of experiments were added

As the selectivity of C4 olefins in groups A1 and A3 decreases when the temperature is too high, but the overall yield of C4 olefins. From the original experimental data, the higher the temperature, the greater the yield of C4 olefins. We consider whether the temperature will affect the catalyst activity and whether the temperature higher than 450 ℃ will affect the yield of C4 olefins.

In theory, four groups of experiments were designed, and

the prediction results using the optimized random forest model were as follows: the predicted temperature of group A1 and A2 was 400 ℃, the predicted temperature of group A3 was 475 ℃, and the predicted temperature of group A4 was 450 ℃ (the ratio of Co/SiO_2 to HAP was 200mg:200mg, and the catalyst carrier was HAP). the results of catalyst combination, temperature and predicted C4 olefin yield are as follows:

Order	The Proportion of Co/SiO_2 and HAP	Catalyst support	The Load of Co wt%	Ethanol flow rate ml/min	Temperature ℃
1	200mg:200mg	HAP	1	0.9	475
2	200mg:200mg	HAP	0.5	1.68	450
3	200mg:200mg	HAP	1	0.3	400
4	200mg:200mg	HAP	1	2.1	400
5	200mg:200mg	HAP	1	1.68	400

5. ADVANTAGES AND DISADVANTAGES OF THE MODEL

6.1 ADVANTAGE

The linear regression model in question 1 considers the assumptions of linearity, independence and residual normality, and the results are accurate.

This paper visualizes the data, which is concise and practical. [5]

The system considered by the model is comprehensive and has strong practicability.

6.2 SHORTCOMING

1. This paper ignores the influence of other reaction products such as ethylene, acetaldehyde, methylbenzaldehyde and methylbenzyl alcohol, which reduces the accuracy of the model.
2. In the analysis of control variable method, the model is more complex because all components of catalyst combination are considered.

4. GENERALIZATION OF MODEL

In this paper, the effects of catalyst combination and temperature on the yield of C4 olefins were studied by controlling variable method. the analytical method is widely used and can be extended to chemical research, drug preparation and so on. A linear regression model was also established to study the relationship between ethanol conversion, C4 olefin selectivity and temperature. the model can be extended to study the relationship between dependent variables and independent variables, which is intuitive, concise and practical.

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Research and Development of Suitable Aging Platform Based on Middle-Aged and Elderly Online Shopping Market Research

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Abstract: With the penetration of the Internet, the middle-aged and elderly online shopping market outside the ' digital economy spotlight ' has great potential. Based on this situation, this paper first uses stratified and two-stage sampling to extract the middle-aged and elderly population in Tangshan, and investigates online shopping through interview-based survey method. Secondly, using correspondence analysis, ordered multi-class Logistic regression and correlation analysis to understand the status of middle-aged and elderly online shopping. Through K-means++, the middle-aged and elderly groups are subdivided and the portraits of users are depicted. Finally, based on the survey results, build a concise page, with voice input and playback, double audit, flow pool intelligent recommendation function of the transfer Taobao, Pinduoduo and other platforms of the middle-aged and elderly shopping APP, for the middle-aged and elderly into the online shopping market and economic development to provide direction.

Keywords: Correspondence Analysis; Ordered Multi-Classification Logistic Regression; K-Means++; Relevant Analysis; E-Commerce Platform

1. INTRODUCTION

National statistics show that China has become the country with the largest elderly population in the world. At the same time, China ‘ s aging process is developing rapidly with an annual increase of 10 million people. It is expected that the proportion of the elderly population aged 65 and above will reach 14% in 2020, and the whole will enter a deep aging society. the aging problem has brought pressure to China 's economy and also brought opportunities. the expansion of the proportion of the population and the improvement of living standards make today ‘ s elderly groups have the consumption potential that cannot be ignored. the development and application of the Internet model in daily life provides more choices for their consumption. More types of goods and more convenient logistics under the e-commerce model also provide new exports for the exploration of their consumption potential.

In recent years, the network share of middle-aged and elderly people has gradually increased. According to Tencent 's official data, as of September 2018, there were as many as 61 million WeChat users aged between 55 and 70. In various forms of network, pictures, audio and video are obviously more favored by the middle-aged and elderly people. Correspondingly, new forms of traffic such as live broadcast and short video carrying commodity economy will also become a new trend for middle-aged and elderly people to shop. and according to the ' Focus on the Silver Economy-2019 Network Consumption Trend Report for Middle-aged and Elderly People ' released by the JD. COM Big Data Institute, the online shopping consumer market for middle-aged and elderly people has great development potential in the context of the continuous penetration of the Internet into middle-aged and elderly people.

2. RESEARCH ON ONLINE SHOPPING MARKET OF MIDDLE-AGED AND ELDERLY PEOPLE

2.1 SAMPLING SURVEY

Since the accuracy of sampling is related to the order of sampling methods, and the more advanced the sampling method used, the greater the proportion of sampling accuracy, in order to ensure the scientific nature of the survey, reduce errors. Firstly, the stratified sampling method was selected. In order to ensure the rationality of the sampling process, a two-stage PPS sampling was used to conduct a trial survey and a formal survey.

The formal investigation mainly adopts interview, supplemented by electronic questionnaire and in-depth interview.

The survey data collection is divided into three categories: the elderly, children, children and their parents data. Data coding using both pre-coding and post-coding to achieve two-way entry of the questionnaire, each questionnaire questions in turn. the reliability and validity of the questionnaire data and the project test are carried out. All the tests of the questionnaire are passed. the questionnaire structure is reasonable, and the survey results are reliable.

2.2 STATUS OF MIDDLE-AGED AND ELDERLY SURVEYS

Using descriptive statistical analysis correspondence analysis, ordered multi-classification Logistic regression and correlation analysis, this paper analyzes the subjective and objective factors that affect the willingness to participate in online shopping, the satisfaction of participating in online shopping, and the subjective and objective factors that hinder the participation of middle-aged and elderly people, and longitudinally compares the development status of middle-aged and elderly markets in online shopping platforms, and makes deep processing of

data to provide data support for exploring how to further establish media platforms.

Through K-means++, the middle-aged and elderly groups are subdivided and user portraits are depicted. Through the market survey, the conclusions are as follows: (1) the development potential of middle-aged and elderly online shopping market is large, and the attention of social support is high; (2) the participation of middle-aged and elderly people in online shopping is limited to their original living habits, and subsequent companionship or increased participation; (3) the satisfaction of middle-aged and elderly people to online shopping needs to be improved, and the restrictive factors are mainly e-commerce platforms; (4) Online shopping reflects the social ' digital divide ' problem, the aging society humanistic care is urgent; (5) There are differences in online shopping preferences among middle-aged and elderly groups, but the main shopping types are daily necessities, food and clothing.

3. DEVELOPMENT OF AGING PLATFORM

Based on the above research results of online shopping for middle-aged and elderly people, combined with the theoretical basis of literature, this paper compares the consumption demand of middle-aged and elderly people in the social environment, the market situation of middle-aged and elderly people in the e-commerce platform, and analyzes and compares the contradiction between supply and demand of middle-aged and elderly modules in the e-commerce platform to explore the best shortcut to improve the participation of middle-aged and elderly people in online shopping. Through sorting out the ideas and conclusions of relevant literature, further processing of data, and selecting constructive suggestions for research, this paper provides theoretical support for exploring how to further establish media platforms.

Based on the characteristics of the middle-aged and elderly consumer groups, this paper discusses the feasibility of combining intelligent recommendation and speech recognition to optimize the shopping page. Combined with the existing excellent cases and strong theoretical basis, the middle-aged and elderly groups in the data are subdivided through K-means++, and the portraits of users are portrayed. the data processing and analysis are attempted, and the flow pool is set up for APP development. the connection with relevant platform channels is attempted to integrate information and promote the R & D landing.

Based on the current situation of online shopping market, through targeted research, this paper explores the specific improvement measures of e-commerce platform, and tries to take the form of lap, screen products with high cost performance from each e-commerce platform, and present them to the middle-aged and elderly according to the principle of font amplification and simple interface after extracting key information of products.

The established APP pre-model is compared with other similar APPs to establish a feedback optimization mechanism. First of all, a small range of applicable, for the promotion of the market is not suitable for non-standard settings to optimize and upgrade. Always adhere to the principle of aging first, and absorb and adopt the relevant suggestions put forward by users. Follow the front end of the industry, grasp the general direction, and strive to promote the media to deeper areas.

3.1 RESEARCH ON THE MARKET DEVELOPMENT OF MIDDLE-AGED AND ELDERLY ONLINE SHOPPING

Through descriptive statistical analysis of the basic information of the respondents, it is found that both urban and rural middle-aged and elderly people have a certain understanding of online shopping. Limited by economic level and social infrastructure, rural online shopping is slightly lower than urban. But for the online shopping of middle-aged and elderly people, the attention and support of the whole society show a ' one-sided ' trend, which reflects the public ' s affirmation of the online shopping trend of middle-aged and elderly people. Most middle-aged and elderly people have the intention of online shopping. Based on this phenomenon, the intervention of large factories and investment capital will increase the development potential of the online shopping market of the ' silver hair ' group. In addition, more middle-aged and elderly people buy daily necessities, clothing, food, household appliances online, pay attention to practicality. This requires the standardized operation of e-commerce platforms to ensure the commodity quality of the online shopping market for middle-aged and elderly people, so as to stimulate market vitality. Through the establishment of the Spearman model, it can be seen that among the influencing factors of online shopping satisfaction proposed by middle-aged and elderly people, they are more inclined to online shopping platform issues, such as page complexity, after-sales service attitude, and concerns about counterfeit and inferior products. E-commerce platforms and society should make relevant measures in this regard.

3.2 FEASIBILITY STUDY ON E-COMMERCE PLATFORM AND MEDIA DEVELOPMENT FOR MIDDLE-AGED AND ELDERLY PEOPLE

Through the comprehensive analysis of the main influencing factors of online shopping for middle-aged and elderly people, it is concluded that the optimization of shopping page by combining intelligent recommendation and speech recognition will greatly improve the enthusiasm and satisfaction of middle-aged and elderly consumers in online shopping. the simple and easy-to-learn platform will become an important link for middle-aged and elderly people, a typical consumer to participate in online shopping. In short, improving the feasibility of deep development of media platform research and development will greatly improve the scale economic benefits of middle-aged and elderly markets.

With the development of aging society, the whole society has paid more attention to the life of middle-aged and elderly people, and the emergence of the epidemic has increased the market quota of online shopping. the middle-aged and elderly consumer market ushered in an important period of strategic opportunities. Therefore, the in-depth development and innovation of the online shopping middle-aged and elderly market not only solves

the existing contradiction between supply and demand, but also injects vitality into economic development. It can better adapt to the current social development trend.

3.3 PLATFORM TECHNICAL SCHEME

In order to make the middle-aged and elderly people better integrate into the online shopping market, the project constructs a shopping platform exclusive to the middle-aged and elderly people - - goods APP. In cooperation with Taobao, Jingdong, Pinduoduo and other platforms, the product information is focused on screening, in order to expand the font, the page is concise and clear, and the page is displayed, with voice input and voice playback functions. the search content is double audited to prevent the elderly from being cheated, and the flow pool intelligent recommendation system is designed to recommend the top-ranking items to the elderly and reduce the selection of shopping. Voice input and playback functions, dual audit and flow pool intelligent recommendation system technology have been realized in Douyin and other APPs. So the technology of this project is scientific and feasible.

Based on the above analysis, it shows that the research of this project is feasible in terms of content, method and implementation. APP part of the page is as follows. As shown in Fig. 1.

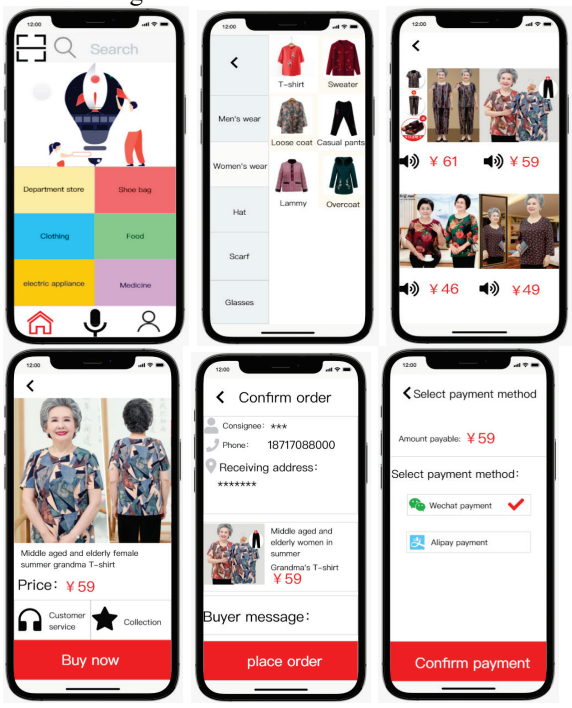

Figure 1: APP section page

4. PURPOSE AND SIGNIFICANCE

Under the trend of aging development, focusing on the middle-aged and elderly economy, starting from the contradiction between online shopping supply and demand of middle-aged and elderly people, this paper collects the understanding of online shopping of middle-aged and elderly people, analyzes the online shopping preferences of middle-aged and elderly people, understands the favorite online shopping products of middle-aged and elderly people of different ages, analyzes the willingness of middle-aged and elderly people to participate in online shopping, and studies the factors affecting the participation of middle-aged and elderly people in online shopping, so as to find ways to improve the willingness of middle-aged and elderly people to participate in online shopping, and provide development direction for middle-aged and elderly e-commerce platforms, so as to create a more suitable online shopping environment for middle-aged and elderly people. From the perspective of user experience, this paper analyzes the shortcomings of online shopping, and provides some reference for the future development direction of online shopping platform, in order to promote the development of middle-aged and elderly online shopping market. Solve the contradiction between supply and demand at the same time stimulate the vitality of the elderly economy.

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Evaluation of Higher Education System based on index Dimension Reduction

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Abstract: Education industry is an important part of the service industry. Due to the uniqueness of national higher education system, the research and evaluation of a country's higher education system has become a hot spot. Therefore, a model is established to solve these problems. For the model, firstly, the relevant indicators of China, the United States, Germany, Vietnam and higher education are collected, and the framework of the evaluation model is listed: Topsis model based on entropy weight method, and the improved countries are selected; Principal component dimension reduction analysis and factor dimension reduction analysis further concentrate indicators; Topsis model based on entropy weight method was used to evaluate the health degree of the system.

Keywords: Entropy Weight Method; Principal Component Analysis; Factor Analysis; Evaluation of Education System

1. PROBLEM ANALYSIS

This topic requires the development of a model that can be used to assess the health of higher education systems in any country, and explores the establishment and vision of education systems. Our work mainly includes the following aspects [1-4]:

Based on the data collected in four countries, the model of education evaluation system is established, and a national higher education system with room for improvement is selected. Based on principal component analysis, the known data indexes were combined into several unrelated indexes, and the newly established indexes were named. [5] Finally, the corresponding analysis and suggestions were put forward. Based on factor analysis, the index data of selected countries were analyzed and the above analysis was further verified. Based on the above model, the influential indicators were found through factor analysis method, and the influence of the factors on the education system was properly analyzed according to the influential factors. [6] in addition, the entropy weight method and Topsis were combined to establish a model for evaluation, including the implementation of effective measures to represent the indicators and increase investment.

2. MODEL

2.1 DATA PROCESSING

First, select the four countries, namely China and Vietnam, the United States, Germany, and then select the eight indicators associated with higher education system, namely, universities, education spending as a percentage of GDP [7-8], undergraduate course graduation rate, the development of higher education levels, number of PhD graduates, students and graduates employment, proportion of university teachers and students, QS number in the top 100 university.

2.2 TOPSIS MODEL BASED ON ENTROPY WEIGHT METHOD

(1) Identify a range of factors related to the higher education system

There are many factors affecting the higher education system. Firstly, eight representative indicators are selected: the number of universities, the proportion of education expenditure in GDP, the undergraduate graduation rate, the number of doctoral students, the number of international students, the graduate employment rate, the proportion of teachers and students to universities, and the number of top 100 universities in QS. If these five indicators are set as evaluation factors, the evaluation factor is set as X_j={x_1, \ x_2, x_3, x_4, x_5, x_6, x_7, x_8}

(2) Assessing higher education systems in different countries

Eight indicators are used to compare and measure a country's higher education system. Therefore, the following Table 1 is obtained:

Tab 1: Indicators of higher education systems

The ev aluation model	Indicators of higher education systems							
	University numbe r	Educatio n spendi ng as a percentag e of GD P	Undergra duate gr aduation Rate	Number of PhD graduates	Number of stude nts studi ng abroa d	Graduate employm ent rate	Percenta ge of co llege stu dents an d faculty	Number of univer sitier in the top 100 rank ed by Q S
China	2914	4.04	95	62578	140637	93.5	17.6	6
USA	3621	7.3	60	55195	1075496	82	14.41	27
Germany	426	4.9	34	29000	282000	91	12.3	3
Vietnam	235	5.7	96.33	24000	13758	38	20.28	0

(3) Standardized data processing

The original matrix of education system state can be expressed as evaluation factor subset $X_j = \{x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8\}$ and higher education systems in different countries:

$$A = \begin{pmatrix} a_{11} & \cdots & a_{18} \\ \vdots & \ddots & \vdots \\ a_{81} & \cdots & a_{88} \end{pmatrix}$$

Due to the size difference, the initial values in the original matrix are difficult to compare, so these indicators need to be standardized. the processed standard matrix is:

$$B = \begin{pmatrix} b_{11} & \cdots & b_{18} \\ \vdots & \ddots & \vdots \\ b_{81} & \cdots & b_{88} \end{pmatrix}$$

(4) Calculate the information entropy of each index

According to the calculation formula of information entropy:

$$S_j = -k\sum_{j=1}^{n} f_{ij}\, lnf_{ij}, j = 1,2,3,4,5$$

$$f_{ij} = \frac{b_{ij}}{\sum_{i=1}^{n} b_{ij}}, k = \frac{1}{lnn}$$

When $f_{ij} = 0, f_{ij}lnf_{ij} = 0$, so as to obtain the information entropy vector of each evaluation index.

(5) Calculate the weight of each evaluation index

Set the weight vector of each evaluation index as $W = (w_1, w_2, w_3, w_4, w_5)$. According to the calculation formula of index weight:

$$w_j = \frac{1 - E_j}{m - \sum_{j=1}^{m} E_j}$$

2.3 PRINCIPAL COMPONENT ANALYSIS

Suppose there are n samples and P indicators, then the sample is n × the of P matrix X is:

$$x = \begin{bmatrix} x_{11} & \cdots & x_{1p} \\ \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{np} \end{bmatrix}$$

You need to find a new set of variables z_1, z_2, z_3, z_4, z_5. Then they need to meet:

$$\begin{cases} z_1 = l_{11}x_1 + l_{12}x_2 + \cdots + l_{1p}x_p \\ z_2 = l_{21}x_1 + l_{22}x_2 + \cdots + l_{2p}x_p \\ z_3 = l_{31}x_1 + l_{32}x_2 + \cdots + l_{3p}x_p \end{cases}$$

Analysis steps:

(1) Standardized sample matrix. (2) Calculate the covariance matrix of standardized samples; (3) Calculate the eigenvalue and eigenvector of R. (4) Calculate the principal component contribution rate and cumulative contribution rate. (5) Write down the principal components and analyze their meaning.

3. SOLUTION OF MODEL

3.1 SELECTION OF COUNTRIES TO BE IMPROVED

Through the analysis of the evaluation model, Vietnam is finally selected as the country to be improved.

3.2 REANALYSIS OF IMPROVED COUNTRIES

Using the indicators after principal component analysis, the evaluation model is used again to make a reasonable evaluation of Vietnam, and the factor analysis method is used to select the impact indicators that have a great impact on Vietnam, and put forward relevant suggestions to improve the education level of Vietnam.

4. MODEL TEST

4.1 FACTOR ANALYSIS TEST

According to kmo and Bartlett test of SPSS:

Tab 2: KMO and Bartlett tests

Kmo sampling suitability quantity		0.912
Bartlett sphericity test	Approximate chi square	709.002
	Degrees of freedom	26
	Significance	0.000

(1) As shown in Tab 2: Kmo test: kmo > 0.9 indicates that it is very suitable for factor analysis.

(2) As shown in Tab 2: Bartlett spherical test: where the p value corresponding to the statistical data is less than 0.05(95% confidence level), reject the null hypothesis, and consider that the correlation coefficient cannot become the identity matrix, that is, there is correlation between the original variables, which is suitable for factor analysis.

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Research on Value Characteristics of Consumer Behavior Based on Factor Analysis

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Abstract: With the continuous development of the Internet, companies in various fields paymore and more attention to expanding the channels of Internet customers. A fast and effective model is needed to introduce fresh and active users, improve users' desire to buy products and enhance the company's. The purposeof brand influence. However, how to identify high-quality users and channels and optimize marketing costs has always been a pain point for companies. Based on this, this paperdealswith user information throughdata preprocessing, data visualization, factor analysis and multiple linear regression. Method, such asanalysisof user behavior data. Then judge the value of users, and make special marketing strategies for users. Now, we are promoting at a low cost to achieve the goal of improving the conversionrate of users.

Keywords: Multivariate linear regression; TOPSIS scoring factor analysis of consumer behavior.

1. INTRODUCTION

In recent years, the popularity of the Internethas brought earth-shaking changes to the traditionalmarketing concept in the market. Theirstrong competitiveness is actively expanding the channels of obtaining customers from the Internet [1-2], thus introducing fresh and active usesfor the company's products from various aspects. Users, improve the user's desire to buy, enhance the company'sbrand influence. Enterprises constantly adapt to the development of the times, the traditional camp. Marketingideas and strategies to improve, to further tap the useful information for themselves, and keep continuous learning anddiligence. Ability, lookingfor the best customer channels. However, it hasbeen a long time for households to identify high-quality users and channels and optimizemarketing costs. Can't be solvedeffectively. In this paper, weneed to judge the value of usersby analyzing the given userbehavior data. Users are divided into important users, ordinary users and development customers according tocertain criteria. And thenuse for different categories. Make special marketing strategy, realize low-cost promotion, and reach the standard of improving user conversion rate.

2. MODEL BUILDING

First of all, in order to avoid the influence ofindex dimension, we get three grades by combining the scoring criteria. Level of indexset, standardize the original data to the sameorder of magnitude, and then comprehensive comparative analysis. In addition, after we do the positive treatment on the factors, we standardize the three factors, so as to get more. Scientific comprehensive scoredata.

2.1 DATA PREPROCESSING

Data preprocessing includes: removing unique attributes, data standardization, normalization, feature selection (dimension reduction).

(1)Remove unique attributes: Unique attributes are usually ID attributes, which can't describe the distribution law of the sample itself. Here, the ID attribute represents the basic attribute characteristics of users. We need to determine the categories of users with different IDs, so the ID cannot be removed, but we can remove the two unique attributes such as equipment and mobile phone model. At the same time, because the login days cannot be negative, we deleted the data of -1 login days.

(2)Standardized data processing: First, in order to avoid the influence of index dimensions, we get three equal-grade index sets by combining with score evaluation criteria, standardize the original data to the same order of magnitude, and then comprehensively compare and analyze. In addition, after we have done the positive processing on the factors, we have standardized the three factors to get more scientific and reasonable comprehensive score data.

(3)Feature selection (dimension reduction): We do factor analysis on the data in login_day except user id, attention to WeChat official account 1, attention to WeChat official account 2, adding sales friends and joining the group, and finally get three factors, in order to get the comprehensive score of each user, and classify users according to certain criteria.

(4)Positive data processing: As a result, three factors are finally obtained, the first factor is called the number of study courses, the second factor is called purchase desire, and the third factor is called login interval. Since the login interval is a very small index, it needs to be positively processed and converted into a very large index. the formula for converting a very small index into a very large index is as follows: $\tilde{x}_i = \max - x$

2.2 KMO\BARTLETT'S TEST

In this paper, KMO and Bartlett were used totest the raw data to verify whether the raw data could be applied to the factor analysis model. The test results are shown in Table [3-4].

Table 1 KMO and Bartlett's test

Sampling suitability quantity of KMO.		0.716
Bartlett sphericity test	Approximate chi-square	398871.722
	Freedom	55
	Significance	0.000

The test results showed that factor analysis could be performed using the original data at95% confidence

intervals.

2.3 R-TYPE FACTOE MODELING

Constructing the relationship between the 11 indicators and the common factor yields the following determinant.

$$\begin{cases} x_1 = u_1 + a_{11}f_1 + a_{12}f_2 + \cdots + a_{1m}f_m + \varepsilon_1 \\ x_2 = u_2 + a_{21}f_1 + a_{22}f_2 + \cdots + a_{2m}f_m + \varepsilon_2 \\ \cdots \\ x_{11} = u_{11} + a_{111}f_1 + a_{112}f_2 + \cdots + a_{11m}f_m + \varepsilon_{11} \end{cases}$$

a_{ij} denotes the covariance between the origin alvariable xiand the common factor f_j, $a_{ij} = \mathrm{cov}_{ij}(x_i, f_j)$. Extracting $a_{ij}$from the determinantconstructs the A matrix. The whole determinant can be abbreviated as: $x = \mu + Af + \varepsilon$

where $f = (f_1, f_2, \ldots, f_m)$ $(m \leqslant 11)$ is the common factor vector, $\varepsilon = (\varepsilon_1, \varepsilon_2, \ldots, \varepsilon_m)$ is the special factor vector, $A_{s\times m} = (a_{ij})$ is called the factor loading matrix, and the rank of the A matrix is assumed to be m.

The dependence of the original variable xi on the common factor and the contribution ofthe common factor f_j to the overall index data are solved by calculating the sum of squares of rowelements h_i^2 and the sum of squares of column elements g_i^2 of the A matrix, respectively, and then the most dominant composite factor is selected.

where the sums of squares of the row and column elements are, respectively: $h_i^2 = \sum_{j=1}^{m} a_{ij}{}^2 g_i^2 = \sum_{i=1}^{p} a_{ij}{}^2$

2.4 DETERMINE THE NUMBER OF FACTOES

Three public factors were extracted by the cumulative contribution of the variance interpretation table and the turning point of the gravel plot, and the variance contribution of theextracted three public factors were 30.839%, 29.029%, and 11.458%, respectively, and the cumulative variance contribution of the first three public factors had reached 71.326%, that is the first three public factors could contain 71.326% of the information of the original index, so the first three public factors werechosen the first three common factors were chosen to reflect the data of the overall index.

2.5 FACTOR SCORE

Factor analysis is to represent the variables as linear combinations of public and special factors, and in this paper, we can reverse thepublic factors as linear combinations of the original variables to obtain the factor scores, and the generated component score coefficient matrix is shown in Table 2.

Table 2 Component score coefficient matrix

	ingredient		
	1	2	3
login_day	0.241	0.079	0.261
login_diff_time	0.007	0.229	0.482
distance_day	0.031	0.027	0.590
course_order_num	0.076	0.445	-0.311
finish_num	0.279	-0.188	0.001
coupon	0.076	0.464	-0.249
study_num	0.185	0.025	-0.069
login_time	0.153	-0.123	-0.209
learn_num	0.288	-0.190	-0.002
camp_num	0.107	-0.185	-0.193
launch_time	0.157	0.322	0.147

From the above table, the expressions of the three principal components can be obtained.

$f_1 = 0.241x_1 + 0.007x_2 + 0.031x_3 + \cdots + 0.157x_{11}$

$f_2 = 0.079x_1 + 0.229x_2 + 0.027x_3 + \cdots + 0.322x_{11}$

$f_3 = 0.261x_1 + 0.482x_2 + 0.590x_3 + \cdots + 0.147x_{11}$

The first principal component $f_1$has a larger coefficient of positive loadings for the number of study sessions and the number of completed sessions, so the first principal component is said to be the number of studies; the second principal component $f_2$has a larger coefficient of positive loadings for the number of coupons received and the number of unfinished orders with annual classes, so the second principal component is said to be the desire to purchase; the third principal component f_3 has the largest coefficient of positive loadings for the logging interval and the numberof days between the last logging and theendof the period, so the third principal component is said to be the study interval. The threeprincipal components are more intuitiveto determine whether users will eventually place orders from three perspectives:learning quantity, purchase desire, and learning interval.

3. CALCULATION OF TOPSIS SCORE

Through the analysis of the three principal component indicators, it can be seen that the learning quantity and purchase desire are themaximum indicators, while the learning interval is the minimum indicator. Set up the scoring model based on TOPSIS.

3.1 FORWARD TREATMENT

As the learning interval is a minimal index, we need to forward the minimal index and transform it into a maximal index [5-6]. The formula for transforming the minimal index into amaximalindex is as follows: $\tilde{x}_i = \max - x$

Among them, $\tilde{x}_i$ is the index data after the very small index is turned forward, x is the originaldata, and max is the largest value among similar indexes.

3. CALCULATE THE SCORE AND NORMALIZE IT

Define the distance between the i-th $(i = 1, 2, \ldots, n)$evaluation object and the maximum value and the minimum value as follows:

$$D_i^+ = \sqrt{\sum_{j=i}^{n} w_j\left(z_j^+ - z_{ij}\right)^2}$$

$$D_i^- = \sqrt{\sum_{j=i}^{n} w_j\left(z_j^- - z_{ij}\right)^2}$$

The TOPSIS score corresponding to whether the user places an order is: $S_i = \frac{D_i^-}{D_i^+ + D_i^-}$

4. EVALUATION MODEL OF MULTIPLE LINEAR REGRESSION

4.1 TEST OF SIGNIFICANCE

To test whether there is a real linear relationship between the dependent variable and the independent variable [7-8], the significance test is carried out first:

Test of significance				
model	Model fitting condition	likelihood ratio test		
	-2 log likelihood	chi-square	freedom	significance
finally	0.000	99.779	99	0.0015

P=0.0015<0.05, that is, within 95% confidence interval, the regression equation is considered meaningful, and the

model is effective.

4.2 USING MULTIPLE LINEAR REGRESSION METHOD

The following multiple linear regression is used to predict each index coefficient. Let three principal components be independent variables and y be dependent variable, and satisfythe linear relationship as follows:

$$y_i = \beta_0 + \sum_j B_j f_{ij} + \mu_i,$$

$$i = 1,2,\dots,n\ j = 1,2,\dots,p$$

Where $\beta_0, \beta_1, \dots, \beta_p$ is the regression coefficient, μ_i is an unobservable disturbance term that satisfies certain conditions. Make the predictedvalue.

$$y_i = \beta_0 + \sum_j B_j f_{ij} + \mu_i,$$

$$i = 1,2,\dots,n\ j = 1,2,\dots,p$$

Where is u_i residual, which represents the numerical difference between the actual value and the predicted value. Based on the above analysis, we define f_1 as learning quantity, f_2 as purchasing desire and f_3 as learning interval. The multiple linear regression evaluation model of whether users place orders is constructed as follows:

$$y = \beta_0 + \beta_1 f, + \beta_2 f_2 + \beta_3 f_3$$

4.3 CALCULATE REGRESSION COEFFICIENT

model		Unstandardized coefficient		Normalization coefficient	t	significance
		B	Standard error	Beta		
1	(constant)	0.140	. 000		93085513	0.000
	x	0.287	. 000	1.945	474520772	0.000
	y	0.287	. 000	1.664	344314503	0.000
	z	0.287	. 000	0.761	187352929	0.000

After solving the index coefficient, the regression equation is as follows:

$$y = 1.945f_1 + 1.664f_2 + 0.761f_3$$

From the above-mentioned factor model, multiple linear regression evaluation model and TOPSIS score, we can well understand that ourmodel has a good fitting effect. Based onthis, we testedthe sensitivity of the model, and further fitted the result of whether the user would place an order with the given data, and judged that the fitting effect of the model reached 95%, indicating

that the fitting effect of the model was good.

5. EVALUATION OF MODEL

(1) In order to evaluate whether the user finally places an order or not, we divide the influencing factors into three categories through factor analysis and dimension reduction, whichmakes themodel simpler.

(2) The use of multiple linear regression combined with TOPSIS comprehensive evaluation when weighting each index avoids the influence of individual subjective factors.

(3) In this paper, we consider the influence ofmany factors when solving whether the user finally places an order, which makes the established model more reliable and applicable.

6. GENERALIZATION OF THE MODEL

This model is applicable to a wide range of fields, realizes the overall analysis of whether users ultimately buy under the influence of multiple factors, can be applied to a variety of sales problems, and plays an extremely important role in improving users' desire to buy, optimizing marketing costs and distinguishing high-quality users.

7. CONCLUSIONS AND SUGGESTIONS

According to the research of users' consumption behavior, it is found that whether users place orders or not is related to multiple factors. After the model is established, it is finally concluded that whether users place orders or not is closely related to such factors as watching time, active time, login interval, age, etc. Now, some suggestions are put forward for these factors.

7.1 CLASSIFY USERS AND GIVE DIFFERENT PREFERENTIAL TREATMENT.

Login duration can be used as one of the indicators to distinguish the importance of users, so we can divide users into three categories according to the division of login duration: membership, silver and bronze. Different incentives are given to these three types of users respectively: member users enjoy full discount of products and send small gifts; Silver can enjoy the relief of large coupons; However, bronze users can only enjoy occasional coupon grabbing activities, so as to stimulate users' promotion psychology and achieve the purpose of increasing users' consumption.

7.2"MEMORY" PUSH

Most users will log in again within 0.8-1 days after logging in. the company monitors the online time of users this time, and sets the time to push the products browsed by users this time, and push similar products and related products again.

7.3 GRADING, TAKING DIFFERENT MEASURES

According to the number of users, the region is divided into three levels: sales Golden Zone, sales retention area and sales barren area. Sales Golden Zone has a larger user flow. In these areas, you can put the products that users are interested in in in your own golden position, put the content with the best transformation potential there, and don't waste every exposure opportunity, so as to ensure the click volume and order rate of users; As for the sales retention areas, which belong to areas with high sales flow, users in these areas are also the main objects of sales, so we should strengthen publicity and promotion, and add novel elements to give users a good visual experience and consumption experience; for poor sales areas, which belong to areas with low sales volume, this part of users has poor stickiness and low consumption contribution. Therefore, the company should reduce the product launch, design eye-catching product appearance, and initially improve users' attention.

7.4 PUSH PRODUCT TYPES BASED ON AGE

The age of consumers is concentrated in the middle-aged and old age group (46-99). the company should conduct market research, collect the products with the highest sales volume in this age group, and increase the efforts of

putting in the products needed by this group of people. For example, middle-aged users are busy and need to push products or methods to relieve fatigue and promote sleep; the elderly users are in poor health, so they need to push health care, health care products and some courses to strengthen their health. According to the different needs of different age groups, different types are provided.

7.5 INCREASE THE PERFERENTIAL EFFORTS FOR USERS TO PURCHASE THE GOLDEN PERIOD.

At the time of gold purchase, the company can enhance the popularity of the store by means of disguised discounts, sample promotion, red envelope promotion, etc., and promote customers to place orders again in a short time, thus effectively forming customer loyalty.

Discount in disguise: postage-free. the price of a single product is slightly lower than that required for postage-free. Buy two or more products together to meet the requirement for postage-free. Combine the products for a discount.

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Photoelectric Intelligent Garbage Sorting Vehicle

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Abstract: With the development of the Times and the progress of society, more and more garbage is produced. At present, most small and medium-sized garbage plants still need a large number of porters when classifying and transporting garbage. the work repeats machinery and has high labor intensity, which is suitable for mechanization improvement and reducing labor costs. the intelligent car designed in this paper has fast speed, stable driving process, and has camera recognition and intelligent grasping functions. It also uses ant colony system to realize intelligent trajectory planning of the car. It is an integrated system, which is simple, efficient and low cost, and can effectively improve work efficiency and reduce labor costs.

Keywords: Garbage classification; Ant colony system; Intelligent vehicle

INTRODUCTION

With the continuous expansion of city size and population, the annual growth rate of garbage output in China is more than 10 percent, and nearly 150 million tons of municipal garbage is generated every year. Although garbage classification has been promoted in China, people in many places lack the awareness of garbage classification, which also leads to more tasks in the garbage sorting link. [1] Garbage encircles one-third of China's cities, occupying 750, 000 mu of land, according to a survey released recently [2]. Garbage siege is becoming an increasingly difficult problem for Chinese cities. There is an urgent need for more efficient treatment of urban garbage in China.

Although garbage classification has been achieved in some areas in recent years and some achievements have been made, the garbage classification mode at the present stage is not precise enough. For example, kitchen garbage is still mixed with a large amount of plastic, glass, paper and other garbage, which cannot be directly processed by kitchen garbage processing equipment. In order to meet the requirements of on-site processing, These areas have to carry out artificial light secondary classification of household garbage after the first classification, in order to meet the standards of improving the purity of food waste disposal [3]. However, it is reported that this work has already been carried out in some areas, with tons of kitchen waste provided by waste recycling plants. However, due to the workload of sanitation workers, labor cost problems and declared failure. It can be seen that manual garbage classification is not feasible.

In this paper, on the spot, instead of the cumbersome system operation, convenient to safety and highly intelligent, designed a model suitable for multiple application scenario of garbage sorting. It greatly simplifies the input of manpower and has many functions such as garbage identification, accurate grasping and intelligent route planning. Besides, it is easy to operate and high efficiency, which is of great significance to reduce the work burden of sorting workers.

DEVICE DESCRIPTION

The car realizes functions including fast driving and turning, camera recognition, intelligent garbage capture(The schematic diagram of the manipulator is shown in Figure 1), intelligent trajectory planning and so on. So as to realize the search, identification, classification and emergency transport capacity of the car.

In order to improve the transport capacity of the car, fast action and turning function are necessary features, and also need to have accurate identification ability, grasp ability and excellent route planning, so that more garbage can be captured.

There is also a camera recognition feature that can identify the color of the car under the car, the color of the garbage in front and the color of the pile. For example, when the yellow accumulation point is set artificially, avoid being near the black accumulation point [4]. Similarly, correctly identifying the type of garbage ahead will be the basis of successful sorting; After capturing garbage, it is necessary to correctly put it into the corresponding color area to identify the color of the area in front.

Intelligent grasping of garbage requires accurate grasping of garbage and avoiding dropping and destruction of garbage. Accurate control of the force is very important. Here we use a manipulator with a bottom, so that the garbage is not easy to fall because of mistakes [5]. In addition, we set up several common garbage grasp strength, manipulator can according to the camera to identify the object after the signal through the MCU control grasp strength, to ensure that the garbage is not destroyed.

Intelligent trajectory planning enables the car to transport the garbage to the corresponding location. through a shorter distance.

Figure 1. Mechanical arm

The working process is as follows:

First, the car is sorting through own photoelectric sensors

for autonomous navigation and search for, find to specify garbage gathering place, and then use manipulator grasping, a take a certain quantity of garbage, through the sensor to judge whether overload, reached after bearing limit stop scraping, then intelligent planning based on ant colony algorithm is the most reasonable route, get somewhere after they sort the garbage, Use the camera recognition function to judge the classification mark below, and then rotate the camera to identify the garbage and determine whether the garbage is consistent with the classification point. If so, the garbage will be placed to the classification point; if not, the next garbage category will be judged [6]. Then drive to the next classification point according to the planned route, until the garbage in the carrying device is put into place, return to the garbage collection point for the next garbage capture, repeat this process until the garbage classification point is completely sorted.

TECHNICAL ROUTE AND FEASIBILITY ANALYSIS

First quick action ability need high performance drive, only a strong ability to drive can ensure maximum motor, besides must have the corresponding tire strengthen resistance to guarantee the tyres grip, not body occurred in the process of high-speed rollover and the phenomenon of slippage, car body set to streamline reduce air resistance to accelerate the car driving, make the tuyere is blunt motor, To achieve the purpose of cooling the motor.

The recognition function of the camera can adopt the computer imaging function, and the OpenMv camera and STM32 chip can be used to solve the problem of identifying the garbage and the color of the garbage accumulation place [7]. the color sensor module can also be installed at the bottom of the car to identify whether it is the pile place of the team. OpenMv module is an open source, low-cost, powerful and advanced machine vision module. With STM32H7 as the core and OV7725 camera chip integrated, the core machine vision algorithm is efficiently implemented in C language and Python programming interface is provided on the small hardware module. Machine vision algorithms on OpenMV include color block search, face detection, eye tracking, edge detection, marker tracking, etc. It can be used to detect illegal intrusion, screen defective products, track fixed markers and so on. Users can easily complete a variety of machine vision-related tasks by writing simple Python code.

Garbage grabbing device is in the front of the car, when it is determined that there is garbage in front, you can use the two small claws with a thin bottom to grab garbage, which can well avoid garbage damage and falling.

The path planning of garbage can also be designed through OpenMv camera and STM32 chip. Excellent track planning can make the car get the garbage first, which can be used to make the car quickly find the garbage and put it to the designated place in the actual production and application of the project. Here, the project plans to use ant colony algorithm to optimize the driving track of the car.

Ant colony is a very common insect colony, and the birth of ant colony algorithm is inspired by the behavior of ants foraging. In the process of crawling, ants will release a pheromone substance and form a pheromone track [8]. Ants can determine the next direction of foraging through the pheromone on the ground. When ants find a direction with a high concentration of pheromone during foraging, they will consciously forage for food in the direction with a high concentration of pheromone.

The proposed ant colony algorithm and related research process are as follows: first observe the behavior of real ants in the foraging process in nature, then build the behavior model of real ants in the foraging process, and finally use these behavior models to design the relevant algorithm. These algorithms can solve swarm and optimization problems. Different ant colony algorithms can be derived from different ant behaviors. the relation between ant behavior and ant algorithm is shown in Figure 2:

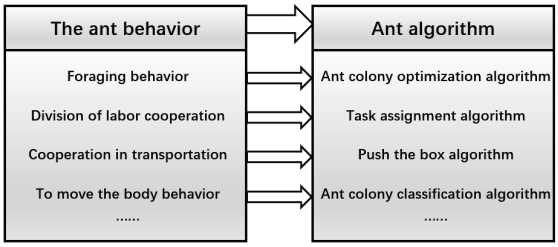

Figure 2. Diagram of ant behavior and ant algorithm

THE KEY PROBLEM

Garbage trajectory planning is the most critical step in this project, which needs to be simulated and realized by ant colony algorithm.

Here are the basic contents of ant colony algorithm:

Define parameters

Set the ant number K, expected heuristic factor β, pheromone heuristic factor α, pheromone volatilization coefficient, the maximum number of iterations is set as $N_{\max}$, starting point S, target point E, starting taboo table $tabuk$ as empty set, and all ants start from the starting point.

Probability selection

The concentration of pheromone determines the direction of the ant's next movement in the process of searching the optimal path. Suppose that at time t, the probability of ant from position point i to point j is $p_{ij}^{k}(\mathrm{t})$:

$$p_{ij}^{k}(\mathrm{t})=\begin{cases}\dfrac{[\tau_{ij}(\mathrm{t})]^{\alpha}\cdot[\eta_{ij}(\mathrm{t})]^{\beta}}{\sum[\tau_{ij}(\mathrm{t})]^{\alpha}\cdot[\eta_{ij}(\mathrm{t})]^{\beta}} & \text{if } j\in \mathrm{J_k}(i)\\ 0 & else\end{cases} \quad (1)$$

In Formula (1), $J_k(i)$ is the set that the ant at position point i can select for all the following paths; $\tau_{ij}(t)$ is the pheromone concentration from point i to point j at time t; Is the heuristic factor, and its size is the reciprocal $\eta_{ij}(t)=\dfrac{1}{d_{ij}}$ of the distance between point i and point

j (d_{ij} is the distance length between point i and point j); α and β are heuristic factors of pheromone and expectation respectively [9].

Path selection and saving

When each ant transfers the next node j from node I, node j needs to be added to tabu table $tabuk$. Then step (1) of Formula (1) is repeated. When all ants reach the end point, the cycle is ended and the path length of each ant is stored.

Pheromone update

After all ants have completed a path search, the individual ant paths are then updated with pheromones. the process of pheromone volatilization is set as numerical variation of volatilization coefficient $\rho(0<\rho<1)$. Pheromone update equation is as follows:

$$\tau_{ij}(t+1)=(1-\rho)\tau_{ij}(t)+\Delta\tau_{ij}(t) \quad (2)$$

$$\Delta\tau_{ij}(t)=\sum_{k=1}^{m}\Delta\tau_{ij}^{k}(t) \quad (3)$$

$$\Delta\tau_{ij}^{k}(t)=\begin{cases} Q/L^{k} & \text{if } k \text{ chooses } i \text{ to } j \\ 0 & \text{else} \end{cases} \quad (4)$$

In Formula (2), the pheromone increment of the distance from node i to node j; in Formula (3), $\Delta\tau_{ij}^{k}(t)$ represents the pheromone left by the KTH ant in the distance from node i to node j. In Formula (4), Q is a constant, referring to the total amount of pheromones left by ants after the whole path search. L^{k} Represents the path length of the KTH ant in this circular search [10].

(5) Iteration cycle

After updating pheromones in each cycle, all ants were relocated to the starting position, and the next round of path planning began. After N iterations, an optimal path was selected from all paths.

(6) the flow of traditional ant colony algorithm is shown in the figure 3:

So that's the basic ant colony algorithm.

In this case, ant colony algorithm can be used to carry out intelligent planning for the trajectory of the car, so as to achieve intelligent planning for the trajectory of the car [11].

Features and innovations

Technical advantages

The smart car only needs a very small space to sort and treat garbage, and can work smoothly in various garbage plants to improve efficiency [12]. the intelligent car has fast speed, stable driving process, also has the camera recognition, intelligent grab function, but also through the use of ant colony algorithm to optimize the travel path, is an integrated system, the system is simple, efficient, low cost, can effectively improve work efficiency, save manpower.

Price advantage

In the study of the trolley in this question, in order to improve the application value of the trolley, and in consideration of some costs in actual industrial operation, the objects we use have higher cost performance [13]. Each module and quantity of garbage sorting vehicle is shown in table 1.

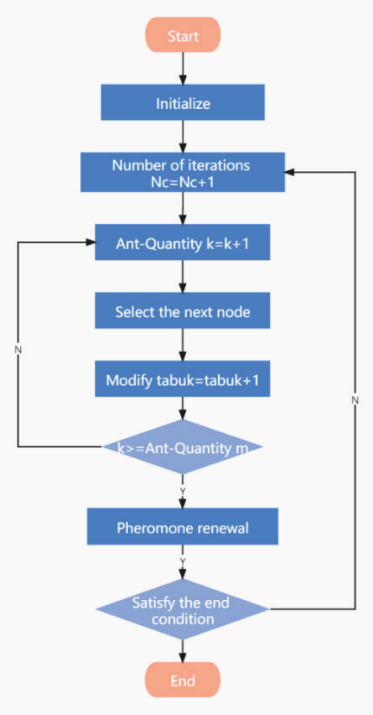

Figure 3 Flow chart of ant colony algorithm

Table 1. Each module and quantity of garbage sorting vehicle

module	quantity
OpenMV4H7Cam	1
stm32f407zgt6	1
car model	1
S3010 steering engine	1
AS1015	2
LM2940	4
XL6009	1
IR7843	8
IR2104	2
74HC02	2
MP1584	2
AMS1117	1
HCPL2630	2

In addition, ant colony algorithm has high efficiency in the application of moving cars. It belongs to bionics and is a search algorithm for finding the shortest and effective path in a specified area according to the law of ant foraging. In this application scenario, it has great advantages and conforms to the optimal trajectory of the car in the actual working environment, and can effectively reduce the economic cost caused by the potential time consumption [14].

It can be seen that whether hardware cost or running cost, the garbage sorting car designed in this paper has a very bright market prospect.

Algorithm advantage

Ant colony algorithm is an intelligent optimization algorithm inspired by the behavior of ants searching for food in nature. It is based on the study of the collective foraging behavior of real ant colonies in nature, and

simulates the real cooperative process of ant colonies [15]. the solution path is constructed by several ants, and the quality of the solution is improved by exchanging pheromones on the solution path.

The ant colony algorithm adopted has the following characteristics:

(1) the positive feedback mechanism is adopted to make the search process converge continuously and finally approach the optimal solution.

(2) Each individual can change the surrounding environment by releasing pheromones, and each individual can perceive the real-time changes of the surrounding environment, so individuals can communicate indirectly through the environment.

(3) Distributed computing is adopted in the search process, with multiple individuals performing parallel computing at the same time, which greatly improves the computing capacity and operation efficiency of the algorithm [16].

(4) the heuristic probabilistic search method is not easy to fall into the local optimal, easy to find the global optimal solution.

Ant colony algorithm is an excellent optimization algorithm.

RESULTS AND DISCUSSION

Garbage is a misplaced resource. Turning waste into treasure through garbage classification can effectively relieve the situation of resource shortage [17]. However, due to various reasons in modern society, such as people's weak awareness of environmental protection, local development conditions are not allowed and various types of garbage, China's current garbage classification and treatment system is not perfect, the classification effect is not ideal, and the coverage of the area is not wide enough. For many years, most of the domestic cities are simply landfill waste treatment [18]. With the rapid improvement of social civilization, people pay more and more attention to sustainable development, while the economic growth and the improvement of people's living standards inevitably determine that human beings need to develop more resources, which will undoubtedly lead to the depletion of natural resources and the deterioration of the natural environment.

The intelligent car designed in this paper has a simple structure and perfect functions. OpenMv camera is used to accurately identify the category of garbage [19]. the manipulator with the bottom ensures the stability of grasping garbage, which can prevent the subsequent process from falling due to road inequality; in addition, we are inspired by the behavior of ants into the ant colony algorithm, which can greatly improve the driving efficiency of the garbage sorting intelligent car, greatly save the potential time cost, convenient and efficient [20]. On the one hand, garbage sorting can save land resources, and the waste of the other party is classified and sent to recycling, which can greatly reduce the occupied land. Secondly, timely disposal of garbage can effectively avoid the spread of disease and environmental pollution. Our garbage sorting vehicle realizes efficient sorting and recycling through intelligent planning trajectory. on the other hand, garbage classification also improves the overall civilization quality of the society, helps to provide a more beautiful living environment for future generations, and helps to build ecological civilization.

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The Catalytic Process of C4 Olefins Prepared from Ethanol was Investigated based on Multiple linear Regression

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Abstract: C4 olefin is one of the important petrochemical basic raw materials. Ethanol is the raw material for the production and preparation of C4 olefin. At present, there are few specific studies on improving the selectivity of the gas product propylene in this reaction, so it is of great theoretical significance and application value to explore the technological conditions for the preparation of C4 olefins by ethanol catalytic coupling [1]. the results of the same catalytic combination reaction with different charging methods are slightly different. Therefore, multiple linear regression models of four catalyst factors, temperature on ethanol conversion and C4 olefin selectivity are established for different charging methods, and accurate fitting analysis is carried out. In order to enhance the reliability of the results, the final integration model is obtained by using the idea of ensemble learning and adding the Relief F algorithm model of feature extraction.

Keywords: Multiple linear regression model; Relief F algorithm integration learning

1. PROBLEM ANALYSIS

By analyzing the data, it was found that there were slight differences in the results of the same catalytic combination reaction under different charging methods. Therefore, multiple linear regression models of four factors of catalyst, temperature on ethanol conversion and C4 olefins selectivity were established for different charging methods, and accurate fitting analysis was carried out. In order to enhance the reliability of the results, the final integration model is obtained by using the idea of ensemble learning and adding the Relief F algorithm model of feature extraction. the weights of five factors obtained by the two models were averaged to obtain the effects of different catalyst combinations and temperatures on ethanol conversion and C4 olefins selectivity.

2 DEFINITION AND SYMBOL DESCRIPTION

In order to simplify problem analysis and data processing, symbols are stipulated as follows:

symbol	define
α	Ethanol conversion
β	C4 olefins selectivity
T	Reaction temperature
t	The reaction time
s_i	Catalyst combination variable
θ	C4 olefin yield
n	The number of particles
c_1	Individual learning factors of particles, also known as individual accelerators
c_2	The particle's social learning factor, also known as the social acceleration factor
ω	Inertial weight of velocity

3. MULTIPLE LINEAR REGRESSION MODEL

Firstly, based on the data analysis, this paper establishes multiple linear regression models of ethanol conversion rate and C4 olefins selectivity in different charging modes from the following five dimensions.

3.1 PREPARATION OF MULTIPLE LINEAR REGRESSION MODEL

1. Data standard interval mapping

The units of the five dimensional indicators selected are different, because the conversion rate of ethanol and the selectivity interval of C4 olefin are within the interval of (0, 100). the data are normalized to the interval of [0, 100], and the calculation method is as follows:

$$\text{Normalized data} = \frac{\text{Maximum value of data} - \text{Original data}}{\text{Maximum} - \text{Minimum value}} * 100 \quad (1)$$

2. Multiple linear regression model

Breaking down the catalyst portfolio into four dimensions, Co load s_1\Co/SiO2 The quality of loading $s_2$and HAP the quality of loading s_3 \Ethanol concentration per minute s_4, With temperature T Together constitute the influence of ethanol conversion rate, C4 Five dimensions of olefin selectivity:

$$\alpha_{A1} = \omega_1 s_1 + \omega_2 s_2 + \omega_3 s_3 + \omega_4 s_4 + \omega_5 T \quad (2)$$

$$\alpha_{B1} = \omega_1' s_1 + \omega_2' s_2 + \omega_3' s_3 + \omega_4' s_4 + \omega_5' T \quad (3)$$

$$\beta_{A1} = \omega_1'' s_1 + \omega_2'' s_2 + \omega_3'' s_3 + \omega_4'' s_4 + \omega_5'' T \quad (4)$$

$$\beta_{B1} = \omega_1''' s_1 + \omega_2''' s_2 + \omega_3''' s_3 + \omega_4''' s_4 + \omega_5''' T \quad (5)$$

ω_iDenotes the regression coefficient of the equation, $i = 1\backslash 2\backslash 3\backslash 4\backslash 5$.

Using Matlab statistical toolbox to establish multiple linear regression equation:

$$[b, bint, r, rint, stats] = regress(Y, X, alpha) \quad (6)$$

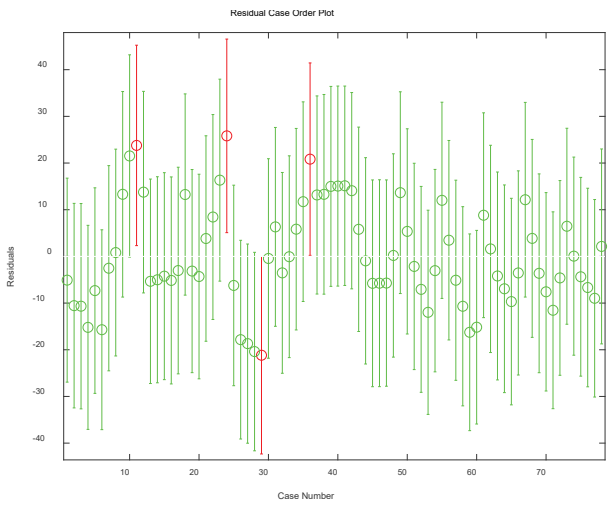
Where b is the regression coefficient, bint is the confidence interval of the regression coefficient, r is the residual, rint is the confidence interval of the residual, and alpha is the significance level. Stats contains four statistics, F test and estimated error variance S^2\The correlation coefficient $R^2\backslash P$. the correlation coefficient R^2 the closer it is to 1, the more significant the regression equation is. $F > F_{1-\alpha}(k, n-k-1)$, Refused to H_0, F the larger is, the more significant the regression equation is. the probability that corresponds to F $P < \alpha$ (α

Default is 0.05)When refused to H_0, the model works. the smaller the estimation error variance is, the more significant the regression equation is.

3.2 THE ESTABLISHMENT AND SOLUTION OF MULTIPLE LINEAR REGRESSION MODEL

1\Function of the relationship between different catalyst combinations and temperature on ethanol conversion:

According to the experimental data of loading mode Ⅰ and Ⅱ, multiple linear regression was carried out on the data by Matlab, residual graph was drawn and residual value and confidence interval were given.



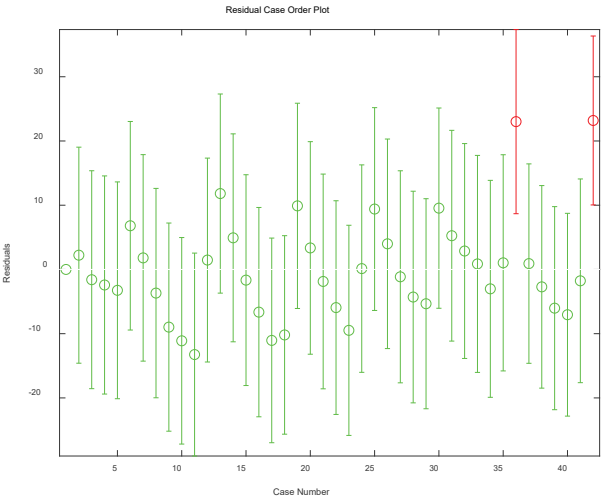


Figure 1. Residual diagram between ethanol conversion rate and factors in Formula Ⅰ Figure 2. Residual diagram between ethanol conversion rate and factors in Formula Ⅱ

Table 1 Confidence intervals

Feeding way	The correlation coefficientR^2	The F value	The probability P that corresponds to F	Estimated error variance
Ⅰ	0.88716733732681	505.087346125673	0.005264277345	5.821546944089
Ⅱ	0.8820621886818	12.38438563095022	0.00302113567344	0.9513567897543

Ⅰ Feeding method: Correlation coefficient R2 = 0.88716733732681, indicating that the regression equation is very significant. the probability p<α corresponding to F rejects H. According to F test, regression model (7) is established.

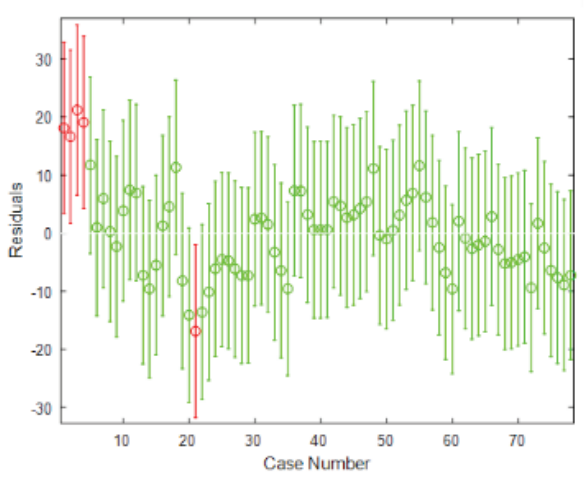
$$\alpha_{A1} = 4.8628 - 0.0867s_1 - 0.0010s_2 + 0.2485s_3 + 0.1810s_4 + 0.5545T \quad (7)$$

Ⅱ Feeding method: Correlation coefficient R2 =0.8820621886818, indicating that the regression equation is very significant. the probability p<α corresponding to F rejects H. According to F test, regression model (8) is established.

$$\alpha_{B1} = -0.9429 + 0.2566s_1 - 0.1714s_2 - 0.1250s_3 + 0.0732s_4 + 0.2933T \quad (8)$$

2\Function of the relationship between different catalyst combinations and temperature selectivity for C4 olefin:

In accordance with the experimental data of Ⅰ and Ⅱ loading mode, multiple linear regression was carried out on the data by Matlab, residual graph was drawn and residual value and confidence interval were given.



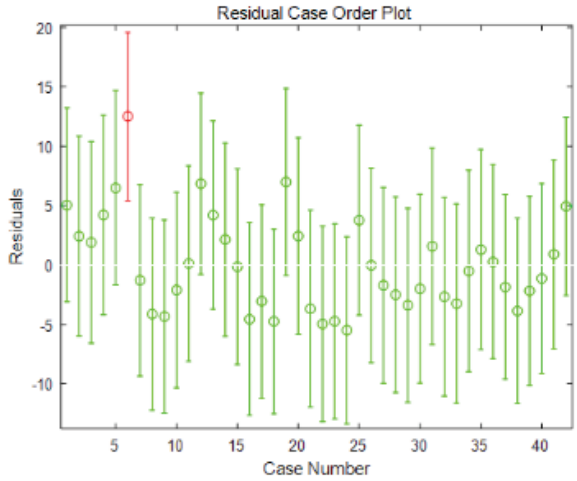


Figure 3. the selectivity of type Ⅰ C4 alkenes and the residual diagram of factors Figure 4. the selectivity of type Ⅱ C4 alkenes and the residual diagram of factors

Table 2 Confidence interval Ⅱ

Feeding way	The correlation coefficient R^2	The F value	The probability P that corresponds to F	Estimated error variance

Ⅰ	0.84803693194482	405.087246461155	0.000192859210	5.820027944450
Ⅱ	0.91880288437719	1404.465658337	0.005345346867	1.325633478064

Ⅰ Feeding method: Correlation coefficient R2 =0.84803693194482, indicating that the regression equation is very significant. the probability p<α corresponding to F rejects H. According to F test, regression model (9) is established.

$$\beta_{A1} = 0.0590s_1 + 0.00005s_2 + 0.0000s_3 - 0.0212s_4 + 0.2730T \quad (9)$$

Ⅱ Feeding method: Correlation coefficient R2 =0.91880288437719, indicating that the regression equation is very significant. the probability p<α corresponding to F rejects H. According to F test, regression model (10) is established.

$$\beta_{B1} = 357.6536 + 0.1238s_1 - 7.3310s_2 + 0.0000s_3 - 0.0389s_4 + 0.4272T \quad (10)$$

4. FEATURE EXTRACTION RELIEF F ALGORITHM MODEL

To strengthen the accuracy of the results, we use the thought of integrated study, set up Relief F algorithm of feature extraction, the calculated results with the results of the multivariate linear regression model superposition analysis, get the final weights of each factor, the analysis under different loading ways, different combination of catalyst and temperature on the influence of ethanol conversion rate, selectivity of C4 olefin.

4.1 PREPARATION AND ESTABLISHMENT OF RELIEF F ALGORITHM MODEL

The calculation steps of the feature extraction algorithm are as follows:

Step1: reset the weights of all factors to 0 and divide them into multiple samples.

Step2: randomly select a sample R, find out the nearest neighbor samples from the heterogeneous and homogeneous samples, find the differences in different features of the samples, and obtain the weight of features according to sample analysis.

Step3: repeat the selection operation of step2, obtain samples and feature differences according to the sorted classes, and update the weight W according to the formula.

Step4: average the result of weight W of each cycle.

Sample weight W is calculated as follows:

$$W(A) = W(A) - \sum_{j=1}^{k} diff(A,R,H_j)\Big/(mk) + \sum_{c=clas(R)} \left[\frac{p(C)}{1-p(Class(R))} \sum_{j=1}^{k} diff\left(A,R,M_j(C)\right)\right]\Big/(mk) \quad (11)$$

In the above formula, $\mathrm{diff}(A,R_1,R_2)$ represents the difference between samples R_1 and R_2 on feature A, and $M_j(C)$ denotes the nearest sample j of the C class sample, as follows:

$$\mathrm{diff}(A,R_1,R_2) = \begin{cases} 0 & R_1[A] = R_2[A] \\ 1 & R_1[A] \neq R_2[A] \end{cases} \quad (12)$$

4.2 DATA CLASSIFICATION

According to the analysis of data and algorithm, the data should be classified first. After comprehensive analysis of different charging methods, we found that the conversion rate of ethanol ranged from 0% to 90%, and the selectivity of C4 olefin ranged from 0% to 60%. Therefore, 10% interval was taken as the span of classification, and 0% to 10% samples were recorded as the first type samples. the sample data of different charging methods are classified according to the above method. Part of the results are as follows, and all the results are shown in the appendix:

Table 3 Sample classification of ethanol conversion under loading mode A (part)

α_A	s_2	s_1	s_3	s_4	T	Classification number
34.05	200	1	200	1.68	250	4
37.43	200	1	200	1.68	275	4
46.94	200	1	200	1.68	300	5
49.70	200	1	200	1.68	325	5
47.21	200	1	200	1.68	350	5
46.24	200	1	200	1.68	400	5
18.07	200	2	200	1.68	250	2
17.28	200	2	200	1.68	275	2
19.60	200	2	200	1.68	300	2
30.62	200	2	200	1.68	325	4
39.10	200	2	200	1.68	350	4
48.40	200	2	200	1.68	400	5
5.50	200	1	200	0.9	250	1
8.04	200	1	200	0.9	275	1
17.01	200	1	200	0.9	300	2
28.72	200	1	200	0.9	325	3
36.85	200	1	200	0.9	350	4
53.43	200	1	200	0.9	400	6
9.62	200	0.5	200	1.68	250	1

4.3 THE RELIEF F ALGORITHM MODEL WAS SOLVED

After data classification was completed, Matlab software was used to solve the problem. According to ReliefF algorithm, the weight of each factor of different catalyst combinations and temperatures on ethanol conversion rate and C4 olefins selectivity in the two charging methods was calculated. the 20 times of weight iterative calculation figure and the average weight table are as follows:

Table 4 Average weight of 20 iterations

	s_1	s_2	s_3	s_4	T
α_{A2}	0.0917	0.0020	0.2523	0.2025	0.5238
α_{B2}	0.1254	0.5912	0.0051	0.0061	0.4122
β_{A2}	0.2543	0.1653	0.1432	0.0489	0.2894
β_{B2}	0.0534	0.0212	0	0.0367	0.2948

5. INTEGRATED ANALYSIS OF MULTIPLE LINEAR REGRESSION MODEL AND RELIEF F ALGORITHM MODEL

The absolute value of the function coefficient obtained by establishing the multiple linear regression model is the weight of each factor, and the symbol represents the correlation. the absolute value of all coefficients of the multiple linear regression model is expressed in the same way as above, and the results obtained by the Relief F algorithm are written as follows.

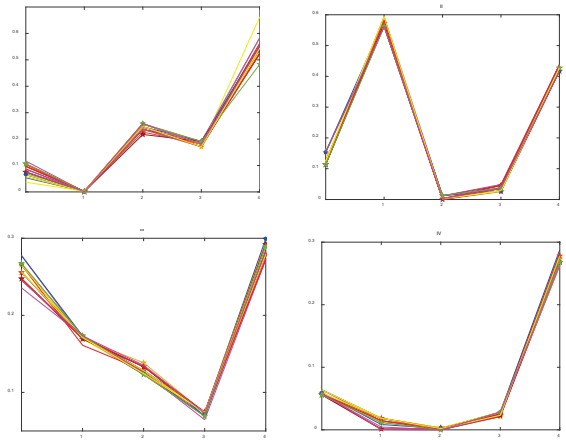


Figure 5. Numerical diagram of weight for 20 iterations

Table 5 Weight results of various factors under different loading modes in multiple linear regression model

	s_1	s_2	s_3	s_4	T
α_{A1}	0.0867	0.0010	0.2483	0.1810	0.5545
α_{B1}	0.1238	7.3310	0	0.0389	0.4272
β_{A1}	0.2566	0.1714	0.1250	0.0732	0.2933
β_{B1}	0.0590	0.00005	0	0.0212	0.2730

Table 6 Average weight results of all factors under different loading methods of Relief F algorithm

	s_1	s_2	s_3	s_4	T
α_{A2}	0.0917	0.0020	0.2523	0.2025	0.5238
α_{B2}	0.1254	0.5912	0.0051	0.0061	0.4122
β_{A2}	0.2543	0.1653	0.1432	0.0489	0.2894
β_{B2}	0.0534	0.0212	0	0.0367	0.2948

According to the above two tables, the analysis results of influences of various factors on ethanol conversion rate under different bagging methods are as follows:

Table 7 Analysis of factors and degree that affect ethanol conversion rate

Loading way	Factors affecting ethanol conversion rate	Degree of influence	The weight
I	The temperature	high	0.55
	HAP mass, rate of ethanol infusion	Medium	0.25\0.20
II	The quality of the Co	high	0.59
	The temperature	Medium	0.41

Table 8 Factors and degree analysis of influencing C4 olefins selectivity

Loading way	Factors affecting ethanol conversion rate	Degree of influence	The weight
I	Temperature, Co/SiO2 quality	high	0.28\0.25
	Co quality, HAP quality	high	0.16\0.14
	The temperature	high	0.26
II	Co/SiO2 quality\ The rate of ethanol infusion	low	0.05\0.03

1. In Ⅰ charging mode, temperature factor has a great influence on ethanol conversion, with a weight of about 0.55; the influences of HAP mass and ethanol infusion rate on ethanol conversion were the next, with weights of 0.25 and 0.20.

2. Under the loading mode Ⅱ, the weight ratio of Co load in the linear regression was 7.33, which was significantly different from the results calculated by Relief F algorithm, but compared with other factors, Co load still had a great impact on ethanol conversion rate; the influence of temperature on ethanol conversion was the second, and the weight was about 0.41.

Similarly, the analysis results of the influence of various factors on the selectivity of C4 olefin in different bagging methods are as follows:

3. In Ⅰ charging mode, temperature and Co/SiO2 mass have great influence on the selectivity of C4 olefins, with weights of about 0.28 and 0.25. Co loading and HAP mass had the second most significant effect on C4 olefins selectivity, with weights of 0.16 and 0.14.

4. In Ⅱ charging mode, temperature has a great influence on the selectivity of C4 olefin, and the weight is about 0.29. the quality of Co/SiO2 and the rate of ethanol infusion had the second effect on the selectivity of C4 olefins, with weights of about 0.05 and 0.03.

6. Evaluation of the model

Relief series of algorithms have high operation efficiency and no restriction on data types. They belong to a feature weight algorithm, which gives high weight to all features with high correlation with categories. Therefore, the limitation of the algorithm is that it cannot effectively remove redundant features.

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Research on Converter Flue Gas Analysis Based on Penalty Factor Improved Machine Learning

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Abstract: In order to realize intelligent steelmaking and improve the end-point hit rate, a random forest model and a BP neural network model are established to analyze and predict the carbon content and temperature in molten steel. In order to make the model always have a good prediction effect between 70%-85%, the penalty factor is introduced as an independent variable, the error term obtained after the original model predicts the data is multiplied by the penalty coefficient λ to obtain the penalty factor, and the model Where λ is 1. the new variables after adding the penalty factor are retrained in the optimized model, and an improved model with more accurate prediction effect in the interval of [70%, 85%] is obtained. After testing, the improved random forest model is used to predict the carbon content of molten steel in [70%, 75%] this fixed interval always has more accurate results; the improved BP neural network model is used to predict the temperature of molten steel in [70%, 85%] There are always more accurate results in this fixed interval.

Keywords: Random Forest; BP Neural Network; Penalty Factor; Converter Flue Gas

1. INTRODUCTION

Smart steelmaking is a necessary way for small and medium-sized enterprises in my country's iron and steel industry to face the coupling pressure of "de-capacity, green manufacturing, and market competition" to realize the transformation of enterprise technology structure and complete enterprise development. the key to intelligent steelmaking is to accurately control the carbon content and temperature of molten steel. Using intelligent algorithms, a mathematical model can be established between the carbon content and temperature of molten steel and the main factors affecting the two to achieve the Effective prediction of carbon content in water and molten steel temperature [1-2].

2 [C]&[T] PREDICTION MODEL BASED ON MACHINE LEARNING

2.1 DATA SOURCES

Based on an experiment, the proportion of oxygen consumption, total oxygen, CO content in flue gas, CO2 content in flue gas and carbon content in molten steel [C] and molten steel temperature value [T], which contains 5 data sets, analyzes the correlation between the indicators, takes the first four variables as independent variables, and the last two variables as dependent variables.

2.2 [C]&[T] PREDICTION MODEL BASED ON BP NEURAL NETWORK

The general structure of a neural network is composed of an input layer, a hidden layer, and an output layer. the hidden layer can be one layer or multiple layers, and the layers are connected to each other. the loss is obtained by forward propagation, and the error is returned by BP, and the weight of each layer is corrected according to the error signal. Differentiate each ω, and then update each ω.

The number of hidden layers is determined: An increase in the number of network layers will improve the accuracy and speed of operations [3]. However, the complexity of the model has also increased, and the risk of overfitting has also increased. Considering the small number of data samples, a 10-layer network is selected to build the model.

Selection of activation function: Since the derivative values of the Sigmoid function and the Tanh function are not greater than 1, then the gradient will inevitably disappear during the iterative process. the ReLU function can avoid this phenomenon well, so this paper chooses the ReLU function as the activation function of the model in this paper.

Selection of training algorithm: In the process of neural network training, three algorithms, Levenberg-Marquardt, Bayesian regularization, and quantized conjugate gradient are generally used for training [4]. Since the data samples used in this article are small, over-fitting is not easy to appear, and it will not take too much training time, so the Bayesian regularization training method is used.

Based on the above analysis, the following neural network structure is established:

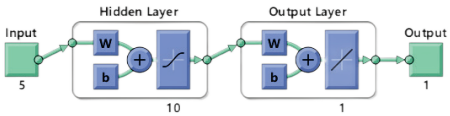

Figure 1 Neural network structure

2.3 [C]&[T] PREDICTION MODEL BASED ON RANDOM FOREST

Random forest is a special bagging method that uses decision trees as a model in bagging [5]. First, use the bootstrap method to generate m training sets. Then, for each training set, construct a decision tree. When the node finds the features for splitting, randomly extract a part of the features from the features, and find the best among the extracted features [6-8]. the optimal solution is applied to the node for splitting. Assuming that X and Y are input and output variables, respectively, and Y is a continuous variable, given the training data set:

$$D = \{(x_1, y_1), (x_2, y_2), \cdots, (x_n, y_n)\}$$

It can be defined as different regions by traversing each feature variable and its corresponding feature value of the training set data. Assuming that the segmentation variable

being divided into regions is the *i*-th variable, and the corresponding segmentation feature value is *j*, then:

$$\begin{cases} a_1(i,j)=\{x\,|\,x^{(i)}\le j\} \\ a_2(i,j)=\{x\,|\,x^{(i)}>j\} \end{cases}$$

Through continuous traversal and division, the input data is divided into L subspaces $a_1,a_2,\cdots,a_L$, and each subspace a_1 contains its corresponding sample data and output value β_1, then the solution of the model at this time is:

$$f(x)=\sum_{l=1}^{L}\beta_1 I(x\in\alpha_1)$$

Using the sum variance measurement, the measurement goal is to obtain the minimum mean square error of each set of D_1 and D_2 for the data sets D_1 and D_2 on both sides of the partition point *j* for the division feature *i*, and the minimum sum of the mean square errors of D_1 and D_2. the expression is:

$$\min_{i,j}[\min_{\beta_1}\sum_{x_l\in\alpha_1(i,j)}(y_l-\beta_1)^2+\min_{\beta_2}\sum_{x_l\in\alpha_2(i,j)}(y_l-\beta_2)^2]$$

Determination of the number of trees and the number of leaf nodes:

As can be seen from the figure below, in the prediction model of [C] and [T], when the number of decision trees and leaf nodes are 5 and 20, respectively, the random forest model exhibits the most ideal mean square error;

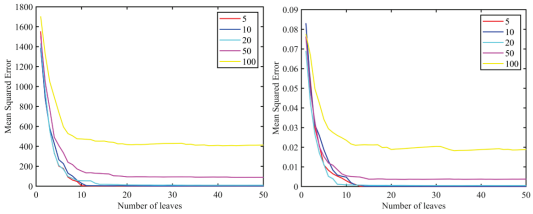

Figure 2 Adjustment of the number of leaves in random forest

In the same way, draw the curve formed by the trees in the random forest model and their mean square error. the figure below shows that when predicting [C] and [T], the number of trees is both 20 When the model error converges to the minimum, this paper determines the number of trees in the random forest as 20.

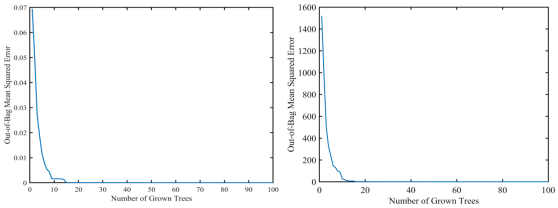

Figure 3 Adjusting the number of trees in a random forest

2.4 ANALYSIS OF MODEL RESULTS

Based on the above analysis, the neural network models of [C] and [T] are established respectively, and the model training error is shown in the following figure:

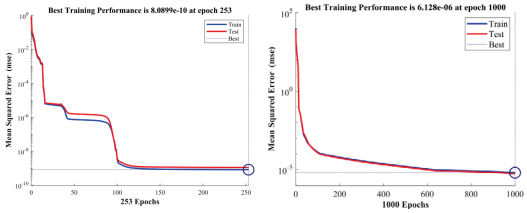

Figure 4 Neural network training effect

The figure reflects that [C] neural network model training error and test error gradually converge after about 100 iterations; [T] neural network model training error and test error gradually converge after about 600 iterations, and the final errors are all in Within 105, it shows that the training effect is better.

After establishing a random forest model for the data sets of [C] and [T], calculate the goodness of fit, and the results are shown in the figure below. It can be seen from the figure that the fitting effect of [C] and [T] based on the random forest model is better, and the R^2 of both are close to 1, indicating that the model establishment effect is better.

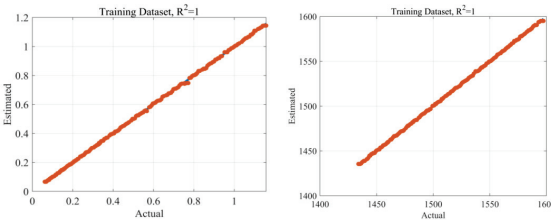

Figure 5 Fitting effect of random forest

Comparing the errors obtained from the BP neural network and the random forest test set, the analysis of the following figure shows that only when the two are used for the fitting prediction of their own data set, the errors of the BP neural network in the [C] model and the [T] model are both It is much smaller than the error of random forest to data prediction.

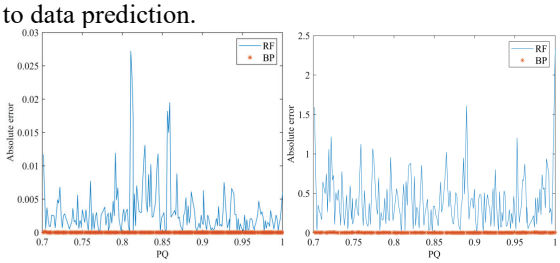

Figure 6 Comparison of the prediction effects of the two models used in their own data sets

3. IMPROVEMENT OF MACHINE LEARNING MODEL BASED ON ADDITIONAL PENALTY ITEMS

The penalty term method is a model structure optimization algorithm that improves its generalization ability by indirectly pruning the network structure. the principle is to add a "complexity item" to the traditional error function to measure the complexity of the network structure and reflect the pros and cons of generalization ability. This item inhibits the increase of the weight value during the training process and drives the unimportant weight value to gradually decrease. Small to zero effect, so that the model adapts to the known samples while ensuring that its structure is not too complicated [9]. Assuming that that the vector made by the ownership parameters in the model is w, then the error function with penalty term can be

described as follows:

$$\tilde{E}(w) = E(w) + \lambda E_p(w)$$

The first term at the right end of the above formula is the standard performance measurement of the traditional error function on the network. It depends on the network structure model and input data at the same time. It is generally defined as the mean square error or square error on the training sample set. the second term $\lambda E_p(w)$ is a penalty term, which only depends on the network structure model parameters. It is called the penalty term parameter or penalty term coefficient, which represents the relative importance of the penalty term with respect to the performance measurement item.

It can be seen from the above error image that whether it is an optimized random forest model or a BP neural network model, there is not much difference in the error generated when predicting PQ between 70%-85% and 85%-100%. Make the prediction of the two models more accurate when the PQ is between 70% and 85%. Now based on the weighted average model, after introducing the penalty factor, the weighted random forest model and the BP neural network model are established again to achieve the PQ in the the target of higher model accuracy between 70%-85%.

3.1 THE ESTABLISHMENT OF A MACHINE LEARNING MODEL WITH THE INTRODUCTION OF PENALTY FACTORS

Suppose the penalty factor is λL_i, where λ is the penalty coefficient, which is set to 1 in this article. In order to make the prediction result more accurate when the model is between 70%-85%, the penalty factor is now defined as follows:

$$\lambda L_i = \begin{cases} A_i - B_i, 70\% \le PQ_i \le 85\% \\ 0, 85\% \le PQ_i \le 100\% \end{cases}$$

When PQ is in the range of 70%-85%, the error between the predicted value of the original model and the true value is set as the penalty factor; when PQ is in the range of 85%-100%, the value of the penalty factor is set to 0. As a result, this column of data is set as a new variable, and back to the model for training.

3.2 IMPROVED ANALYSIS OF MODEL RESULTS

After the training of the two models after introducing the penalty factor is completed, the other data sets are respectively predicted, and the result is subtracted from the true value to obtain the absolute error, and the accuracy of the PQ in different intervals is calculated after inversion. :

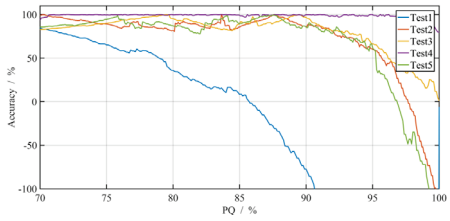

Figure 7 The accuracy of the random forest model improved based on the penalty factor

From the analysis of the above figure, after adding the penalty term, the RF model has a better prediction effect on the data when the PQ is between 75% and 80% than when the PQ is between 85% and 100%. When predicting data set 1, the accuracy reaches 60% when PQ is between 75% and 80%, and as the PQ index increases, the model's prediction accuracy for data set 1 decreases. and when the PQ reaches 85%, the prediction accuracy of the random forest model for data set 1 is reduced to 0%, indicating that the random forest model with the penalty term is not good for the prediction of data set 1; However, when the improved model predicts data sets 2, 3, 4, and 5, the accuracy is above 85% when the PQ is between 75% and 80%, and the accuracy of the model only drops when the PQ is between 95% and 100%., Which reflects that the improved model has a good prediction effect for data sets 2, 3, 4, and 5 when the PQ is between 75% and 95%.

In summary, the improved random forest model always has a better prediction effect in the fixed interval of 70% - 75%.

In the same way, after the neural network model with the penalty factor introduced is trained, predictions are made on other data sets respectively, and their accuracy is calculated as shown in the figure below:

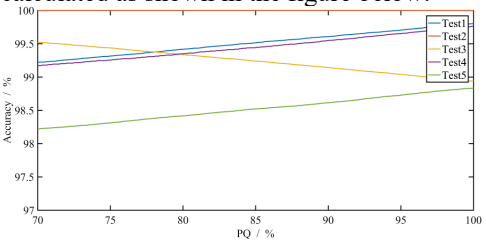

Figure 8 The accuracy of the improved neural network model based on the penalty factor

From the graph analysis, it can be seen that, compared with the random forest model, the improved neural network has a generally better prediction effect for [T], and its accuracy is above 98%, and the accuracy is linear with the change of PQ. For data sets 1, 4, and 5, the prediction effect of the neural network increases with the increase of PQ; for data set 3, the accuracy of the neural network's prediction decreases with the increase of PQ. Since the improved neural network has a higher accuracy for the data set 1-5 in the data set, the fixed interval range is determined to be 70%-85%.

4. CONCLUSION

Based on the above analysis, the improved random forest and neural network model has a better prediction effect in the specified interval of most data sets. the accuracy in this interval is due to the outside of the interval, indicating that the addition of the penalty factor improves the model's prediction of the specified interval Effect.

For [C] predicted by the improved random forest model, the accuracy improvement effect of the model for different data sets is different: For data set 1, the accuracy improvement is more obvious when the PQ is 81%-85%, while for the data in sets 2, 3, the improved random forest prediction model has a significant improvement in accuracy when the PQ is between 87%-90% and 90%-83%. on the whole, the improved model has a slight increase in overall accuracy compared to the original model. For [T] predicted by the improved BP neural network model, there are still big differences in the

accuracy of the model for different data sets: the improved model's accuracy improvement for data set 1 is mainly concentrated in the larger range of PQ; the accuracy of data set 4 is also relatively large, but there is no obvious range; the accuracy of data set 2, 3 is slightly improved.

In summary, on the whole, the improved model has a certain increase in prediction accuracy compared to the original model, but the impact on the accuracy of different ranges of PQ for different data sets is different. Compared with the original model, the deep learning model after weighted average processing and adding penalty factors has better accuracy and robustness.

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Evaluation Model of Minors' mental Health Based on Improved Factor Analysis

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Abstract: With the rapid development of China's economy and society, China has paid more and more attention to the mental health ofminors, and a simple and effective model is urgently needed to evaluate the mental healthlevel of minors. Based on this, this paper analyzes the physiological and psychological development, the increase of competitive pressure, the expansion of social experience and the change of thinking mode, and establishes aset of mental health assessment model for minors, which can be used to reasonably, accurately and quickly assess the mental health status of all minors. First, preprocess the data to remove the influence of irrelevant data and missing data, and standardize the preprocessed data. Then, through factor analysis, we turn the 10 evaluation indicators given in theannex into three comprehensive indicators: physiological and psychological development, increasing competitive pressure, expanding social experience and changing thinking mode. Then, we calculate the TOPSIS score and fitthe regression equation with the TOPSIS score as the dependent variable and the comprehensive index as the independent variable. Finally, an evaluation equation applicable to allminors' mental health is established, and the mental health of minors can be evaluated bycombining the evaluation criteria.

Keywords: Factor analysis; Multiple linear regression; TOPSIS score; Mental health evaluation.

1. INTRODUCTION

With the rapid development of China's society and economy, the competitive pressure is increasing, and the minors are in an important period of physical and mental development. Their own social experience has expanded and their way of thinking has changed, resulting in various psychological problems in their study, life and interpersonal communication [1-4]. Therefore, it is of great significance to construct the evaluation system of minors' mentalhealth.

2. EXTRACTION OF PRINCIPAI COMPONENT INDEX BY FACTOR ANALYSIS

In order to avoid data redundancy caused byinformation duplication among indicators, thispaper uses factor analysis to extract comprehensive indicators for later analysis and processing.

2.1-KMO, BARTLETT SPHERICAL INSPECTION

In this paper, KMO and bartlett are used to test the original data to verify whether the original data can use factor analysis mode [5-6] l. the test results show that the original data can be used for factor analysis within 95% confidence interval.

Table 1. KMO and bartlett inspection table.

KMO and bartlett inspection.		
KMO sampling suitability quantity.		0.721
Bartlett sphericity test	Approximate chi-square	1655.163
	freedom	45
	significance	0.000

2.2ESTABLISHMENT OF R-TYPE FACTORMODEL

The relationship between 10 indexes and common factors is constructed, and the following determinants are obtained:

$$\begin{cases} x_1 = u_1 + a_{11}f_1 + a_{12}f_2 + \cdots + a_{1m}f_m + \varepsilon_1 \\ x_2 = u_2 + a_{21}f_1 + a_{22}f_2 + \cdots + a_{2m}f_m + \varepsilon_2 \\ \vdots \\ x_{10} = u_{10} + a_{101}f_1 + a_{102}f_2 + \cdots + a_{10m}f_m + \varepsilon_{10} \end{cases}$$

a_{ij} represents an original variable x_i Common factor f_j The covariance between, namely: $a_{ij} = \mathrm{cov}(x_i, f_j)$. Construct a matrix from the determinant. the whole determinant can be abbreviated as: $x = u + Af + \varepsilon$, among $f = (f_1, f_2, \cdots f_m)(m \le 10)$ Is a common factor variable, $\varepsilon = (\varepsilon_1, \varepsilon_2, \cdots, \varepsilon_8)'$ is a specialfactor vector. $A_{8\times m} = (a_{ij})$ It is called factor load matrix, and the rank of matrix A is assumed to be m.

By calculating the sum of squares of row elements of A matrix respectively. h_i^2 And that sum of square of column elements g_i^2 , solve the original variables. x_i the dependence on the common factor and the contribution ofthe common factor fj to the overall index data X, and then select the most important comprehensive factor. Where the sum of squares of row elements and column elements is respectively:

$$h_i^2 = \sum_{j=1}^{m} a_{ij}^2 g_j^2 = \sum_{i=1}^{p} a_{ij}^2$$

2.3 DETERMINE THE NUMBER OF FACTORS

In this paper, three common factors are extracted from the turning point of the gravel map and the cumulative contribution rate of variance interpretation table. the variance contribution rates of the extracted three common factors are 76.735%, 12.021% and 3.502%, respectively. the cumulative variance contribution rate of the first three common factors has reached 92.258%, that is, the first three common factors can contain 92.258% of the

information of the original index, so the first three common factors are selected to reflect the whole.

2.4 FACTOR SCORE

Factor analysis is to express variables as linear combinations of common factors and special factors. In this paper, we can express common factors as linear combinations of original variables in reverse, that is, we can get factor scores, and the generated component score coefficient matrix is shown in table.

Table 2Matrix table.

influencing factor	component part		
	1	2	3
interpersonal relationship	0.634	-0.256	0.077
stubbornly biased	0.422	-0.333	0.596
Obsessive symptoms	0.245	-0.333	0.452
Obsessive symptoms	0.457	-0.295	0.103
depressed	0.652	-0.259	-0.428
anxious	0.658	-0.179	-0.451
Learning pressure	0.487	0.404	-0.151
Psychological imbalance	0.265	0.458	0.388
Emotional imbalance	0.558	0.409	0.036
maladjustment	0.482	0.538	0.141

From the above table, we can get the expressions of three principal components:

$$f_1 = 0.634x_1 + 0.422x_2 + \cdots + 0.482x_{10}$$

$$f_2 = -0.256x_1 - 0.333x_2 + \cdots + 0.538x_{10}$$

$$f_3 = 0.077x_1 + 0.596x_2 + \cdots + 0.141x_{10}$$

The positive load coefficient of depression and anxiety in first principal component is large, so first principal component is called theincrease of competitive pressure. the positiveload coefficient of psychological imbalance and maladjustment in the second principal component f2 is larger, so the second principalcomponent is called physiological and psychological development and development. the positive load coefficient of paranoia and obsessive-compulsive symptoms in the third principal component f3 is large, so the third principal component is called the expansion of social experience and the change of thinking mode. the three principal components reflectthe influencing factors of mental health of minors more intuitively, and the data of the three principal components are obtained according to the above expressions.

3. CALCULATION OF TOPISIS SCORE

Through the above analysis, three principal component indicators are obtained, among which the policy support and national attention are the maximum indicators, and the pressureof college students is the minimum indicators. In this paper, a scoring model based on TOPSIS is established [7-8].

3.1 CALCULATE THE SCORE AND NORMALIZE IT.

Finally, the score is calculated and normalized, and the maximum value is defined as:

$$z^+ = \left(z_1^+, z_2^+, \cdots, z_5^+\right) = \left(\max\left\{z_{11}, z_{21}, \cdots, z_{n1}\right\}, \cdots, \max\left\{z_{15}, z_{25}, \cdots, z_{n5}\right\}\right.$$

The minimum value is defined as:

$$z^- = \left(z_1^-, z_2^-, \cdots, z_5^-\right) = \left(\min\left\{z_{11}, z_{21}, \cdots, z_{n1}\right\}, \cdots, \min\left\{z_{15}, z_{25}, \cdots, z_{n5}\right\}\right.$$

Define the first $i\left(i = 1, 2, \cdots, n\right)$ the distancebetween each evaluation object and the maximum value and the minimum value is:

$$D_i^+ = \sqrt{\sum_{j=i}^{5} w_j \left(z_j^+ - z_{ij}\right)^2} \quad D_i^- = \sqrt{\sum_{j=i}^{5} w_j \left(z_j^- - z_{ij}\right)^2}$$

The TOPSIS score corresponding to the mental health status of minors is:

$$S_i = \frac{D_i^-}{D_I^+ + D_i^-}$$

4. EVALUATION MODEL BASED ON MULTIPLE LINEAR REGRESSION

The above three principal component indicators are used as independent variables, and theTOPSIS score of mental health status of minors is used as dependent variable. Through analysis, it can be seen that there is a linear correlation between independent variables anddependent variables. the OLS general least square method is used to solve the correlationcoefficient of each index, so as to obtain themultiple regression equation with three principal component indexes [9-10].

4.1 TEST OF SIGNIFICANCE

To test whether there is a real linear relationship between the dependent variable and the
independent variable, the significance test iscarried out first, and the results are shown in
the following table:

Table 3 Regression equation fitting test table.

model	R	R square	Adjusted R square.	Error in standard estimation.	P
1	0.963a	0.926	0.926	0.221	0.0008

a. Predicted variables: (constant), component 1, component 2 and component 3.
b. dependent variable: TOPSIS value.

It can be seen from the above table that thestandard P=0.0008<0.05 corresponding to f test means that the regression equation is considered meaningful within 95% confidence interval. Among them, R2 and R2adjusted are both close to 1, which indicates that the regression model has high fitting goodness.

4.2 USING MULTIPLE LINEAR REGRESSION TO FIND THE EVALUATION EQUATION.

Table 4 Coefficient table of multivariate regression equation.

		Unstandardized coefficient		
model		B	Standard error	significance
1	(constant)	12.860	0.044	0.000
	Composition 1	-0.669	0.005	0.000
	Composition 2	-0.001	0.010	0.000
	Composition 3	-0.265	0.011	0.000

In this paper, multiple linear regression is used to predict each index coefficient. f1, f2, f3are independent variables, Y is dependent variable, and satisfy the following linear relationship:

$$y = 12.8605 - 0.6690 * f_1 - 0.0011 * f_2 - 0.2646 * f_3$$

Sensitivity analysis shows that the scores obtained by the evaluation system are basically consistent with TOPSIS scores, and the change trend of scores is basically

consistent. Therefore, the evaluation model established in this paper is verified to be accurate.

5. MODEL EXTENSION

This model is applicable to a wide range of fields, not only for the establishment of the mental health system of minors under the influence of multi-dimensional factors, but also for a variety of evaluation systems, such as the adolescent health evaluation system and the elderly health evaluation system. Through factor analysis, various influencing factors are extracted into several concise factors, and the data obtained by TOPSIS is more convincing. It can quickly, accurately and simply evaluate different objects reasonably.

6. MODEL EVALUATION

6.1 EVALUATION OF THE MODEL

(1) We have considered 10 indicators that affect teenagers' mental health, obtained the correlation of the 10 indicators given in the title by principal component analysis, and divided the factors that affect teenagers' mental health into three main components: first, the increase of competitive pressure; second, the development of physiology and psychology; third, the expansion of social experience and the change of thinking mode.

(2) In order to better evaluate the mental health status of teenagers, we use topsis solution distance method to evaluate the mental health of teenagers in this area.

(3) In order to get the linear relationship between adolescents' mental health scores and three principal components, we use multiple linear regression analysis model to evaluate adolescents' mental health.

(4) By establishing the model, we tested the significance of the evaluation model of adolescent mental health established by ourselves, and compared the model score with the actual score, and found that the fitting effect between the model score and the actual score was very good.

6.2 EVALUATION OF ALGORITHM BASED ON

(1) The evaluation of TOPSIS solution distance method: TOPSIS can make full use of the information of original data, and the results can accurately reflect the gap between evaluation schemes. the basic process is to unify the index types of the original data matrix (general normalization processing) to get the normalized matrix, then standardize the normalized matrix to eliminate the influence of each index dimension, and find the best scheme and the worst scheme in the limited scheme, then calculate the distances between each evaluation object and the best scheme and the worst scheme respectively, and obtain the relative closeness between each evaluation object and the best scheme, which is used as the basis for evaluating the pros and cons. This method has no strict restrictions on data distribution and sample content, and data calculation is simple and easy.

(2) Evaluation of principal component analysis: Principal component analysis is a dimensionality reduction algorithm, which can convert multiple indicators into a few principal components, which are linear combinations of original variables and have no correlation with each other, and can reflect most information of original data. the defect lies in that when the sign of factor load of principal component is positive or negative, the meaning of comprehensive evaluation function is not clear and the naming clarity is low.

(3) Evaluation of multiple linear regression analysis: Multiple linear regression is used to explore the relationship between multiple independent variables and dependent variables in a phenomenon, and the optimal combination of multiple independent variables can jointly predict or estimate the dependent variables, which is more effective and more realistic than using only one independent variable to predict or estimate. Sometimes, in regression analysis, it is only a guess which factor to choose and which expression to use, which affects the diversity of factors and the unpredictability of some factors, and makes regression analysis limited in some cases.

6.3 ADVANTAGES OF THIS MODEL IN COMPREHENSIVE EVALUATION

(1) Using the principal component analysis method, 10 evaluation indexes are divided into three categories to reduce the evaluation dimension, and then taking these three principal components as independent variables and TOPSIS scores as dependent variables, a multiple linear regression equation is established, which can better reflect the mental health of teenagers.

(2) When we set up the model, we set the parameters to be easy to adjust to meet the needs of further research, and further explained the sensitivity of parameters and the robustness of the model through sensitivity analysis.

7. SUGGESTION

We set up a mathematical model to process and analyze the data of the factors affecting the mental health of minors, and get the following results:

Compulsive symptoms, study pressure and emotional imbalance are the main factors that affect the mental health of minors. No matter from the perspective of boys or girls, obsessive-compulsive symptoms, study pressure and emotional imbalance are the three main factors that affect the mental health of boys and girls, but these three factors affect the mental health of boys to a greater extent than that of girls. the reason is that boys are naturally playful, obsessed with games, greatly influenced by the network environment, and boys in adolescence are rebellious, paranoid, easily excited and have intense emotional reactions. Compared with girls, boys have to bear greater social pressure, which leads to constant pressure from the outside world on boys' study. the high pressure of study has a serious impact on their mental health.

It can be seen that the current mental health of minors is not optimistic, and the unhealthy psychological harm is very great, which will endanger students' personal growth and development, family happiness and social stability. Therefore, we give the following suggestions through investigation and data analysis:

Family: Let go of love, approach children, be good at enlightening and listening

Parents should not give their children too many rigid rules and regulations, nor impose too high expectations on them. Children should be encouraged to participate in collective activities and cultural and sports activities, cultivate hobbies, and let children build new excitement; Be good at listening to children's thoughts, truly understand their hearts and give them the right to choose freely; At the same time, parents should set an example, take a natural attitude towards life, learn positive ways to deal with various pressures, and don't shy away from difficulties. Children's exposure to positive and optimistic family environment will be affected, which will help cultivate children's quality of bearing pressure and frustration.

School: Respect individual differences and implement quality education

Schools should regularly arrange students' psychological lectures, carry out mental health education and provide relevant psychological counseling to students; Schools should train teachers in psychological knowledge, "A good word warms the winter in three months, and a bad word hurts the cold in June. " Teachers are groups that are in direct contact with students. Teachers' words and deeds will directly affect students' inner thoughts. Teachers' quality should be strengthened. Schools should build a warm, harmonious and beautiful campus, respect individual differences, and never form an atmosphere of "only points theory". Achievements can represent many things, but not everything. We should promote the all-round development of students' morality, intelligence, physique, beauty and labor, and cultivate social talents with excellent comprehensive quality.

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Credit Rating Classification Model Based on AHP-EWM

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Abstract: the potential personal credit risk is an important hidden danger that leads to the bank crisis. This paper mainly solves this problem and studies the personal credit risk assessment of bank customers, selects risk assessment indicators and establishes a high precision assessment model, so as to maximize the bank credit income. After preprocessing of the indicators data through the system clustering original 25 indicators fall into four general index, respectively, for the assets, liabilities, credit history and personal information, thus established the new personal credit risk evaluation index system, and then through the analytic hierarchy process (ahp) and entropy weight method, linear combination method to calculate the weights of each indicator, Then, the weighted Topsis model is used to score and estimate the customer's credit, and k-means algorithm is used to cluster the credit score. According to the clustering results, the corresponding ABCD four grades are divided, and the credit good degree decreases successively. Among them, the customer's credit score is divided into grade A between [71.5, 100]. It is classified as grade B between [57.6, 71.5], grade C between [50.2, 57.6] and grade D between [10, 50.2].

Keywords: K-means clustering; Weighted Topsis; Hierarchical analysis; Entropy weight method

1. PROBLEM ANALYSIS

In the absence of customer credit rating, the establishment of a model to classify customer credit rating is actually to quantify the various indicators of customers. We build an individual credit risk evaluation index system, reduce the dimension of indicators through system clustering, and establish a new evaluation index system. Using the method of analytic hierarchy process (ahp) and entropy weight method to determine the weight of each index, and then USES the weighted Topsis model to evaluate the model, get each customer's credit score, in order to classify the customer's credit rating, we use the K - means algorithm to cluster of customer credit score, the result is divided into four classes, Therefore, the customer's credit score corresponds to four credit grades ABCD respectively.

2. PERSONAL CREDIT RISK ASSESSMENT MODEL BASED ON K-MEANS CLUSTERING

To establish model in the case of category unknown credit rating classification with the customers, will issue one to extract the 25 indexes is one of the important reference in real life personal credit evaluation data, clustering and combining the actual situation, so the system will be 25 indicators divided into four kinds of general indicators, respectively, for the assets, liabilities, credit history, and personal information. Then, we choose the linear combination of analytic hierarchy Process and entropy weight method to calculate the weight of these indicators, and then use Topsis method to calculate the credit score and valuation of each customer. Finally, cluster according to the score and valuation, and divide the credit rating of users into four categories: ABCD.

2.1 SYSTEM CLUSTERING

System clustering method which is at the beginning of each sample as a kind, then according to the distance criterion, the relative near samples were first divided into small classes, and then have the distance between the aggregation of small class according to their class to merge, constantly continue, until obtain appropriate classification requirements, which can easily find out the main factors influencing the system.

Firstly, we obtained that personal credit evaluation is mainly affected by assets, liabilities, historical credit and personal information by referring to relevant materials and combining with the actual situation. Then, we used factors to measure the correlation coefficient of these four aspects. In the cluster analysis of factors (specific factors), the first step is to determine the correlation coefficient of factors in different classes, the specific method is as follows:

We define two factors, x_i and y_i, that correspond to our specific factor and type. and calculate its correlation coefficient, the formula is as follows:

$$r = \frac{\sum_{j=1}^{n}(x_{ji} - \bar{x}_i)(y_{ji} - \bar{y}_i)}{\sqrt{\sum_{j=1}^{n}(x_{ji} - \bar{x}_i)^2}\sqrt{\sum_{j=1}^{n}(y_{ji} - \bar{y}_i)^2}}$$

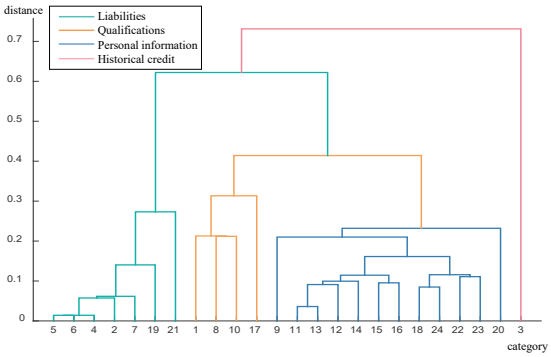

FIG. 1 System clustering diagram

Secondly, Euclidean distance is used as the distance calculation criterion. According to the calculated distance

between each class, the two nearest classes are merged into a new class, and then the distance between the new class and other classes is calculated. Similarly, the two nearest classes are merged into a new class according to the calculated distance. the above process is repeated, and finally the 25 factors are grouped together. Finally, each factor was labeled according to the order of the table, and the correlation coefficient matrix was taken as the input parameter. After clustering analysis by MATLAB, the cluster diagram of the system was obtained, as shown in Figure 1.

According to the clustering results, the 25 indicators can be divided into 4 categories of general indicators, among which:

- Assets include current deposit status A1, savings account/bonds A6, percentage of bonds in disposable income A8, property status A12;
- Liabilities include loan term A2, loan purpose A41/A42/A43, loan amount A5, other installment plan A14, current number of loans with the bank A16;
- Personal information includes working years A7, gender and marital status A91/A92/A93/A94, other debtors/guarantors A10, current residence years A11, age A13, housing status A15, occupation type A17, telephone number A19, foreign worker A20;
- Historical credit includes credit history A3.

2.2 WEIGHT DETERMINATION BASED ON AHP-EWM

After four indicators are established, ahp and entropy weight method are used to determine the weight of each indicator. the specific algorithm steps are as follows:

(1) Ahp determines the weight

The judgment matrix is obtained according to the importance of assets C_1, liabilities C_2, historical credit C_3 and personal information C_4 to the personal credit P of the target layer and the related importance of the judgment quasi-side layer.

Table 1 Judgment matrix

P	C_1	C_2	C_3	C_4
C_1	1.0	3	2	5
C_2	0.3	1	0.25	2
C_3	0.5	4	1	5
C_4	0.2	0.5	0.2	1

According to the above judgment matrix, consistency test was carried out and CR=0.0568 was calculated to be less than 0.1. It can be considered that the consistency of the judgment matrix is within our acceptable range.

In order to ensure the robustness of the results, arithmetic average method, geometric average method and eigenvalue method are used to calculate the weights and average values respectively, so as to avoid the deviation caused by using a single method, and the results are as follows:

Table 2 Weight calculation for the three results

C_i	Arithmetic mean	Geometric mean	Eigenvalue	$w1_i$
C_1	0.314	0.318	0.315	0.316
C_2	0.325	0.321	0.326	0.324
C_3	0.119	0.115	0.111	0.115
C_4	0.232	0.236	0.240	0.233

(2) Combined with entropy weight method to determine the comprehensive weight

The weight determined by AHP method is subjective. In order to make the weight of the evaluation index more reasonable and reliable, we determine the comprehensive weight by combining the entropy weight method, which is based on the index data and calculates the entropy by deducing and calculating the entropy.

Attachment to all the customer's credit rating as the evaluation sample, including assets, liabilities, quality, and individual conditions, four evaluation indexes, is composed of matrix, and the standardization of each element to judge whether there is a person in the negative Z matrix, the existence of a negative number, $\tilde{Z}$ matrix matrix standardized processing, formula for standardization; Calculate the weight of the ith index of the JTH index and regard it as the probability used in relative entropy calculation. Calculate the information entropy of the JTH index according to the following formula:

$$e_j = -\frac{1}{\ln n}\sum_{i=1}^{n} P_{ij}\ln(P_{ij}), (j = 1, 2, \dots, m)$$

In addition, the information entropy redundancy is calculated. Finally, the information utility value is normalized to obtain the entropy weight of each evaluation index, and the formula is as follows:

$$b_j = \frac{d_j}{\sum_{j=1}^{m} d_j}, j = 1, 2, \dots, m$$

The weight of each indicator is calculated as follows:

Table 3 Weight results of each index calculated by entropy weight method

	C_1	C_2	C_3	C_4
$w2_i$	0.31579	0.327861	0.116345	0.22576

(3) Combine the two to determine the weight

In order to combine ahp and entropy weight method, the average offset distance D is defined. By collecting a large number of relevant psychology literature, found in the personal credit assessment is divided into four levels of screening, we find out the four general indexes as secondary screening index, the situation of these assets directly reflects the loan to the customer if there is a stable economic conditions and enough ability to repay, is an important premise and guarantee for the credit can be recycled; Liabilities can also reflect the current asset status and solvency of individuals to a certain extent. Credit record is a true reflection of a person's character, and it is an objective basis to judge whether a customer will perform the contract when lending with other institutions or individuals. Therefore, historical credit also plays an important role in personal credit evaluation. Personal information is an auxiliary assessment of a customer's economic strength. Therefore, we obtained the authoritative ranking of the importance degree of the 4 indicators, and obtained their relevant weights according to the ranking, as shown in the following table:

Table 4 Authority ranking of general data

C_i	J_i	formula	W_j
C_1	1	$W_j = (1 - \frac{J_i}{\sum_{k=1}^{3} J_k})/2$	0.295
C_2	2		0.263
C_3	3		0.240
C_4	4		0.212

The average offset distance D is defined by the one-

dimensional distance formula between two points, which is as follows:

$$D_x = \sum_i^3 |W_j - wx_j|, x = 1,2$$

The value of x for 1, 2, on behalf of the meaning of analytic hierarchy process $w1_j, w2_j$ and entropy weight method represents the ith a weight, so $|W_j - wx_j|$ represents authority results and calculation results, the difference between D_x for x a evaluation model of the weight distribution, the main results $D_1 = 0.093965, D_2 = 0.082$.

According to the above results, it can be concluded that the error of entropy weight method is smaller than that of analytic hierarchy process. In order to comprehensively consider the influence of subjective and objective factors, linear weighting method is adopted:

$$w_j = \alpha w1_j + (1-\alpha)w2_j, 0 < \alpha < 1$$

Where $w1_j$ represents the weight of the four indexes in the ANALYTIC hierarchy process, $w2_j$ represents the weight matrix in the entropy weight method, $w2_j$ represents the index weight of individual credit evaluation after the combination of the two methods, and $\alpha$is the weight factor. In order to determine the weight factor, we consider the average offset distance. Because a smaller average offset distance means more accurate results, we assign a higher weight to the algorithm with a smaller deviation, whose formula α is as follows:

$$\alpha = \frac{D_2}{D_1 + D_2}$$

The weight assigned by the analytic hierarchy process is small, while the weight assigned by the entropy weight method is large. the main result data are shown in the following table:

Table 10 Algorithm combined with data table

	AHP	EWM	Combing
C_1	0.316	0.3157934	0.315
C_2	0.324	0.32786136	0.326
C_3	0.115	0.11634524	0.115
C_4	0.233	0.2257647	0.227

In this way, through the linear combination of the two evaluation algorithms, we get the final weight of assets, liabilities, historical credit and personal information, thus obtaining the personal credit evaluation system.

2.3 CALCULATE CREDIT SCORES ACCORDING TO TOPSIS

After the weight of the four indicators was calculated by AHP-EWM, the weighted Topsis model was used to evaluate the indicators and the individual credit score of each customer was obtained. the specific algorithm steps are as follows:

Step1: Firstly, all the data involved in the selected indicator are processed forward to unify the indicator type, and the forward matrix is obtained. Among them, assets, historical credit and personal information are extremely large, while liabilities are extremely small. the reciprocal method $(\frac{1}{x})$ is used for extremely large processing of this index, and the polar consistency matrix $R = (r_{i1}, r_{i2}, r_{i3}, r_{i4})$ of the evaluation index is obtained.

Step2: Use AHP-EWM to determine the index weight vector

Step3: standardize the forward transformation matrix obtained by step1 to eliminate the influence of different index dimensions, namely

$$z_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^n {x_{ij}}^2}}$$

Step4: according to the step to get on the standardization of the matrix maximum defined $Z^+ = max|z_{ij}|$ and minimum $Z^- = min|z_{ij}|$, which is suitable for the optimal vector Z^+, Z^- as the vector of inferior quality.

Step5: define the distance between the ith evaluation object and the maximum value $D_i{}^+ = \sqrt{\sum_{j=1}^m w_j (Z_j{}^+ - z_{ij})^2}$ and minimum distance $D_i{}^- = \sqrt{\sum_{j=1}^m w_j (Z_j{}^+ - z_{ij})^2}$.

Step6: Finally calculate the score before normalization of the ith evaluation index

$$S_i = \frac{D_i{}^-}{D_i{}^- + D_i{}^+}$$

At this point, the larger the various evaluation indexes are, the closer the state of the evaluated object is to $D_i{}^-$, and the greater the comprehensive evaluation value is, the higher the individual credit score will be. on the contrary, it is close to $D_i{}^+$, and the smaller the comprehensive evaluation value, the lower the individual credit score.

Through the above a series of steps that will get the four indexes of system clustering, through the AHP - EWM fusion algorithm, determines the relative weight, and standardized data on the results of clustering index of user data, and USES the topsis, determines the optimal vector and vector, the worst in each index are calculated separately, and the Euclidean distance, finally obtained and the optimal value of the recent distance.

Based on the given data and the established scoring model, the distribution of credit scores of these 1000 customers is calculated. the results are shown in the figure below, showing normal distribution as a whole:

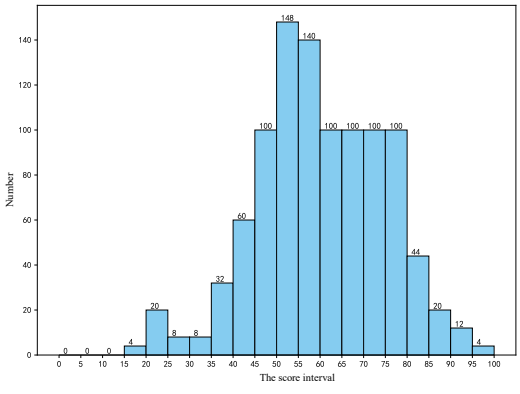

FIG. 2 Histogram of credit score distribution

2.4 CLASSIFICATION OF CUSTOMER CREDIT RATING BY K-MEANS CLUSTERING

After obtaining customers' credit scores, we also need to divide their credit grades. K-means algorithm is used to cluster customers according to the calculated credit scores, and corresponding grades are divided according to the

clustering results. the specific process is as follows:
(1) Randomly select K objects, and each object initially represents the center of a cluster;
(2) for each remaining object, assign it to the nearest cluster according to its distance to each cluster center;
(3) Recalculate the average value of each cluster and update it to the new cluster center;
(4) Repeat 2 and 3 until the criterion function converges.
By setting different initial values and making several attempts, the optimal results are selected for analysis. the plan of the optimal results is shown in the figure below:

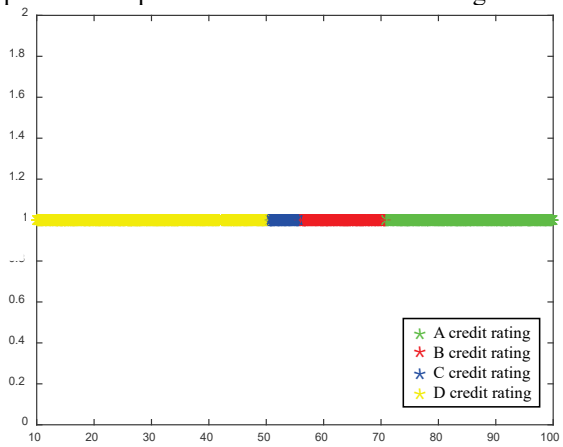

FIG. 3 Clustering results

According to the clustering results, the credit rating of customers can be divided into 4 categories. Here, ABCD is used to represent the four grades. A represents very good credit, B represents good credit, C represents average credit, and D represents poor credit.

Table 11 Level correspondence

credit rating	credit score
A	71.5-100.0
B	57.6-71.5
C	50.2-57.6
D	10-50.2

3. TEST THE MODEL

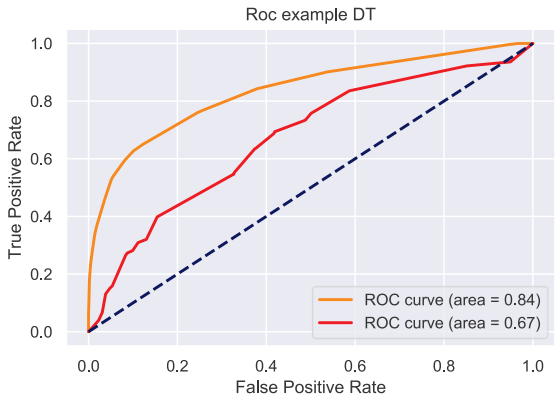

FIG. 3 Roc curve

In the above, in order to verify the generalization of the decision tree model, the KS value is introduced as the basis of the evaluation model. In order to further test the effect of 00 model, Roc curve was introduced. First, 5-fold cross-validation was carried out for the training set data, and Roc curves were drawn respectively. the average Roc curve was calculated by interpolation, and the results were obtained, as shown in the figure below:

As can be seen from the figure above, the roc curve has a good customer effect of 0.84, while the ROC curve has a bad customer effect of 0.67, which is very good for the credit evaluation model.

4. EVALUATION AND PROMOTION OF THE MODEL

4.1 ADVANTAGES OF THE MODEL

4.1.1. Data is preprocessed before the evaluation model is established. In particular, one-Hot coding is used for the standardization of disordered discrete data, which effectively improves the data quality and makes the model more accurate.

4.1.2. When constructing the personal credit risk assessment model, a variety of methods are compared, and the current optimal model continues to be optimized with full consideration of a certain principle, and the model results are highly usable.

4.1.3. the personal credit risk assessment model based on AHP-EWM not only considers the subjective experience of experts, but also takes into account the actual situation when determining the index weight, so as to obtain a more objective and reasonable comprehensive weight, avoiding the influence of personal subjectivity.

4.2 SHORTCOMINGS OF THE MODEL

Due to the limited time and energy, the established personal credit risk evaluation system also has some shortcomings. the limited factors considered by the model affect the accuracy of the model to a certain extent.

4.3 PROMOTION OF THE MODEL

Individual credit decisions can be extended to enterprises, and the research method in this paper can be referred to in the risk assessment of enterprise loans.

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Damping Attenuation Characteristics of Valve-Controlled Damping Adjustable Shock Absorber

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Abstract: the main objective of this paper is to study the damping attenuation characteristics of valve-controlled damping adjustable shock absorber. Considering the damping heat generation and dissipation process, the thermodynamic equilibrium model of the shock absorber was established in terms of energy conversion. the damping curves of the shock absorber sample at four different impact velocities were obtained through experiments. Compared with the simulation, it is found that the difference value of the thermal decay rate hits its peak, which is mainly caused by the mechanical friction at low speed. Simultaneously, the experimental results demonstrate that the damping power drops by 25.64% after reaching the thermal equilibrium. Nevertheless, it can still provide damping power of about 281.34J during the one work process. Finally, the study indicates that the shock absorber still has good damping characteristics after thermal decay.

Keywords: Adjustable Damping; Shock Absorber; Thermodynamic; Damping Power; Damping Attenuation

1. INTRODUCTION

It is universally acknowledged that shock absorber is a fundamental component of automotive suspension to buffer and eliminate road vibration, which plays a significant role in the overall vehicle stability, passenger comfort and driving safety. the working quality of shock absorber itself, i. e. the damping characteristics, has prominent effects on the performance of the suspension. Recently, investigation on damping characteristics of shock absorbers has become the focus at home and abroad. Pengfei Liu et al. [1] proposed a novel resistance switching method to control an electromagnetic damper (EMD) system of a vehicle seat suspension, and researched torque response characteristics of the EMD system in detail. the results demonstrate that the EMD seat was able to reduce the vibration of driver body. Rahmani Mohsen et al. [2] used nonlinear time domain simulations and linear stability analysis to obtain the required equivalent stiffness and damping to be supplied by the shimmy damper. Aydin Ersinet al. [3] investigated earthquake behavior of the structure corresponding to these optimum designs using EI Centro Earthquake (NS) record. As a result, it was shown that the numerical examples that the optimum damper design could be changed based on the vibrations of the designer's constraints. Yan Yong et al. [4] mainly analyzed the effect of the yaw damper with its series stiffness value on the stability and bifurcation type of the railway bogie. Finally, numerical analysis of corresponding bifurcation diagrams is given to verify the accuracy of the conclusion. Demić M D et al. [5] analyzed the thermal load effects of the shock absorber from the perspective of the damping degradation mechanism, and calculated the dynamic deflection and mechanical work capacity of the suspension under random vibration by simulation. the results demonstrate that the heat generation of the shock absorber decreases with the increase of the vehicle's velocity and the amplitude, and the thermal load effect decreases as the use time increases. Deng Xiaoxu et al. [6] obtained the thermal balance temperature under the parameters of excitation speed, excitation amplitude and quality through a huge influx of experiments, and determined the influence of these parameters on thermal equilibrium. Most specifically, he confirmed the relationship between the parameters by linear regression analysis. However, it's theoretically derived that the damping performance of the shock absorber is affected by various parameters. H. T. Liu et al. [7] established a damping characteristic model of a single-tube inflatable shock absorber, investigated the effects of chamber pressure, oil density and viscosity on damping characteristics by simulation. the results suggest that as the destiny and viscosity of the oil increases, the damping effect of the shock absorber increases. Ahmad Syuhri et al. [8] studied the damping nature, harvested power and efficiency. the results indicate that the electrical force contributes a lot in low range of amplitudes and frequency. Gatti Gianluca et al. [9] investigated the effect of the nonlinearity and mass ratio of the attachment for both softening and hardening stiffness characteristics using an analytical formulation. Jarrah Majid et al. [10] established a nonlinear FE model to conduct a parametric study on the effect of components geometry on the apparent mechanical properties of the piston metallic damper. It indicates that PMD exhibits stable hysteretic behavior and meet code requirements for low-cycle fatigue. Mikhailov V. P. et al. [11] described a dynamic model of the starting current of an active damper based on a magnetorheological elastomer and derived experimental data for the damper. Dziedziech K. et al. [12] focused on the tuned liquid column damper, both open and sealed, and the identification of its time-varying properties of nonlinear damping, frequency and air pressure identification. Results indicate that the damping ratio is nonlinear, time-varying and depends on the level of vibration. Walsh Kenneth K. et al. [13] performed results of numerical simulations for a five-story base-isolated building subject to four benchmark earthquakes. It indicates that the RPSD (resetting semi-active stiffness damper) is capable of a similar control performance as the

RSASD.

Normally, the previous work utilized the gradient of the damping force peak to evaluate the thermal attenuation characteristics of the actual shock absorber. Actually the real gradient of the damping force peak does not fully represent the thermal attenuation characteristics. the damping characteristic exhibited by the shock absorber diagram is the comprehensive performance of the internal damping characteristics of each damping valve. Therefore, the area enclosed by the dynamometer can be used as the damping force during the unit working period, which is heating power during the unit period.

This paper will take the valve-controlled adjustable damping shock absorber as the research objective. the thermodynamic equilibrium model of the shock absorber will be established in terms of energy conversion to study the characteristics of indicator attenuation before and after thermal equilibrium at four impact velocities.

2. ESTABLISHMENT AND SIMULATION ANALYSIS OF THERMAL EQUILIBRIUM MODEL

2.1. REBOUND STROKE

Considering that the damping force of the shock absorber is significantly larger in the fourth level than the other levels, and the corresponding damping power is also the largest. Thus, this paper will only study the thermodynamic process in the 4th level:

(1)Prior to opening the valve

Figure 1 shows the oil passage before opening the valve in the shock absorber, and, the damping force is generated by the fixed orifice corresponding to the rebound valve system.

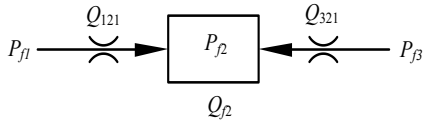


Figure 1 The oil passage of rebound stroke prior to opening valve

Taking the piston as the research object, the damping force of the rebound stroke before opening the valve is:

$$F_{fkq}=\left[\frac{\pi\left(d_p^2-d_r^2\right)}{4a_1}v_{f1}\right]^2 A_p-\left\{\frac{P_{40}V_{40}}{V_{40}+A_c x_{f2}}-\left(\frac{\pi d_r^2}{4a_2}v_{f1}\right)^2+\left[\frac{\pi\left(d_p^2-d_r^2\right)}{4a_1}v_{f1}\right]^2\right\}A_r$$

where, d_p and d_r denote the diameter of the shock absorber piston and piston rod respectively; v_{f1} denotes the velocity of the piston during rebound stroke; P_{40} and P_{f4} respectively denote pre-charge and dynamic pressure of the air chamber; V_{40} and V_{f4} denote initial and dynamic volume of the chamber respectively; A_c, A_p and A_r denote the cross sectional area of floating piston, piston and piston rod respectively; x_{f2} denotes the displacement of floating piston.

$$a_1=C_v A_{fg}\sqrt{2/\rho}, a_2=C_v A_{bg}\sqrt{2/\rho}$$

where, ρ denotes the oil density; C_v denotes the flow coefficient; A_{fg} and A_{bg} denote the fixed orifice area of rebound and compensator valve respectively.

(2)After opening the valve

Figure 2 depicts the oil passage after opening the valve,

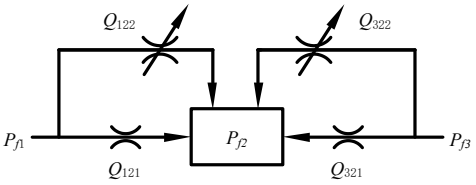


Figure 2 The oil passage of rebound stroke after opening valve

and the damping force can be obtained by the force analysis of the piston:

$$F_{fkh}=\frac{P_{40}V_{40}}{V_{40}+A_c x_{f2}}-\frac{Q_{f3}}{a_4}-\frac{a_2\left(a_2-\sqrt{a_2^2+4a_4Q_{f3}}\right)}{2a_4^2}+\frac{Q_{f1}}{a_3}+\frac{a_1\left(a_1-\sqrt{a_1^2+4a_3Q_{f1}}\right)}{2a_3^2}$$

where, Q_{f1} and Q_{f3} represent the flow through the rebound valve and the compensation valve respectively; μ represents dynamic viscosity of oil;

$$a_3=\frac{\pi\delta_f^3}{6\mu\ln\left(r_{f2}/r_{f1}\right)}, a_4=\frac{\pi\delta_b^3}{6\mu\ln\left(r_{b2}/r_{b1}\right)}$$

where, δ_f and δ_b respectively represent the bending deformation of the rebound and the compensation valve discs; r_{f1} and r_{f2} and r_{b1} and r_{b2} represent the inner and outer radius of the rebound and compensation valve respectively; μ denotes the oil dynamic viscosity.

2.2 COMPRESSION STROKE

Similar to the analysis process of the rebound stroke, the oil in the compression chamber is mainly divided into two ways during compression stroke: on one hand, the oil flows through the flow valve system into the rebound chamber; on the other hand, the oil flows through the compression valve system into the compensation chamber.

(1)Prior to opening the valve

Before opening the valve, the corresponding hydraulic oil circuit is shown in Figure 3,

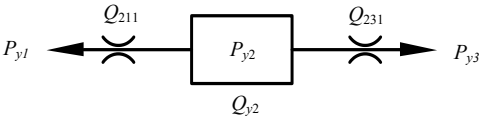


Figure 3 The oil passage of compression stroke prior to opening valve

and the damping force can also be obtained:

$$F_{ykq}=\left[\frac{\pi\left(d_p^2-d_r^2\right)}{4b_1}v_{y1}\right]^2 A_p+\left\{\frac{P_{40}V_{40}}{V_{40}-A_c x_{y2}}+\left(\frac{\pi d_r^2}{4b_2}v_{y1}\right)^2-\left[\frac{\pi\left(d_p^2-d_r^2\right)}{4b_1}v_{y1}\right]^2\right\}A_r$$

where, v_{y1} is the velocity of the piston rod during compression stroke; x_{y2} is the displacement of floating piston during compression stroke.

$$b_1=C_v A_{lg}\sqrt{2/\rho}, b_2=C_v A_{yg}\sqrt{2/\rho}$$

where, A_{lg} and A_{yg} are the fixed orifice area of flow-off and compression valve respectively.

(2)After opening the valve

After opening the valve, the corresponding hydraulic oil circuit is shown in Figure 4,

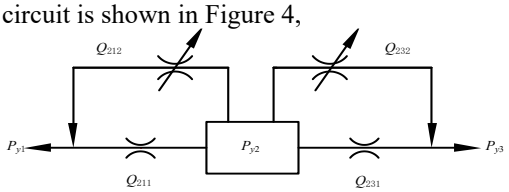


Figure 4 The oil passage of compression stroke after

opening valve
and the damping force can be obtained:

$$F_{ykh}=\left[\frac{Q_{y1}}{b_3}+\frac{b_1\left(b_1-\sqrt{b_1^2+4b_3Q_{y1}}\right)}{2b_3^2}\right]^2 A_p+\left[\frac{P_{40}V_{40}}{V_{40}-A_c x_{y2}}+\frac{Q_{y3}}{b_4}+\frac{b_2\left(b_2-\sqrt{b_2^2+4b_4Q_{y3}}\right)}{2b_4^2}-\frac{Q_{y1}}{b_3}-\frac{b_1\left(b_1-\sqrt{b_1^2+4b_3Q_{y1}}\right)}{2b_3^2}\right]A_r$$

where, Q_{y1} and Q_{y3} represent the flow through the flow valve and compression valve respectively;

$$b_3=\frac{\pi\delta_l^3}{6\mu\ln\left(r_{l2}/r_{l1}\right)}, b_4=\frac{\pi\delta_y^3}{6\mu\ln\left(r_{y2}/r_{y1}\right)}$$

where, δ_l and δ_y denote the bending deformation of the flow valve and compensation valve discs; r_{y1}, r_{y2}, r_{l1} and r_{l2} denote the inner and outer radius of the compression and flow valve.

The value of work done by the shock absorber during the working cycle, i. e., the heating work during per unit cycle is given by:

$$W_z=FS$$

where, F denotes the damping force; S denotes the displacement of the piston rod.

The thermal energy generated by the damping force will be shifted to two parts: one part is absorbed by the shock absorber body and thereby causing its own temperature to rise; furthermore, the other part is diffused into the atmosphere by heat exchange. In accordance with the conversion of energy, the thermal equilibrium equation of the shock absorber can be obtained:

$$W_z=Q_{ws}+Q_{sr}$$

where, W_z is the damping work; Q_{ws} is the work causing the temperature rise; Q_{sr} is the work of external heat dissipation

Wherein, the temperature rise equation of the shock absorber body is:

$$Q_{\mathrm{ws}}=(C_lM_l+C_sM_s)\frac{\mathrm{d}T_{oil}}{dt}$$

where, C_l and C_s denote the specific heat of oil and cylinder respectively; M_l and M_s denote the mass of oil and cylinder respectively; T_{oi} denotes the oil temperature.

2.3 HEAT CONDUCTION MODEL

During the heat dissipation process of the shock absorber, the heat in the working cylinder is transmitted to the housing of the reservoir cylinder by means of heat conduction. Therefore, the heat flux of the heat conduction process yields:

$$\Phi_{cd}=\frac{T_{n1}-T_{w2}}{R_{cd}}$$

where, T_{n1} is the temperature of the inner wall of the working cylinder; T_{w2} is the temperature of the outer wall of the reservoir cylinder.

The thermal resistance of the R_{cd} in the Eq. (12), and the corresponding calculation formula thereof can be obtained:

$$R_{cd}=\frac{1}{2\pi\lambda_g l_n}\ln\frac{r_{n1}}{r_{n2}}+\frac{1}{2\pi\lambda_g l_w}\ln\frac{r_{w1}}{r_{w2}}+\frac{1}{2\pi\lambda_y l_{cy}}\ln\frac{r_{w1}}{r_{n2}}$$

where, r_{n1} and r_{n2}, denote the inner and outer radius of the work cylinder respectively; r_{w1} and r_{w2} denote the inner and outer radius of reservoir cylinder respectively; λ_g and λ_y denote the cylinder and oil thermal conductivity respectively; l_n, l_w and l_{cy} denote the effective length of work cylinder, reservoir cylinder and overlapping chambers.

2.4 HEAT CONVECTION MODEL

The heat transfer process of the oil in the working chamber is forced convection heat transfer in the tube, and the corresponding heat transfer model can be expressed as:

$$\Phi_{dl}=h_{dl}A_n(T_y-T_{n1})$$

where, h_{dl} denotes the coefficient of forced convection heat transfer; A_n denotes the heat exchange area between the inner wall of the working cylinder and the oil; T_y denotes the oil temperature; T_{n1} denotes the inner cylinder temperature.

2.5 THERMAL RADIATION MODEL

If the surface of the reservoir cylinder is coated with black paint, the heat transfer process of the external radiation is supposed to be considered. In fact, the radiant heat flux of a black object can be obtained by the following formula:

$$\Phi_r=\varepsilon c_b A_{\mathrm{w2}}\frac{T_{w2}^4-T_{air}^4}{100^4}$$

where, ε denotes the emissivity of external radiation of reservoir cylinder, here, ε=0.75; T_{w2} and T_{air} denote the temperature of the surface of the reservoir cylinder and the external environment respectively; c_b denotes the emissivity of the reservoir cylinder, here, c_b =5.67; A_{w2} denotes the radiation area of the reservoir cylinder.

Based upon the thermodynamic analysis above and the series-parallel relationship between the numerous thermal resistances in the heat transfer process of the shock absorber, hence, the expression of the total heat flux during the heat transfer of the shock absorber is as follows:

$$Q_{sr}=\frac{T_y-T_{air}}{R_z}$$

where, R_z = R_{dl}+R_{cd}+R_b; R_z denotes the total resistance during heat transfer; R_{dl} denotes the thermal resistance of heat convection; R_b denotes the thermal resistance of heat transfer from the surface of the reservoir cylinder.

3. EXPERIMENTAL ANALYSIS OF ATTENUATION CHARACTERISTICS

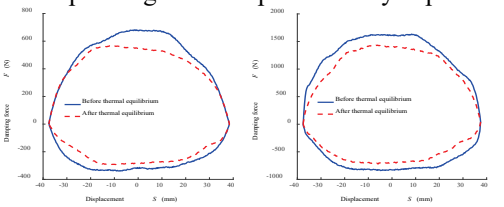
The whole shock absorber was taken as the experimental object, and the experiment was carried out according to the test procedure stipulated by the national standard QCT545-1999. First, the shock absorber sample is placed in a normal temperature environment for more than 6 hours. Secondly, according to the performance of the shock absorber, the stroke of the piston rod is ±37.5 mm, and the excitation frequency of the actuator is set to 0.556 Hz, 1.12 Hz, 1.668 Hz and 2.207 Hz. the specific process of the experiment is as follows:

(1)Fixing the lower end of the shock absorber on the servo cylinder of the test bench, so that the upper end of the piston rod is suspended;

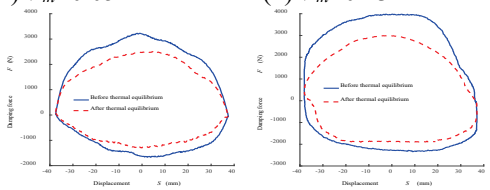
(2)Start the hydraulic power source to supply oil to the test bench;

(3)Input the control command on the host computer interface, find the middle position by measuring the highest position and the lowest position of the piston rod, and initialize the position of the piston rod;

(4)Fixing the upper end of the piston rod to the force sensor;
(5)Input the corresponding sinusoidal excitation signal on the upper monitor and set the experiment value every 2 minutes;
(6)Export the test results and perform data processing to output the damping force and obtain temperature rise curve.
The electro-hydraulic servo test bench is utilized to collect three signals of the real-time temperature, damping force and piston rod displacement of the shock absorber sample. Moreover, in accordance with the test results, as are shown in Figure 5, the change of the indicator diagram corresponding to the impact velocity is plotted.



(a) V_m=0.052m/s (b) V_m=0.131m/s



(c) V_m=0.262m/s (d) V_m=0.524m/s

Figure 5 Damping experimental values before and after thermal equilibrium

It can be seen from Figure 5 that although the experimental curve of the dynamometer is not as saturated and round as the simulated one, there is no sustained zero damping, and the damping changes smoothly and continuously. Hence, it can be considered that the vibration damping effect is well. Furthermore, the work attenuation in various degrees after thermal equilibrium verifies that of the simulation.
Most specifically, the peak values of the damping force and the work before and after thermal equilibrium are shown in Tables 1 and 2 respectively. Note that the maximum difference between the experimental and the simulated results of the damping force peak is 302.2N, accounting for around 13.6% of the compressive force peak when it is at 0.524m/s and 25°C during the compression stroke. on the other hand, the maximum difference between the experimental and simulated value of the damping work is 24.98J, occupying approximately 9.45% of the work per unit cycle, which occurs at the impact velocity of 0.262m/s prior to the thermal equilibrium. In addition, the experimental results suggest that the thermal decay rate increases with the increase of the impact velocity and thereby verifying the correctness of the simulation model.
By comparison, it can be found that the experimental values of other thermal decay rate except at 0.052m/s are smaller than the simulated ones, but the difference at the same excitation speed does not exceed 5%. Then, the analysis shows that the difference is mainly owing to the work caused by mechanical friction at low speed. Furthermore, the damping power drops by 25.64% after achieving thermal equilibrium at the impact velocity of 0.524m/s, however, it can still provide the damping power of 281.34J during one work process. That is, the experiment demonstrates that the shock absorber retains good damping characteristics after thermal decay.

Table 1 The comparison of damping energy before and after thermal equilibrium

Velocity (m/s)	Peak value of damping force (/N) and damping work at 25°C (/J)			Peak value of damping force (/N) and damping work (/J) after thermal equilibrium			Thermal decay rate	
	Rebound	Compression	Damping work	Rebound	Compression	Damping work	Experi-ment (%)	Simula-tion (%)
0.052	699.79	-347.72	59.95	567.29	-332.04	52.48	12.46	9.02
0.131	1631	-845.08	143.45	1441.6	-717.52	123.77	13.72	15.52
0.262	3121.6	-1675.5	264.39	2509.0	-1306.10	209.23	20.86	21.05
0.524	3982.7	-2218.0	378.35	2991.8	-1779.2	281.34	25.64	27.67

Table 2 The comparison of experimental and simulated values of damping force peak and damping work

Velocity(m/s)	Peak value difference of damping force (/N) and work difference (/J) at 25 °C			Peak value difference of damping force (/N) and work difference (/J) after thermal equilibrium		
	Rebound	Compression	Damping work	Rebound	Compression	Damping work
0.052	35.09	15.9	1.29	-37.47	30.04	-0.89
0.131	30.7	15.58	-3.2	37.9	16.79	-0.11
0.262	93.8	74.2	-24.98	23.9	41.7	-19.25
0.524	145	302.2	-6.55	224.3	93.6	2.94

4. CONCLUSIONS

In this paper, the damping heat generation and dissipation process of the shock absorber were considered comprehensively. Then, the thermodynamic equilibrium model of the shock absorber was established. Finally, the damping work attenuation characteristics of the shock absorber at four impact speeds were studied. the results demonstrate that the higher the impact velocity, the larger the damping power, and the greater the damping power attenuation after reaching the thermal equilibrium. The experimental results also indicate that the thermal decay rate increases with the increase of the impact velocity, which verifies the correctness of the simulation model.

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Research on Dynamic Programming Model of Ordering and Transportation of Raw Materials Based on Production Enterprises

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Abstract: For a long time, the ordering and transportation of goods is always the key problem in the production process of enterprises. How to reduce the cost of capital investment and increase revenue in the case of decision-making is often a major concern of enterprises. Choosing different suppliers and transporters, raw material procurement costs and transshipment losses will be different. In order to reduce production costs, some enterprises also increase labor productivity; or the production efficiency of enterprises remains unchanged, the way to reduce unit consumption to increase profits. the discrete stochastic dynamic programming model is used to find the optimal solution of the scheme step by step recursively based on the objective function and boundary equation. Since the final results obtained by the two algorithms are the same, for example, if the dynamic programming model only uses the inverse recursive method for solving, the solving speed will be greatly reduced when there are many stages. From the perspective of practical production, the bi-directional recursive method is used to solve the model, which can speed up the solving rate of multi-stage dynamic programming model.
Keywords: Fuzzy Comprehensive Evaluation Model; Discrete Dynamic Programming Model; Reverse Recursive Method; Simulation

1. INTRODUCTION

In the face of raw materials and enterprise production problems, often multi-process optimization problem. Suppliers and transporters have corresponding constraints, how to control variables through objective function to maximize benefits is the key. the selection of raw materials is divided into two stages. One is the selection of suppliers, and the other is the selection of transporters. Because of the discreteness and randomness between the two choices, the dynamic programming model is a method to solve the optimization of multi-stage decision-making process, which transforms the multi-stage problem into a series of interrelated single-stage problems and then solves them one by one. Therefore, this paper establishes a discrete stochastic dynamic programming model to obtain the maximum profit.

The key point of dynamic programming model is to transform a big problem into a series of sub-problems and solve them one by one. In this multi-stage decision process, each stage selection only depends on the current state to determine the output state. After the decision of each stage is determined, a decision sequence is formed, which determines the final solution of the problem, and the overall optimality is derived by the optimal progression of the subproblem. However, in the sub-process, the selection of suppliers will also affect the selection of transshippers, so it is necessary to establish the transfer relationship of the state before and after the stage, namely the state transfer equation.

In the solution of dynamic programming, the sequential recursive method or the inverse recursive method are often used to calculate the optimal solution of each sub-process, and the final results of the sequential recursive method and the inverse recursive method are exactly the same. Since there are only two sub-processes in this problem, the calculation speed will not be too slow if only one of them is used. But considering the real life is often multi-process time, the solution speed will be greatly reduced. Therefore, on this basis, the use of two-way recursive method to speed up the problem solving speed, so that the model is more widely used.

2. DISCRETE DYNAMIC PROGRAMMING MODEL FOR ORDERING AND TRANSPORTATION OF RAW MATERIALS

2.1 DETERMINATION OF STAGE FUNCTIONS

Considering the progress sequence of product manufacturing, the supply, transportation and production of raw materials can be naturally divided into three stages, so that the problem can be solved and optimized in the order of stages. [1]

Assuming suppliers supply A, B, C three different raw materials. the enterprise choose suppliers as stage one, expressed by S1. A certain transshipment company with low transshipment loss rate meeting the production demand of the enterprise is taken as stage II, which is represented by S2. Enterprises rely on suppliers and transporters to provide sufficient raw materials and advanced production equipment to manufacture products for stage three, using S3 to represent the variables in each stage can be expressed as k = 1, 2,..., n. (Here, n = 3) represents a total of three stages. [2] As shown in Fig. 1.

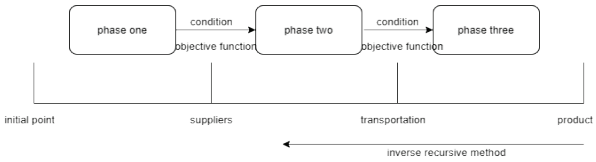

Figure 1. Stage simplified flow chart

According to the requirements of raw materials and loss rate in the actual production of enterprises, the corresponding index function is determined, that is, the supplier supplies the raw materials to one of its corresponding transporters efficiently. When the loss rate of the transporter is small, the raw materials are transported to the enterprise. the capacity of the product manufactured by the enterprise is expressed by $V_{k,n}(x_k, u_k, x_{k+1}, \ldots, x_{n+1})$, $k = 1, 2, \ldots, n$. Since the dynamic programming model is discrete, $V_{k,n}$ can be expressed as functions about x_k, u_k, $V_{k+1,n}$, denoted as:

$$V_{k,n}(x_k, u_k, x_{k+1}, \ldots, x_{n+1}) = \partial_k(x_k, u_k, V_{k+1,n}(x_{k+1}, u_{k+1}, \ldots, x_{n+1}))$$

In this formula, the function ∂_k is monotonic for the index variable $V_{k+1,n}$.

After quantitative analysis on the supply and transfer of raw materials by suppliers and transporters, it is not difficult to find that indicators in each stage can be considered comprehensively. In the actual process, the stage $indeu_s$ of stage S depends on the state x_s and the decision us, which is expressed by $v_s(x_s, u_s)$. the index function is composed of the following:

$$V_{k,n}(x_k, u_k, x_{k+1}, \ldots, x_{n+1}) = \sum_{=1}^{n} v_s(x_s, u_s)$$

2.2 DYNAMIC PROGRAMMING MODEL OF ORDERING AND TRANSPORTATION BASED ON RAW MATERIALS OF MANUFACTURING ENTERPRISES

After establishing the decision variables in the three stages of raw material supply, transportation and manufacturing, the strategy of a certain stage S_k is obtained by combining the sequence of each decision variable u_k. Here, we record the whole process strategy of each stage of raw materials starting from the initial state x_1 in stage one S_1 as follows: The strategy from the first stage to the end stage can be recorded as $P_{1n}(x_1)$, namely

$$P_{1n}(x_1) = \{u_1(x_1), u_2(x_2), \ldots, u_n(x_n)\}$$

The strategy from the state x_k of stage k to the second half of the whole process ending state is denoted as:

$$P_{kn}(x_k) = \{u_k(x_k), \ldots, u_n(x_n)\}, k = 1, 2, \ldots, n-1$$

The strategy from stage k to stage k+1 is denoted as:

$$P_{k(k+1)}(x_k) = \{u_k(x_k), \ldots, u_{k+1}(x_{k+1})\}$$

In different processes of each stage, with the change of state, the optional strategy is within a certain range, and the set of strategies that can be allowed by the reality is defined as the set of permissible strategies, which is represented by $P_{1n}(x_1), P_{kn}(x_k), P_{k(k+1)}(x_k)$.

In this model, in order to make the index function reach the optimal result required by the enterprise, the strategy in the whole process is linked to the optimal strategy, denoted as: $P^*_{kn} = \{u^*_k, \ldots, u^*_n\}$

where P^*_{1n} is the optimal strategy in the whole process. Starting from the initial state x_1, the state is updated according to the optimal strategy P^*_{1n} and the state transition equation. the formed state set is called the optimal trajectory, which is denoted as:

$$\{x^*_1, x^*_2, \ldots, x^*_{n+1}\}$$

Since the transformation process of raw materials between stage S_k and stage S_{k+1} has been determined, and as the end user, enterprises require to purchase class A raw materials as much as possible and class C raw materials as little as possible in stage 1, and reduce the cost of transportation and storage in stage 2, and require suppliers to minimize the transshipment loss rate of the corresponding transshipment suppliers, while ensuring that the production capacity of their own enterprises is improved, that is, the state x_k of S_k in each stage is transferred, and the state x_{k+1} of the next stage has been determined.

The state transition equation is used to express this evolution law as follows:

$$x_{k+1} = T_k(x_k, u_k), k = 1, 2, \ldots, n$$

According to the index function of the state transition equation, it can be expressed as the function of state x_k and strategy P_{kn}, namely $V_{k,n}(x_k, P_{kn})$. Combining the above known state x_k, the optimal value function of the index function $V_{k,n}$ with respect to the policy P_{kn} is obtained, denoted by $f_k(x_k)$, that is: $f_k(x_k) = min\, V_{k,n}(x_k, p_{kn})$

After obtaining the optimal strategy of the whole process, the model needs to be optimized many times to obtain the optimal solution of the procurement and transfer scheme between suppliers, transporters and enterprises. Each optimization solution is a mechanical repetition process with the same principle, which can be regarded as a recursive equation when using computer-aided simplified calculation, namely:

$$\begin{cases} f_{n+1}(x_{n+1}) = 1 \\ f_k(x_k) = min\{v_k(x_k, u_k) * f_{k+1}(x_k)\}, k = 1, 2, \ldots, n \end{cases}$$

Based on the above data, [3] a dynamic programming model for business linkages among suppliers, transporters and enterprises is established as follows:

$$\begin{cases} V_{k,n}(x_k, u_k, x_{k+1}, \ldots, x_{n+1}) = \partial_k(x_k, u_k, V_{k+1,n}(x_{k+1}, u_{k+1}, \ldots, x_{n+1})) \\ V_{k,n}(x_k, u_k, x_{k+1}, \ldots, x_{n+1}) = \sum_{=1}^{n} v_s(x_s, u_s) \\ P_{kn}(x_k) = \{u_k(x_k), \ldots, u_n(x_n)\}, k = 1, 2, \ldots, n-1 \\ P^*_{kn} = \{u^*_k, \ldots, u^*_n\} \\ x_{k+1} = T_k(x_k, u_k), k = 1, 2, \ldots, n \\ f_k(x_k) = min\, V_{k,n}(x_k, p_{kn}) \\ \begin{cases} f_{n+1}(x_{n+1}) = 1 \\ f_k(x_k) = min\{v_k(x_k, u_k) * f_{k+1}(x_k)\}, k = 1, 2, \ldots, n \end{cases} \end{cases}$$

According to the optimality principle analysis of dynamic programming, this model conforms to the actual production situation. Formula (5) reflects the pros and cons of supplier and transporter selection scheme, namely the objective function of the model.

2.3 MODEL SIMULATION

The inverse order method is used to solve the model: the inverse order recursion is used to solve the model. According to the characteristics of time and space, the complex problems are divided into three interrelated stages. After selecting the direction of the system, the reverse calculation is carried out from the end point to the starting point, and some decision is found for each stage

step by step, so that the whole process reaches the optimal, which is called the reverse order decision process. [4]

Various objective situations when the problem is developed to various stages are expressed in different states.

After sorting each stage in a certain order, for a given stage state, its previous stage state cannot directly affect the future decision-making, and can only affect the final optimization results through the selection of the current state.

According to the boundary conditions, [5] the solution process starts from S=3 and then goes backward and forward, so as to gradually obtain the corresponding optimal values of the optimal decisions in each stage, and finally to obtain the optimal solution of the whole problem.

The generalized free terminal conditions are: $ff(T_w) = \zeta(T_w) w = 1,2,3\cdots 402$

Fixed starting conditions can be expressed as: $X_1 = \{x_1\} = \{x_1^*\}$

According to the accuracy requirement, the numerical method is used for discretization, and the process of solving S3-S1 is as follows:

$$f_3(E) = 0\ f_k(s_k) = \underset{x_k \in D_k(s_k)}{MIN}\{C(s_k, x_k) + f_{k+1}(s_{k+1})\}$$

Next: Calculate one subsequent vertex of the vertex on the path in turn

The third stage: $f(s_3) = 0$

The second stage: $f(E_i) = MIN(C(E_i, s_3) + f(s_3))$ $(i = 1,2,3\cdots 8)$

The first stage: $f(T_w) = MIN\begin{cases} C(T_w, E_1) + f(E_1) \\ \vdots \\ C(T_w, E_i) + f(E_i) \end{cases}$

$$\begin{cases} (i = 1,2,3\cdots 8) \\ (w = 1.2.3\cdots 402) \end{cases}$$

C++ is used for subsequent solution of the model, starting from the boundary until the function value is obtained. the solution of the next sub-stage is based on the solution of the previous sub-stage for further solution.

When the simulation experiment, set from 402 suppliers to select, simulate the selection scheme, get the simulation results, namely the most important 50 suppliers, as shown in the figure 2.

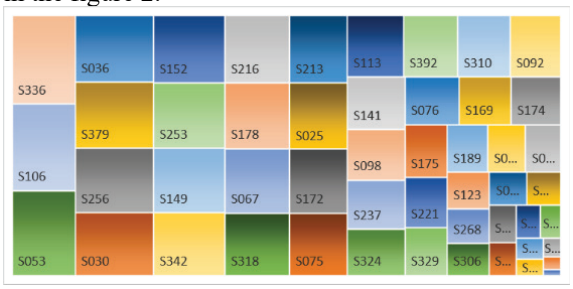

Figure 2.

Table 1.50 most important suppliers

S2 84	S2 47	S0 05	S0 07	S1 74	S0 98	S1 13	S3 18	S1 49	S3 79
S2 66	S3 65	S3 06	S1 89	S1 69	S1 41	S0 75	S0 67	S2 53	S0 36
S2	S2	S2	S3	S0	S0	S1	S1	S1	S0
82	94	68	29	76	92	72	78	52	53
S2 18	S3 74	S1 23	S2 21	S3 24	S3 10	S0 25	S2 16	S0 30	S1 06
S0 31	S2 75	S0 80	S1 75	S2 37	S3 92	S2 13	S3 42	S2 56	S3 36

It can be seen from the table that the 50 most important suppliers can guarantee the production needs of enterprises and achieve the optimization effect. As shown in table 1.

3. IMPROVED METHODS FOR MODELS

Based on the difference between suppliers and transporters, the production cost and final income of enterprises will be different. In order to maximize the use of the multiple linear dynamic programming model, the optimal solution is established through different choices of decision variables, state variables and optimal strategies in the two stages of decision-making. [6]

There are two basic methods for dynamic programming: inverse recursive algorithm and sequential recursive algorithm. Sequential recursion is to push from the starting point to the end point, while reverse recursion is to recursively solve from the end point to the starting point. Each stage has a fixed starting 3.1ALGORITHM IMPROVEMENT OF DYNAMIC PROGRAMMING

Since the starting point and ending point of the three stages have been fixed, for the multi-stage decision-making problem, if the stage variable k and the state variable x_k of different stages are applied to a multi-stage decision-making problem with a large number of stage variables and state variables, the search speed will be greatly reduced. In order to improve the search speed of dynamic programming model in complex and multi-stage decision problems, the model will be improved.

3.2 THE MAIN PROCESS STEPS OF ALGORITHM IMPROVEMENT ARE AS FOLLOWS:

Set A and sets B, A, B are defined to be stored in bidirectional recursive state. First, the combination of $A = \emptyset, B = \emptyset, \emptyset$ is initialized.

$$ff_k(x_{k+1}) = \max/\min[v_k(x_{k+1}, u_k) + ff_{k-1}(x_k)];$$

$$fb_j(y_i) = \max/\min[v_j(y_j, u_j) + fb_{j+1}(y_{j+1})];$$

$$A = A \cup Xf;$$

$$B = B \cup Yb;$$

Xf and/are the state sets of forward recursion and backward recursion at a certain stage, respectively. If/is established, the cycle ends, and the cycle continues to output the optimal result. As shown in Fig. 3.

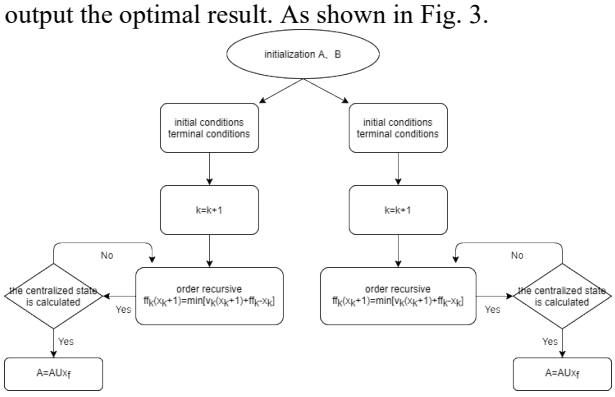

Figure 3. Resolving flow chart

3.3 BASIC EQUATIONS FOR THE IMPROVED

MODEL ALGORITHM:

$$ff_k(x_{k+1}) = \max/\min[v_k(x_{k+1},u_k) + ff_{k-1}(x_k)],\ k = 1,2,\cdots$$

$$fb_j(y_i) = \max/\min[v_j(y_j,u_j) + fb_{j+1}(y_{j+1})],\ \ j = n, n-1\cdots$$

Starting condition: $ff_0(x_1) = 0$;

Terminal conditions: $fb_{n+1}(y_{n+1}) = 0$;

3.4 SIMULATION OF MULTI-DECISION ALGORITHM

Suppose there are k stages and k decisions are needed. the stage and stage variables are k and the state variables are x_k. Accordingly, the decision variables P_k, [7] the optimal strategy P_k^{n}, the index function/and the optimal value function/are expressed as follows:

$$P_k(x_k) = \left|u_k(x_k), u_{k+1}(x_{k+1}), \cdots u_n(x_n)\right.$$

$$P_k^*(x_k) = \left|u_k^*(x_k), u_{k+1}^*(x_{k+1}), \cdots u_n^*(x_n)\right.$$

$$V_k = V_k(x_k, u_k, x_{k+1}, u_{k+1} \cdots x_n, u_n)$$

$$V_k = v_k(x_k, u_k) \oplus v_{k+1}(x_{k+1}, u_{k+1}) \oplus \cdots \oplus v_n(x_n, u_n)$$

$$f_k(x_k) = optV_{k,n}(x_k, u_k, x_{k+1}, u_{k+1} \cdots x_n, u_n)$$

Since the final results obtained by the reverse recursive and sequential recursive algorithms are the same, the bidirectional recursive method is used to solve the model to speed up the problem solving rate of the multi-stage dynamic programming model.

4. CONCLUSION

Based on the dynamic programming model, this paper establishes a discrete random dynamic programming model according to the actual situation of suppliers and transporters. Through the analysis of the supply characteristics of raw material suppliers and transporters, three evaluation indexes are summarized as supply volume, supply rate and procurement cost. By changing the constraint conditions of the scheme, the company ' s profit is increased. Some enterprises also increase their profits by improving labor productivity or reducing unit consumption, so the raw material ordering scheme needed by enterprises will also change. [8]

Although the focus of the two problems is different, but the objective function is the same, and the boundary conditions are small, are recursive to find the optimal solution. Here, the two are put into a discrete random dynamic programming model to consider and analyze. According to the dynamic programming model, the optimal solution is calculated by multiple iterations of reverse order recursion, and then the new ordering and transportation schemes that meet the requirements of enterprises are better planned.

From the perspective of actual production, the bi-directional recursive method is used to solve the model, which can speed up the solving rate of the multi-stage dynamic programming model, and more in line with the needs of enterprise production.

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The Design and Management Model of Airport Taxi Based on Goal Planning

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Abstract: the design of airport taxi involves two aspects, on the one hand, in order to minimize the phenomenon of passengers queuing and boarding, it was decided to distribute the parking spots on both sides of the parallel lanes, set up S-shaped entrances in the queuing area to evacuate passengers, and cross the parallel lanes to ensure the safety of passengers; on the other hand,, in order to improve the efficiency of taxis carrying passengers, the parking area of taxis is set to S type. Based on the setting of this parking lot, taking the number of boarding points, the number of passengers and the number of taxis as decision variables, and the efficiency of the ride as the optimal goal, a constrained ride efficiency model is obtained. It is found that under a certain passenger flow, set 10 There are two parking spaces and five “boarding points”, and the efficiency of the ride is at its maximum at this time. Determine the average return per unit time of normal passenger return to the urban area and the average return per unit time of short-distance passenger travel, and establish a model with the smallest difference, that is: the difference between the return of a taxi "short-distance return+return to the urban area" and the return of direct return to the urban area If the value is the smallest, it is found that a short-distance taxi carrying passengers only needs to return within $2T_0$ of the passenger departure, and then wait for t time to "prioritize" passengers.

Keywords: Single objective optimization; Airport taxi; Design and Management

1. INTRODUCTION

At present, the national economy as a whole is in a state of growth, and the consumption capacity of citizens has increased, and more people choose to travel by air passenger. Passengers arriving at the airport will choose airport buses, intercity railways, taxis, etc., in order to get to the destination in the city. Among them, taxis are not restricted by time and destination, and it is very convenient without transfers, so this way of travel Favored by flight passengers, according to brief statistics, the daily average daily operation volume of taxis to and from Zhengzhou Airport reaches nearly 2, 000, which is one of the main ways for passengers to collect and distribute.

There are often two parallel lanes in the "ride area" of the airport. It is necessary to set up a "boarding point" according to the actual situation, and arrange taxis and passengers reasonably under the conditions of ensuring the safety of vehicle passengers, so as to alleviate the situation of taxis and passengers waiting in line. Maximize the total ride rate.

Taxi's passenger income is related to the mileage, and the destination of passengers is far or near. Under the premise of not being able to refuse to carry and select passengers, taxi drivers are allowed to carry passengers multiple times. Therefore, the management department needs to give "priority" to the return of certain short-distance passenger-carrying taxis in order to balance the total revenue of each taxi driver, and establish a reasonable "priority" arrangement plan based on this condition.

2. EXPERIMENTAL

2.1 SELECTION OF THE BEST "PICK-UP POINT"

From the perspective of airport management, under the premise of ensuring the safety of passengers and vehicles, reasonable ride rules should be set up and "boarding points" should be arranged to improve overall ride efficiency. Therefore, we take ride efficiency as the final optimization goal, and the number of boarding points, the number of passengers arriving at the airport within a unit time, and the number of taxis arriving at the airport within a unit time are used as dependent variables for analysis.

At present, most domestic airport taxi pick-up areas are single-lane parking, matrix multi-lane parking, and oblique parking. [1] [2] the single-lane taxi pick-up method causes each stop due to lane restrictions. the number of taxis in the parking area is small, and the efficiency of taxi departure cannot be guaranteed; the multi-lane taxi pick-up method can accommodate multiple taxis at one time, which is convenient for passengers to carry luggage, and to a certain extent avoids the mixed traffic situation. the safety is high; the oblique taxi pick-up method can effectively improve the efficiency of the ride and effectively reduce the interference between leaving vehicles. Since there are only two parallel lanes in the airport "ride area" given in the question, a matrix-type lane parking and pick-up system is adopted.

First of all, in order to improve the convenience and efficiency of the ride, we set the "boarding point" on both sides of the road to reduce the time wasted due to the front and rear obstruction of the taxi, and double the ride efficiency of the "riding area" [3]. Secondly, in order to

ensure the safety of vehicles and passengers and avoid congestion caused by pedestrians crossing the road, a pedestrian bridge connecting the two sides of the parallel road can be built above the two lanes, and the position of the overpass is right at the airport exit station, avoiding the opposite side" the "boarding point" generates unnecessary walking distance due to the long distance, which improves the convenience and overall riding efficiency of passengers on the opposite side, while avoiding the low traffic of the "boarding point" on the opposite side. If there are many "boarding points" on one side of the road, it will cause the vehicle with passengers in the rear to be blocked by the vehicle in front, which will reduce the efficiency of the ride. Therefore, considering the riding situation, set up multiple "boarding points" on one side. k, the specific idea is shown in Figure 1.

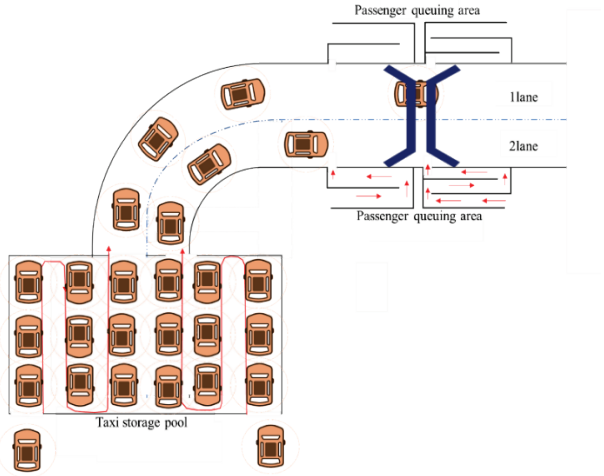

Figure 1 Schematic diagram of airport taxi passenger arrangement 1

This operation method of picking up passengers operates as follows: Arrange a number of taxi berths in the storage tank. At a certain moment, the gates are opened, and the corresponding number of taxis enter the pick-up area through the parallel lanes and stop at the corresponding parking spots. After the taxi stops, the outbound passengers will enter the pick-up area one by one. After passengers board the car, the two lanes of taxis will leave in turn, until the last taxi leaves the parking area, the gates will be opened again, and the pick-up area will enter the taxi.

2.2 AIRPORT OPERATION EFFICIENCY MODEL BASED ON SINGLE OBJECTIVE OPTIMIZATION

1. the establishment of the model

In order to improve the operating efficiency of the airport, it is necessary to consider both passengers and taxis, while reducing the waiting time for passengers and taxis at the airport.

Step1: Determination of optimization goals. the waiting time of a taxi driver is defined as the time between the taxi entering the station and the time when the passenger is loaded, and the waiting time of the passenger is defined as the sum of the waiting time for boarding and the boarding time. Assuming that during the operation of the airport, passengers carry taxis at a stable rate as a whole, set the riding efficiency as η, the total number of passengers as a, and the total number of taxis as b, then:

$$\max \eta = \frac{1}{\sum_{i=1}^{a} t_i/a + \sum_{j=1}^{b} T_j/b} \times \frac{2k}{\alpha^k} \tag{1}$$

Because passengers on both sides get on the bus at the same time for two "boarding points" when taking a taxi, the riding efficiency is increased by four times. Among them, t_i is the slower boarding speed of the two "boarding points" on one side. the total waiting time of passengers, T_j is the total waiting time of the j-th taxi.

Step2: Analysis of decision variables and environmental parameters. Assuming that the taxi is traveling in the same direction and overtaking is not allowed, the straight-line distance from the exit of the plane to the "boarding point" is s, and the total length of the overpass is L. Because the distance between the boarding points is small, it can be ignored. Ensure that the exit of the station, the "boarding point" on the same side, the flyover, and the "boarding point" on the opposite side are on the same straight line and perpendicular to the two parallel lanes. Considering the queue time of passengers and taxis, then:

The waiting time for passengers on the same side is:

$$t_a = \frac{s}{v_{person}} \tag{2}$$

The waiting time for passengers on the opposite side is:

$$t_b = \frac{s+L}{v_{person}} \tag{3}$$

The waiting time for the taxi on the same side is:

$$T_a = \frac{L_1}{v_{vehicle}} \tag{4}$$

The waiting time for the taxi on the opposite side is:

$$T_b = \frac{L_2}{v_{vehicle}} \tag{5}$$

Step3: the total time from entering the station to leaving the taxi is:

$$T = T_j + t_i \tag{6}$$

Step4: Analysis of constraint conditions. After the gates are opened, if the speed of the taxi is too fast, there will be a certain safety hazard. Therefore, the speed of the taxi should not exceed the maximum speed limit Vmax stipulated by the airport.

$$v_{vehicle} \le V_{max} \tag{7}$$

In summary, the constraints given:

$$\begin{cases} t_a = \dfrac{s}{v_{person}} \\ t_b = \dfrac{s+L}{v_{person}} \\ T_a = \dfrac{L_1}{v_{vehicle}} \\ T_b = \dfrac{L_2}{v_{vehicle}} \\ T = T_j + t_i \\ v_{vehicle} \le V_{max} \end{cases} \tag{8}$$

2. Solving the model

According to the above analysis, the model of question three is:

$$\begin{cases} max\ \eta = \dfrac{1}{\sum_{i=1}^{a} t_i/a + \sum_{j=1}^{b} T_j/b} \times \dfrac{2k}{\alpha^k} \\ t_a = \dfrac{s}{v_{person}} \\ t_b = \dfrac{s+L}{v_{person}} \\ T_a = \dfrac{L_1}{v_{vehicle}} \\ T_b = \dfrac{L_2}{v_{vehicle}} \\ T = T_j + t_i \\ v_{vehicle} \le V_{max} \end{cases} \quad (9)$$

Based on the above analysis, the link formula between the efficiency η and the dependent variable can be obtained. By calculating 0.9 times the maximum number of cars available for searching, the number of ride points at this time can be obtained. Under the conditions of ensuring the safety of vehicles and passengers, in order to maximize the overall riding efficiency, a total of 10 parking spaces are set up, that is, five "boarding points" are set on both sides, and the efficiency of the riding system is at the maximum at this time.

2.3 SHORT-DISTANCE TAXI ROUND-TRIP PRIORITY ARRANGEMENT MODEL

In order to balance the revenue of taxis as much as possible, we are now considering giving some priority to taxis returning short-distance passengers and resetting the queuing plan. For this reason, we separately studied the round-trip situation of most taxis between the airport and the city [4], and the round-trip situation of short-distance taxis between the airport and the city, and compared the benefits of the two in the same observation period. With the empty-load rate in the same observation space, search for short-distance taxi positions that make the difference between the revenue and the empty-load rate of the long-distance taxi relatively small as the final queuing plan.

1. Arrange the establishment of the model

The revenue of taxi passengers at the airport is directly related to the mileage (or time) of passengers. In order to balance the revenue of drivers, the following "optimization" plan is determined:

Assuming that a taxi queue waiting time T_0 in a certain period of time, the driving time of passengers returning to the urban area is T_1, and the income is P_1; while the short-distance passenger driving time is $T_2 < T_1$ and the income is $P_2 < P_1$, it needs to return to the airport via $2T_2$. The average return per unit time of a car carrying passengers back to the urban area: $P_1/(T_0 + T_1)$, the average return per unit time of a car carrying passengers back to the urban area: $P_1/(T_0 + T_1)$, *Average unit time revenue of a short-distance passenger-carrying vehicle:* $P_2/(T_0 + T_2)$.

If the revenue of all taxis is required to be as balanced as possible, that is, the waiting time t for taxis returning to the airport for a short distance must meet:

$$\min_{t \ge 0} \left[\frac{P_2+P_1}{T_0+2T_2+T_1+t} - \frac{P_1}{T_0+T_1} \right] \quad (10)$$

the $T0$, $T1$, $T2$, $P1$, $P2$ can be determined according to the actual situation of the airport, and the t value can be obtained. For a short-distance taxi carrying passengers, as long as it returns within 2% of the passenger's departure, and waits for more time, it will be "prioritized" to carry passengers.

Take the airport in the previous question as an example: the average driving from the airport to the city is $T1$=45, $P1$=140; the average short-distance driving is $T2$=10, $P2$=30, assuming the waiting time in line $T0$=60.

From the above formula, t=2.5 can be obtained, so it is concluded that if the short-distance passenger taxi at the airport can return to the airport within 20 minutes, the car only needs to wait for another 2.5 minutes to "prioritize" departure and carry passengers, and achieve revenue Balanced purpose.

2. "Priority" arrangements

Taxi drivers need to choose between two situations based on personal experience:

(A) Go to the arrival area and wait in line to carry passengers back to the city. Taxis must wait in line at the designated "car storage pool" and enter the venue according to the "first come, first come" line to pick up passengers. the waiting time depends on the number of taxis and passengers in the queue, and a certain time cost is required.

(B) Directly vacate and return to the urban area to solicit customers. Taxi drivers will pay no-load charges and may lose potential passenger revenue.

After confirming that the taxi driver returns for a short distance carrying passengers, a certain "priority" will be given to allow him to arrive at the "priority waiting area" for a short wait, so as to enter the first lane for priority transportation; if the taxi is not When the short-distance passenger time requirement is reached, they will not get "priority" after returning to the airport, but will return to the storage tank and wait in line for pick-up. If both of them enter the same lane at the same time, the taxi that returns short-distance passengers will be given priority, and the vehicle that departs from the storage pool needs to stop and wait, as shown in the following figure:

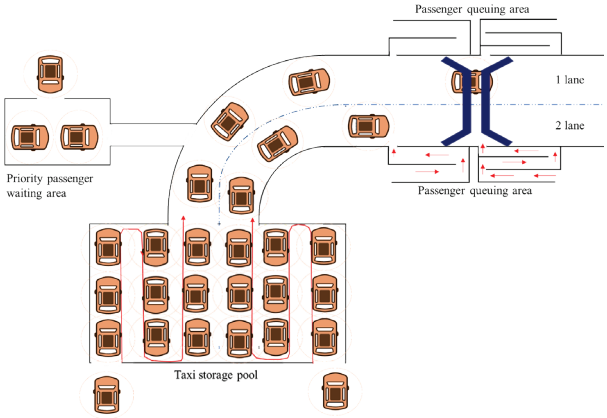

Figure 2 Schematic diagram of airport taxi passenger arrangement 2

3. RESULTS AND DISCUSSION

3.1 ADVANTAGES

Through specific and reasonable determination of the airport taxi pick-up mechanism, the ride efficiency under the number of pick-up points is calculated, and the impact of various environmental parameters on the number of

pick-up points is analyzed and discussed, and the airport management department the overall arrangement is suggestive.

3.2 DISADVANTAGES

Ignore the influence of seasonal factors on the number of passengers at the airport, only qualitatively analyze the factors that affect decision-making, there is still room for improvement.

Some parameters of the model are estimated based on actual conditions, and there are slight errors in the results.

3.3 DICUSSION

This model is based on the planning and processing of taxi pick-up problems in the airport, and can be applied to other types of large transportation hubs at the same time, because they belong to the same type of problem, and the difference is only as long as the flow of people and vehicles and the parameters of some hubs are different, such as large trains. Stations and river, sea ports, etc., can be applied to this model to solve the problem of passenger transfer at the station. In practice, there are many deterministic and uncertain factors that affect decision-making, making it difficult for taxi drivers to make correct judgments. Therefore, airport taxi management departments are required to carry out a reasonable "quantity" release of taxis into the "riding area" based on the actual situation. "As well as arranging a certain number of passengers, providing taxi drivers with a reasonable selection strategy, and improving and balancing the benefits of taxi drivers is of substantial significance.

4. CONCLUSIONS

At the taxi pick-up point of the airport, passengers often queue up when taking a taxi back to the urban area. There are three main types of existing taxi "pick-up points", and the problem is analyzed by two parallel lanes. In order to improve the convenience and overall efficiency of passengers in the process of riding, the "boarding points" are arranged on both sides of the road in turn, and the riding efficiency of the "riding area" is increased to reduce the time wasted due to the front and rear obstruction of taxis. Secondly, based on the safety of vehicles and passengers, to avoid vehicle detention caused by crossing the road, pedestrian overpasses can be built above the lanes on both sides so that the overpass is directly at the exit of the airport, improving the efficiency of passengers on the opposite side. Considering the overall riding situation, if there are more “boarding points”, the vehicles with passengers in the rear will be affected by the vehicle in front, and the riding efficiency will be reduced. Therefore, multiple “boarding points” will be set under the influence of various dependent variables. Pick up point "k, finally, find the optimal arrangement mode of pick up point through the establishment of efficiency model. This question needs to give a certain "priority" to short-distance taxis to balance the short-distance and long-distance taxi drivers' income as much as possible. the passenger carrying income of airport taxis is mainly related to the mileage and time traveled when carrying passengers. In order to make the income among taxi drivers as balanced as possible, the original waiting area queuing method needs to be optimized. According to the actual situation of the airport and the regularity of taxis between the airport and the city, the driving conditions of short-distance and long-distance taxis can be determined, and the income and empty-load ratio of the two types of taxis can be calculated separately, and the income of the rental car driver can be balanced by comprehensive consideration. the goal is to give the optimal short-distance bus "priority" queuing plan.

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Analysis of Pollutant Particle Distribution and Content Based on Diffusion Model

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Abstract: A mathematical model was established to analyze the impact of nuclear wastewater on the territorial sea environment of China, the United States and Japan. and assess the impact of radioactive substances in nuclear wastewater on the Marine environment, organisms and humans in the future. In this paper, a diffusion model that obeys normal distribution is established by the application of Fick's law, which can intuitively show the concentration distribution of one-dimensional plane. At the same time, according to the characteristics of pollutant diffusion with Markov property, a Markov chain model is established, which can calculate the time required for the completion of diffusion under the condition of limited data.
Keywords: Fick's Law; Markov Chain Model; Pollution Concentration; Random Diffusion.

1. BACKGROUND

Radiation leaks from reactors at the Fukushima Nuclear power plant following a tsunami triggered by the March 11, 2011, earthquake in Japan. In an effort to cool the reactors and avoid a meltdown, Tepco has flooded them with cooling water, creating a growing pool of radioactive waste. Today, more than 1.2 million tons of nuclear waste is stored in 1, 182 huge steel containers, and 140 tons of nuclear waste needs to be stored every day, but these huge containers can't hold any more. In February 2020, the Japanese government said the most realistic way to deal with nuclear waste was to dilute it and release it into the sea or atmosphere. In order to reduce the radioactive substances in nuclear waste water, a kind of equipment called advanced liquid treatment system can use special materials to reduce the concentration of more than 60 radioactive substances, such as strontium and cesium, to a certain standard value, but the radioactive substance tritium is almost impossible to remove.

While some groups say tritium has no real impact, some nuclear experts say it is not true that tritium is the only radioactive substance in waste water. the waste water also contains the radioactive isotope carbon-14, which has a half-life of 5, 370 years and can enter all living things to damage human DNA. Three radioactive isotopes, carbon-14, cobalt-60 and strontium 90, take longer to degrade and enter the Marine food chain more easily. Pang said that if nuclear water is discharged into the sea, given the characteristics of ocean currents, nuclear water will affect Pacific rim countries, especially fisheries and aquaculture, for decades to come. Vladimir Rakov, a PhD biologist and researcher at the Russian Academy of Sciences, said that even if nuclear waste water is carefully cleaned and discharged into the ocean, it could still cause radioactive isotopes to be retained in Marine life, including fish, and then accumulate in humans. on April 13, 2021, after a cabinet meeting, the Japanese government officially decided to discharge 1.23 million tons of nuclear waste water from nuclear reactors into the Pacific Ocean within about 10 years. the move drew widespread attention and protest from the international community.

2. THE ESTABLISHMENT AND SOLUTION OF MODEL

Fick's law is a law that describes the relationship between diffusion flow and diffusion material concentration gradient in a diffusion system. It is intended to further understand Fick's law through the analysis of the migration and transformation mechanism of pollutants in water, so as to obtain the migration and transformation law of pollutants in water. Based on the theories of stochastic process, Brownian motion and geometric Brownian motion, the continuous model is approximated by random walk, and the diffusion of pollutant concentration conforms to geometric Brownian motion. These two results are the theoretical basis of water quality migration model.

The pollutants entering water can be divided into two categories: conserved pollutants and non-conserved pollutants. Conservation of pollutants is refers to the pollutants enter the water, distribution of pollutants, the concentration of the pollutants in the water change with the change of time, but the total amount of pollutants, attenuation, also is not going to happen some polymer such as heavy metals, organic compounds, these pollutants degradation or doesn't happen very hard, these pollutants may spread will not happen, There is little harm to humans temporarily, but in the long run, large amounts of accumulation in the environment without degradation can lead to serious harm.

Non-conserved pollutants refer to the degradation of pollutants in water, and their distribution changes over time. At the same time, their total amount also changes, such as the decomposition of microorganisms in water, the biochemical reaction between pollutants and pollutants, and the oxidative decomposition of oxygen-consuming organic matter.

The migration and transformation process of pollutants in water body takes point source as an example. When point

source sewage is discharged into water body, the migration and transformation includes convection, diffusion, biodegradation, suspension and sedimentation. In order to facilitate the study, it is divided into physical process, chemical process and biological process, among which the physical process is the most important, because in practical problems, there can be no chemical process and biological process, but the physical process must exist. Physical process is divided into convection and diffusion, diffusion can be divided into molecular diffusion, turbulent diffusion, floating and dispersing action. the principle of turbulent diffusion mainly comes from turbulence. Turbulent flow and laminar flow do not exist in the constant change of velocity, turbulent flow field particle instantaneous value is equivalent to the average random pulsation caused by the dispersion phenomenon. Dispersion is also known as hydrodynamic dispersion or hydraulic dispersion. the thermal kinetic energy of the particle and the convection of the fluid are the result of molecular diffusion and mechanical mixing. So diffusion has both molecular diffusion and mechanical diffusion. According to the kinetic theory of molecules, the number of molecular collisions per unit time is huge. Under normal conditions, the number of collisions per liter of volume per second is as high as more than 1032 times, indicating that the molecules are constantly making irregular movement. the interpenetration of two different substances through molecular motion is called molecular diffusion. Molecular diffusion satisfies Fick's law. the flux of diffusion is proportional to the gradient of concentration in this direction.

We consider only the molecular diffusion of conserved pollutants. Through existing in the static water contamination particle radial diffusion, and diffusion velocity in different directions of the same ideal conditions is calculated in the diffusion model of the spread of nuclear waste water, the concentration of radioactive particles, and other performance it spread of the data, to the nuclear pollution impact on environment of the territorial sea, a concentration of pollutant particles directly decide the premise. According to Fick's law (describing the relationship between diffusion flow and diffusion material concentration gradient in diffusion system), an instantaneous point source one-dimensional diffusion diagram model is established. the radioactive pollutant particles in sewage are regarded as a whole [2] and taken as the object of study to analyze the characteristics of their movement (diffusion), which conforms to the molecular diffusion process caused by Brownian motion. It is a random molecular diffusion process affected by concentration gradient and finally tends to be stable. According to the characteristics of the diffusion process, all radioactive particles as a collection as a whole, the diffusion process as a movement tends to smooth the process, the spread of the particles over time because of pollution situation with markov [3] sex, namely the spread of the state of the next moment only by the diffusion of the moment on a relevant, has nothing to do with the history before a moment. Markov model was established by taking the stable state achieved by diffusion completion as absorption state and the diffusion direction of pollutant particles as probability event$\{X(n), n = 0, 1, 2 \cdots\}$ the space of is E, If any $m(m \geqslant 0)$integers $n1, n2, n3 \cdots nm(0 \leqslant n1 \leqslant n2 \leqslant n3 \leqslant \cdots \leqslant nm)$\and any natural numbers k and $i1, i2, i3 \cdots im, j \in E$ are satisfied $P\{X(nm+k) = j|X(n1) = i1, X(n2) = i2, \cdots, X(nm) = im\} = P\{X(nm+k) = j|X(nm) = im\}$, then $X(n)$ is Markov chain

It is assumed that the water body is stationary and the pollutants start from point source diffusion. One-dimensional diffusion diagram of instantaneous point source is simulated as follows: Pollutant concentration is assumed to be C(x, t), the length direction of concentration distribution is x direction, and the pollution source is put in x=σ. Fick's law is used as a complement to obtain the following results:

Hypothesis stationary, water pollutants begins with point source diffusion, the instantaneous point source spread one dimensional figure simulation is as follows: a pollutant concentration to C (xt), the length of the concentration distribution is in the x direction, pollution sources on the x = sigma, based on Fick's law, the concentration of do the Fourier transform expression, it is concluded that the diffusion concentration and diffusion distance of normal distribution.

Assume the one-dimensional diffusion diagram model of instantaneous point source as C(x, t), the length direction of the concentration distribution is x, and the pollution source is placed at x=σ. Then, the Normal distribution relationship between diffusion concentration and diffusion distance is obtained by Fourier transform of the concentration expression.

$$\bar{c}(a,t) = \frac{M}{\sqrt{2\Pi Dt}} e^{-\frac{(x-\sigma)^2}{4Dt}}$$

As the diffusion of polluting particles over time is markov [5], that is, the diffusion state at the next moment is only related to the diffusion situation at the last moment, and has nothing to do with the historical situation before the last moment. Markov model was established by taking the stable state achieved by diffusion completion as absorption state and the diffusion direction of pollutant particles as probability event

The Markov model is established and the normal distribution function of the concentration range relationship at different moments in the first question is integrated and averaged to obtain the one-dimensional average concentration at different moments [2], as shown in Table 1:

Table 1 Average concentration

t_1	t_2	t_3	t_4
c_1	c_2	c_3	c_4

Each radioactive particle is studied and its complex molecular motion is divided into three categories:

Scenario A: Movement away from point sources of contamination

Case B: Not moving

Case C: Movement near the point source of contamination

According to the average concentration at different times, the function relation can be established as follows:

$$P_{A_n}=\frac{\frac{1}{C_{n+1}}-\frac{1}{C_n}}{\frac{1}{C_{n+1}}}$$

$$P_{B_n}=\frac{\frac{1}{C_n}}{\frac{1}{C_{n+1}}}$$

$$P_{C_n}=0$$

The transfer matrix is established as follows:

$$\begin{array}{c} \\ A \\ B \\ C \end{array}\begin{array}{c} \begin{array}{ccc} R & A & B \quad C \end{array} \\ \begin{pmatrix} P_{11} & P_{12} & P_{13} \\ P_{21} & P_{22} & P_{23} \\ P_{31} & P_{32} & P_{33} \end{pmatrix} \end{array}$$

$$\begin{cases} P_{11}=\dfrac{P_{A2}}{P_{A1}} \\ P_{22}=\dfrac{P_{B2}}{P_{B1}} \\ P_{12}=1-P_{11}-P_{13} \\ P_{21}=1-P_{22}-P_{23} \\ P_{13}=P_{23}=P_{33}=P_{32}=P_{31}=0 \end{cases}$$

Subtract R from the identity matrix and inverse:

$$(I-R)^{-1}$$

$$\begin{pmatrix} t_{11} & t_{12} & t_{13} \\ t_{21} & t_{22} & t_{23} \\ t_{31} & t_{32} & t_{33} \end{pmatrix}$$

$$\begin{cases} P_{12}=1-P_{11}-P_{13} \\ P_{21}=1-P_{22}-P_{23} \\ P_{13}=P_{23}=P_{33}=P_{32}=P_{31}=0 \end{cases}$$

t12+t23denoting the time to complete diffusion is denoted ast_m

The diffusion range can be obtained by substituting t_m into the positive distribution graph/function.

3. MODEL TO PROMOTE

Aiming at the uncertain mathematical model, it mainly applies the stochastic method and uses the probabilistic distributed random variable to express the uncertainty. From this point of view, the model used in this topic is suitable for the occurrence of things with Markov property. For models with recurrent states in state space, such as the motion model of a finite number of molecules [6], the locomotive model with a finite number of starting and ending points, and the human health and disease transfer model, the Markov chain model used in this question can be applied in these cases.

4. EVALUATION AND IMPROVEMENT OF THE MODEL

4.1 EVALUATION OF THE MODEL

• Advantages

(1) in the case of less data and known information, the model still has the characteristics of relatively accurate grasp of the space transfer of radioactive particles, and calculates the relatively accurate transfer time of radioactive pollutants.

(2) the global territorial sea is regarded as a decentralized system, and the diffusion of each radioactive particle is tracked. the overall use of macro ideas, but the micro calculation is also very precise accuracy, making this model universal and scientific.

(3) A large number of mathematical and physical formulas are used, and variable symbols are also explained in detail. the whole reasoning process is easy to understand, the logic is clear, and the data is concise and intuitive.

(4) Compared with grey prediction, the model applied in this case has higher prediction precision and more accurate results.

(5) This method has good effect on process state prediction and can be used to predict the dangerous state of production site.

Be able to calculate the probability of a system with maintenance capability and multiple degradation states

• Disadvantage

(1) the influence of ocean current movement and tidal movement of sea water on the diffusion of radioactive pollutants is not considered.

(2) Taking only the region as the research object, pollution is a dynamic and continuous process, and it is not enough to directly reflect the accurate situation of pollution in territorial sea based on concentration changes in different time periods.

(3) Is not applicable to system medium and long term forecast. It is assumed that the probability of state change is fixed, whether for failure or maintenance

(4) All events are statistically independent, so the future state is independent of all past states, unless the two states are closely aligned

(5) You need to understand the various probabilities of state change

(6) the knowledge of matrix operation is complicated and difficult for non-specialists to understand

4.2 Model improvement

From geographical knowledge, Japan's territorial sea is the intersection of two ocean currents - Kuril Island cold current and Japan Warm Current, but also the start of the Pacific warm current, the main currents have equatorial circulation, subtropical circulation, sub-polar circulation. In this way, the velocity of the ocean current can be used as the velocity of the ocean body of water; the direction of ocean current is taken as the main direction of particle motion. Based on this, the above two points can supplement the original model.

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The Catalytic Process of C4 Olefin Preparation from Ethanol was Investigated based on Particle Swarm Optimization

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Abstract: Ethanol is a key renewable compound. It is of great value to study the relationship between ethanol conversion and C4 olefin selectivity and temperature, and to design a reasonable combination of catalysts to improve the yield of C4 olefin. In this paper, the effects of different catalyst combinations and reaction temperature on the yield of C4 olefin were studied, and the optimal reaction conditions were sought to improve the yield of C4 olefin. Finally, a complete experiment was designed. We established a particle swarm optimization algorithm model based on linear transformation, and obtained the conditional optimal value of catalyst combination and temperature with the highest C4 olefins yield as possible under different constraints. the optimal value of catalyst performance was obtained. In order to ensure the integrity and reliability of the experiment, the optimal solution catalytic combination of the third question was used to conduct a more detailed study at the temperature between the regions and design experiments to study the temperature at which the catalytic efficiency was higher. We designed three groups of comparison experiments and two groups of optimization experiments according to the actual conditions.

Keywords: Olefin Preparation From Ethanol; Particle Swarm Optimization Algorithm; Comparative Optimization Experiment

1. PROBLEM ANALYSIS

According to the linear relationship model of different catalyst combinations and temperature on ethanol conversion and C4 olefin selectivity, a particle swarm optimization algorithm model based on linear transformation was established, and the conditional optimal value of catalyst combinations and temperature with the highest C4 olefin yield under different constraints was obtained.

To design five groups of new experiments, it is necessary to consider that the new experiment and the original experiment are evenly distributed and have good comparison and optimization. First, the variable data of each catalyst combination was examined, and the combinations lacking contrast were examined. A new experiment was added to determine whether the charging method was related to the catalyst combination. Then select the two factors with the maximum weight solved in the second question, control the single variable, add two experiments of the second charging method, form the comparison experiment within the same charging method, and increase the accuracy of the analysis results of the second charging method; in addition, two optimized temperature experiments were added, and no calculation and analysis was performed at low temperature with low ethanol conversion rate and low C4 olefins selectivity, and at high temperature with missing data. In this way, the catalytic combination of the optimal solution of the third question can be used to study how much temperature the catalytic efficiency is higher and more accurate in a certain range of temperatures.

2. MODEL ASSUMPTIONS

In order to establish a simplified model, the team simplified each participant of the model as follows during the modeling process:

1. In the process of preparing C4 olefin by ethanol coupling, all the experimental processes are legal and standardized, and no safety accidents will occur.
2. It is assumed that the density of materials does not change during the preparation of C4 olefin by ethanol coupling.
3. It is assumed that there are no other side reactions during the preparation of C4 olefin by ethanol coupling, and the utilization rate of carbon atom is 100%.
4. It is assumed that the reaction vessel used in the preparation of C4 olefins by ethanol coupling is of the same size and quality.
5. the quality changes before and after the reaction of preparing C4 olefin by ethanol coupling are not considered.
6. Assume that the design environment of this paper is a real laboratory environment.

3. DEFINITION AND NOTATION

In order to simplify problem analysis and data processing, symbols are stipulated as follows:

symbol	define
α	Ethanol conversion
β	C4 olefins selectivity
T	Reaction temperature
t	The reaction time
s_i	Catalyst combination variable
θ	C4 olefin yield
n	The number of particles
c_1	Individual learning factors of particles, also known as individual accelerators
c_2	The particle's social learning factor, also known as the

	social acceleration factor
ω	Inertial weight of velocity
v_i^d	The velocity of the ith particle in the DTH iteration
x_i^d	The position of the ith particle in the DTH iteration
$f(x)$	Fitness value at position X (generally taking the value of the objective function)
$pbest_i^d$	By iteration d, the ith particle goes through the best position
$gbest^d$	By iteration d, the best position that all particles have passed through

4. ESTABLISHMENT AND SOLUTION OF PSO MODEL

4.1 PREPARATION OF PSO MODELS

We choose the PSO model of multi-objective optimization, namely particle swarm optimization algorithm. We not only change the range of inertia coefficient in the velocity of the iterative particle, so as to avoid too fast convergence. At the same time, the linear model and PSO model are combined effectively, and a particle swarm optimization algorithm based on linear transformation is proposed, which makes the inertia coefficient decrease with the increase of the number of iterations, so as to get the global optimal situation as far as possible [1]. Finally, by obtaining the objective function (C4 olefin yield as high as possible) in line with the constraint conditions, the catalyst combination and temperature under the condition of C4 olefin yield as high as possible were obtained.

Particle Swarm Optimization (PSO) is a Swarm cooperative search algorithm developed by simulating the foraging behavior of birds. In this section, it is used to solve the selected catalyst combination and temperature with the highest C4 olefin yield possible under the same experimental conditions.

In particle swarm optimization, the velocity of the particle at each iterationv_i and the locationx_i the update formula is as follows:

$$v_i^d = wv_i^{d-1} + c_1 r_1 (pbest_i^d - x_i^d) + c_2 r_2 (gbest^d - x_i^d) \quad (1)$$

$$x_i^{k+1} = x_i^k + av_i^{k+1} \quad (2)$$

Among them, ω is inertial weight, c_1 and c_2 is the learning factor, r_1 and r_2 Is a random number between [0, 1]. r_1, r_2 in $(0, 1)$ Between randomly. $pbest$ represents the individual extremum, which records the best location where a single particle is found. $gbest$ Represents the total extremum that records the best position experienced by the entire population.

4.2 LINEAR TRANSFORMATION MODEL PRINCIPLE

Suppose the C4 olefins yield is θ. Under the constraint conditions, the ultimate goal is to seek the highest C4 olefin yield. the objective function is as follows:

$$\max \theta = \alpha \sqcup \beta \quad (3)$$

α represents ethanol conversion and β represents C4 olefin selectivity.

To solve this objective function, the relationship between catalyst combination and temperature and ethanol conversion and C4 olefins selectivity was studied. Reference, specific constraints are as follows:

In the case of charging mode I regardless of temperature:

$$s.t. \begin{cases} 0.1 \le s_1 \le 200 \\ 0.1 \le s_2 \le 5 \\ 0.1 \le s_3 \le 200 \\ 0.1 \le s_4 \le 1.68 \\ 250 \le T \le 400 \\ \alpha = 4.8628 - 0.0867s_1 - 0.0010s_2 + 0.2485s_3 - 0.1810s_4 + 0.5545T \\ \beta = -0.9429 + 0.2566s_1 - 0.1714s_2 - 0.1250s_3 + 0.0732s_4 + 0.2933T \end{cases} \quad (4)$$

Regardless of temperature, charging mode II:

$$s.t. \begin{cases} 0.1 \le s_1 \le 200 \\ 0.1 \le s_2 \le 5 \\ 0.1 \le s_3 \le 200 \\ 0.1 \le s_4 \le 1.68 \\ 250 \le T \le 400 \\ \alpha = 357.6536 + 0.1238s_1 - 7.3310s_2 - 0.0389s_4 + 0.4272T \\ \beta = 0.0590s_1 + 0.00005 - 0.0212s_4 + 0.2730T \end{cases} \quad (5)$$

In the case of temperature below 350 degrees and charging mode I:

$$s.t. \begin{cases} 0 \le s_1 \le 200 \\ 0 \le s_2 \le 5 \\ 0 \le s_3 \le 200 \\ 0 \le s_4 \le 1.68 \\ 250 \le T \le 350 \\ \alpha = 4.8628 - 0.0867s_1 - 0.0010s_2 + 0.2485s_3 - 0.1810s_4 + 0.5545T \\ \beta = -0.9429 + 0.2566s_1 - 0.1714s_2 - 0.1250s_3 + 0.0732s_4 + 0.2933T \end{cases} \quad (6)$$

In the case of charging mode II at temperatures below 350 degrees:

$$s.t. \begin{cases} 0 \le s_1 \le 200 \\ 0 \le s_2 \le 5 \\ 0 \le s_3 \le 200 \\ 0 \le s_4 \le 1.68 \\ 250 \le T \le 350 \\ \alpha = 357.6536 + 0.1238s_1 - 7.3310s_2 - 0.0389s_4 + 0.4272T \\ \beta = 0.0590s_1 + 0.00005 - 0.0212s_4 + 0.2730T \end{cases} \quad (7)$$

4.3 ESTABLISHMENT OF JOINT MODEL

The results show that when the inertia coefficient ω is large, the global convergence capability is strong, and when the inertia coefficient ω is small, the local convergence capability is strong. Therefore, in the process of iteration, if the inertia coefficient ω can be linearly changed with the number of iterations, the initial inertia coefficient ω value will be relatively large and the global search ability will be strong. and with the increase of the number of iterations, the inertia coefficient ω slowly decreases, so as to ensure that particle swarm optimization algorithm has relatively strong local search ability when entering the optimal region. the formula for calculating the inertia coefficient ω linear transformation is as follows:

$$\omega = (\omega_1 - \omega_2) \frac{MaxDT - DT}{MaxDT} + \omega_2 \quad (8)$$

Among them, ω_1/ω_2 Is the initial and final values of the inertia coefficient, $MaxDT/DT$ Is the maximum number of iterations and the current number of iterations.

According to PSO model and linear transformation model, the particle swarm change based on linear transformation is established [2].

Based on the above new calculation formula of inertia coefficient and PSO model, the algorithm flow obtained by us is updated as follows:

Step 1: Within the constraint conditions, the particle swarm is initialized and particles are generated randomly $pbest \backslash gbest$.

Step 2: Calculate the particle position, velocity and inertia coefficient after each iteration according to the formula.

Step 3: Calculate the fitness from the fitness function and $pbest$ Compare and select the best result.

Step 4: Judge $pbest$ and $gbest$ results, select the optimal.

Step 5: Judge whether the termination conditions are met,

if so, output the results; If not, go back to step

4.4 JOINT PARTICLE SWARM OPTIMIZATION MODEL

After calculation, without considering temperature:

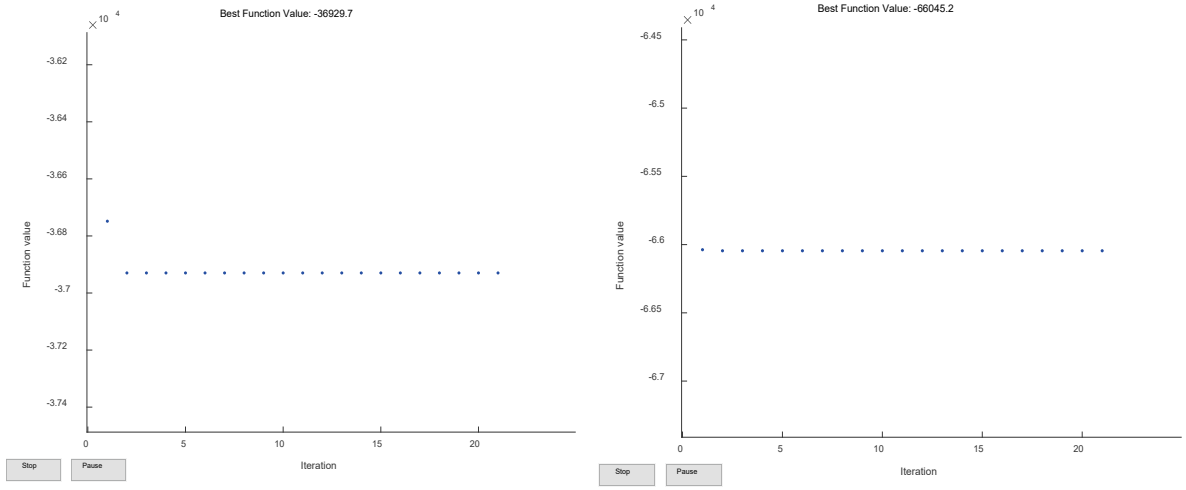

Figure 1. Variation of the optimal function value with the number of iterations

Under the loading mode I (the first left of Figure. 1), when $s_1 = 200, s_2 = 0.1, s_3 = 200, s_4 = 1.68, T = 400$, the yield of C4 olefin has the maximum value. Under charging mode II (first from the right of Figure. 1), when $s_1 = 200, s_2 = 0.1, s_3 = 197, s_4 = 1.68, T = 400$, the yield of C4 olefins reaches the maximum.

In the case of temperatures below 350 degrees:

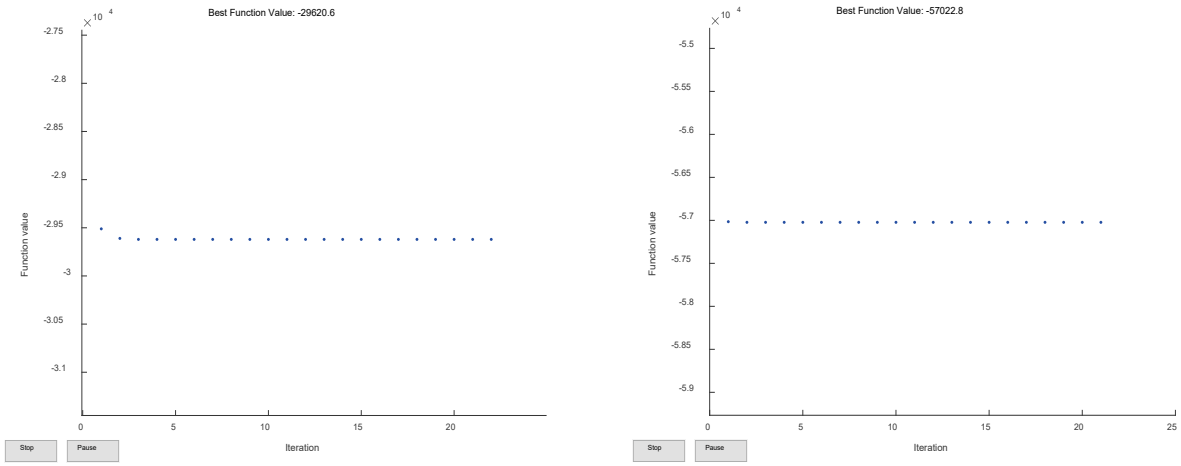

Figure 2. Variation of the optimal function value with the number of iterations

Under the loading mode I (the first left of Figure. 2), when $s_1 = 200, s_2 = 0.1, s_3 = 200, s_4 = 1.68, T = 400$, the yield of C4 olefin has the maximum value. the maximum C4 olefin yield is obtained when $s_1 = 200, s_2 = 0.1, s_3 = 198, s_4 = 1.68, T = 400$ under charging mode II (first from the right of Figure. 2). Under these conditions, Co is highly dispersed on the catalyst surface, and the catalyst surface is suitable for acid and base, so it has a soft high catalytic activity. the conversion rate of ethanol is 84%, and the selectivity of C4 ene is 53%.

In conclusion, when the mixing ratio of Co/SiO2 to HAP is 1:1, the reaction temperature is 400℃, and the Co load is 1 wt%, the catalyst performance is optimal.

5. SUPPLEMENT OF EXPERIMENT

5.1 CONTRAST EXPERIMENT

5.1.1 COMPARATIVE TESTS UNDER DIFFERENT CHARGING METHODS

According to data analysis, the catalyst combination mode of A9 and B5 and A12 and B1 is the same, but there are few differences in experimental data due to different charging methods. In order to determine whether the charging method affects the performance of the catalyst, we designed a set of experiments based on this. According to the catalyst combination of the optimal solution of the third question, the charging method was changed to B charging method, controlling a single variable, while other components remained unchanged [3].

The results were observed at different temperatures, and if the results were found to be approximately the same as the loading method of A, it was believed that the loading method did not affect the effect produced by the catalyst. Otherwise, it is considered that the charging mode affects the effect of the catalyst, and the temperature is combined

with the optimal solution.

Table 1 Comparison between new experimental combination B8 and original combination A4

Serial number	s_1	s_2	s_3	s_4	T
A4	0.5	200	200	1.68	250
					275
B8	0.5	200	200	1.68	300
					325
					350

5.1. 2 THE SAME GROUP COMPARISON TEST WITH B CHARGING MODE

Further study of the data shows that different factors of catalysts have an impact on the conversion rate of ethanol and the selectivity of C4 olefin. According to the weights analyzed in question 2, the weight factors that have a greater impact on the conversion rate of ethanol and the selectivity of C4 olefin are respectively selected in this experiment: the Co loading capacity and the mass of Co/SiO2 were compared in the same group, and the catalyst combination with higher C4 olefin yield was selected as the original combination for comparative analysis.

Table 2 Comparison of different Co loads between new experimental combination B9 and original combination B1

Serial number	s_1	s_2	s_3	s_4	T
B1	1	50	50	1.68	250
					275
B9	0.5	50	50	1.68	300
					325
					350

Table 3 Comparison of Co/SiO2 quality between the new experimental combination B10 and the original combination B6

Serial number	s_1	s_2	s_3	s_4	T
B6	1	75	75	1.68	250
					275
B10	1	200	200	1.68	300
					325
					350

5.2 OPTIMIZATION EXPERIMENT

The experimental temperature range was optimized. According to the data analysis, when the temperature was lower than 350℃, the ethanol conversion and C4 olefins selectivity were lower in all catalyst combinations. When the temperature is higher than 450℃, the data is not sufficient; When the temperature is between 350℃ and 450℃, the conversion rate of ethanol and the selectivity of C4 olefin increase rapidly, and the change of the conversion rate of ethanol and the selectivity of C4 olefin cannot be accurately judged. Therefore, the experimental temperature interval of the new experiment is 20℃, and the range is between 350℃ and 450℃. the catalyst combination of the new experiment is provided according to the combination type of the optimal solution of the third question.

Table 4 Comparison of two new experiments at 350℃-450℃

Serial number	s_1	s_2	s_3	s_4	T
B11 optimal solution	1	75	75	1.68	350
					370
					390
B12 optimal solution	1	200	200	1.68	410
					430
					450

6. EVALUATION AND IMPROVEMENT OF THE MODEL

Advantages: PSO model is easy to solve continuity problems and can independently and effectively optimize system parameters, so as to approach the optimal solution more quickly, which is suitable for real-valued processing.

Disadvantages: PSO model has poor local optimization ability, and tends to produce premature convergence when dealing with multi-peak problems. It has strong robustness and can optimize the model well, while the combination with insufficient sample size or even no sample cannot be inferred well [4].

Improvement: With the expansion of application scope, PSO algorithm has some problems to be solved, such as premature convergence, dimension disaster, and easy to fall into local extremum.

Adjust the parameters of PSO to balance the global detection and local mining capabilities of the algorithm.

Different types of topologies can be designed to change the learning patterns of particles and thus improve the diversity of populations.

PSO is combined with other optimization algorithms (or strategies) to form a hybrid PSO algorithm.

Niche technology can be adopted to further optimize the PSO algorithm.

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An analysis of the influence of American presidential candidates on American economy

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Abstract: Considering from the dimensions of presidential politics, party politics, and political cycles, this US election is of key significance. the elected people's views on Sino-US economic and diplomatic relations are worth studying. First, cluster analysis of 7 impact indicators to obtain key factors in five aspects: finance, environment, external affairs, people's livelihood, and medical care; secondly, through GM (1, 1) prediction, we can get Trump's re-election in 2021. the quantity is 21, 644, and then through multiple linear regression, Trump's proposition on the US economy and the total economic value are determined to be 22, 294; using Biden's 8-year vice presidential tenure data to obtain his proposition and the total economic value is 22752.7. It quantitatively shows that Trump's re-election economic growth rate was small, and development was sluggish; after Biden was elected, he updated his policy propositions, the total economic growth rate was relatively large, and the US economy developed healthy.

Keywords: Multiple Linear Regression Analysis; Grey Prediction Model; Economic Impact; Epidemic Situation

1. INTRODUCTION

The 2020 U. S. election has attracted attention from all walks of life in the world because it will affect the domestic and foreign affairs of the United States in the next four years. Judging from the current developments in the general election, Trump has special characteristics different from traditional political figures and the special impact of the new coronavirus pneumonia during the period. As a "non-open" competition between Republican incumbents and Democratic challengers, candidates of the two parties are engaged in financial and trade, economic and financial governance, and other different key development areas (such as COVID-19 combat measures, infrastructure, Taxation, environmental protection, medical insurance, employment, trade, immigration, education, etc.) have different political positions and administrative programs. [1] Under the constraints of current political, ecological, economic and other factors, the influence of either candidate on the economic structure of China, the United States and the world, as well as the predictability of the China policy are the focus of investigation.

2. EXPERIMENTAL

2.1 INDEX DATA PREPROCESSING BASED ON CLUSTER ANALYSIS

1. STABLISH AN EVALUATION INDEX SYSTEM

After the thrilling "Super Tuesday" and the small "Super Tuesday" that followed, candidates for the 2020 US general election have gradually surfaced. As the presidential candidate launched by the Republican Party, it is a conclusive fact that Trump won in his party, while the Democratic Party introduced Biden as the presidential candidate. the 74-year-old Trump is the 69th US presidential candidate. the candidates of the two parties together are over 150 years old, which means that it has become an inevitable fact that the US economy is in the hands of over-aged leaders.

Looking at all aspects of Trump's administration, the attitude towards the polarization between the rich and the poor and the class gap is very different, and the implementation of the continuous tax cuts will shape the dividend coverage. At the same time, it must be admitted that during his tenure, Trump handed over a relatively beautiful economic answer sheet. From 2017 to 2019, the U. S. economy has shown a continuous growth trend at 2.2%, 2.9% and 2.3%, even if it is affected by 2020. With the impact of the new crown pneumonia epidemic at the beginning of the year, the most pessimistic forecast for the U. S. economy in 2020 has dropped to 1.9%, resulting in a steady growth of 2.3% during the four-year rule. In addition, in terms of jobs and employment rate, Trump added 7 million jobs in the United States during his administration, and the 3.5% unemployment rate reached a record low in 50 years [2] [3].

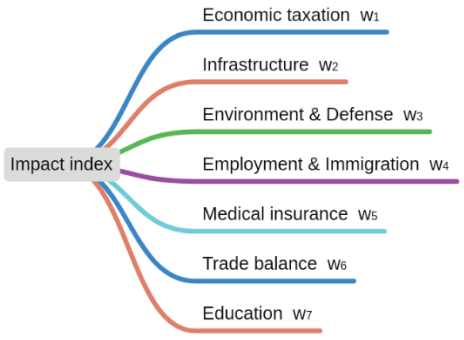

Figure 1 Index evaluation system

Candidates of the two parties differ in financial trade, economic and financial governance, and other different key development areas (such as COVID-19 combat measures, infrastructure, taxation, environmental protection, medical insurance, employment, trade, immigration, education, etc.) Political position and administrative program. In order to analyze the impression that different candidates might have on the United States,

by consulting data and literature, evaluation indicators are selected in economic construction, medical construction, education investment, environmental protection investment, etc. to establish an index evaluation system, as shown in Figure 1.

The above indicators are based on 10 years of data from 2010 to 2019. Among them, the economic tax index mainly refers to the public goods provided by the US government to meet the social needs, as well as the fiscal revenue from the compulsory distribution of free social products. In terms of infrastructure, the U. S. government provides material engineering facilities for social services and public services for residents. This paper takes the government investment in transportation construction as the research object. Biden promised to build a complete clean energy system over the next 30 years. Environmental protection is the focus of government investment in clean energy development. Employment work focuses on the number of jobs and the increase in capital investment employment.

2. ABSOLUTE DISTANCE BETWEEN SAMPLE POINTS

The indicator samples have certain similarities. For example, medical investment includes medical insurance, medical setting, medical subsidy, etc., among which the medical setting fund investment is linked to the construction of social infrastructure, which is an indispensable condition for maintaining the stable development of society, and many more. They should be classified using a quantitative method, and the degree of similarity between samples of indicators that affect the economy should be described using quantitative magnification. A thing usually requires multiple variables to describe it. Simplify it as an independent point in the space. the point and the point exist alone, but there is a certain connection, which is not an absolute independent division.

Record the amount invested in a certain indicator as $v_i\,(i=1,2,\cdots,10)$, and use the absolute distance to measure the similarity between the points in the sample:

$$d(x,y)=\sum_{k=1}^{10}\left|x_k-y_k\right| \quad (1)$$

The specific data values of the indicator sample points are shown in Table 1. All the data have the same dimension, and there is no such problem as the large difference in the range of measurement value variation.

Table 1 Sample data (unit: USD 1 billion)

Year	x_1	x_2	x_3	x_4	x_5	x_6	x_7
2010	2205	610	324	124	769	150	180
2011	2326	621	347	157	799	178	370
2012	2509	650	360	248	831	190	360
2013	2823	648	370	136	880	226.19	390
2014	3093	690	420	277	920	231.59	610
2015	3274	700	430	240	950	232.63	750
2016	3241	705	436	176	984	243	720
2017	3343	710	449	191	1020	253	910
2018	3330	748	462	292	1086	263	960
2019	3497	780	486	191	1135	249	1000

In addition, the index that affects the conditions of economic development is $x_i=(i=1,2,\cdots,7)$, recorded as, then the shortest distance method is used to measure the distance between the class and the class among the index sample classes:

$$D(G_1,G_2)=\min_{\substack{x_i=G_1\\ y_j=G_2}}\left\{d\left(x_i,y_j\right)\right\} \quad (2)$$

Intuitively indicate the closest distance between two classes to measure the distance of the sample class. Import the index data of Table 1 into the program to calculate the shortest distance between the final class and the class, and generate the distance matrix:

$$A=\begin{bmatrix} 0 & 2.2779 & 2.5557 & 2.7609 & 2.0267 & 2.7425 & 2.3391 \\ 2.2779 & 0 & 2.2778 & 0.4830 & 0.2512 & 0.4646 & 0.2006 \\ 2.5557 & 2.2778 & 0 & 0.2052 & 0.5290 & 0.1868 & 0.2454 \\ 2.7609 & 0.4830 & 0.2052 & 0 & 0.7342 & 0.0464 & 0.4218 \\ 2.0267 & 0.2512 & 0.5290 & 0.7342 & 0 & 0.7158 & 0.3124 \\ 2.7425 & 0.4646 & 0.1868 & 0.0464 & 0.7158 & 0 & 0.4034 \\ 2.3391 & 0.2006 & 0.2454 & 0.4218 & 0.3124 & 0.4034 & 0 \end{bmatrix}$$

3. CLUSTER ANALYSIS RESULT

Perform cluster analysis on the evaluation index system established above according to the index sample class shortest distance matrix, calculate the distance from each new sample point (unknown category) to historical sample point (known category), and then predict the category of the new sample as the category of the most similar historical sample point. Or predict the category of the new sample as the most similar among the multiple historical sample points. the basic idea of discrimination is to classify the samples with the closer distance into one class, and the samples with the larger distance into different classes.

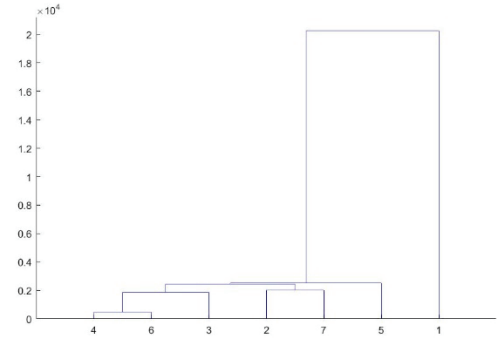

Figure 2 Cluster diagram of U. S. economic impact indicators system

According to Figure 2, it is appropriate to divide the set of indicators that affect US economic development into five categories. Among them, economic taxation, environment and national defense, and medical insurance are a single category, employment and immigration, and trade balance are in one category. Basic settings, Education investment is one category.

2.2 ECONOMIC DEVELOPMENT FORECAST BASED ON GM(1, 1)

Combining the above cluster analysis results of the seven indicator systems of taxation, infrastructure, environmental protection and national defense, employment and immigration, medical insurance, trade balance, and education investment, the inductive analysis yields five key aspects that determine economic development, respectively [4]. *A.* Financial aspects

(including taxation), *B.* environmental aspects (including environmental protection and national defense), *C.* external aspects (including employment and immigration and trade balance), *D.* people's livelihood aspects (including infrastructure and education) and *E.* medical aspects (including medical insurance).

In order to quantitatively describe economic changes and more accurately describe the economic impact of the election of different candidates in the 2020 U. S. election, gross domestic product (GDP) is used to calculate the final outcome of production activities of all resident units in the country during a certain period of time, as An indicator to measure the state of the country's economy. Obtain the quantitative relationship between economic development and key aspects:

Step1:Construct the original series of the total annual GDP data of the United States from 2017 to 2020 during Trump's administration, $X^{(0)} =$ (19386.8, 20500.6, 21427.1, 21664).

Step2:Find the level ratio $\lambda^{(k)}$, there is

$$\lambda(k)=\frac{x^{(0)}(k-1)}{x^{(0)}(k)} \quad (4)$$

Because of all, $\lambda^{(k)} = [0.995, 1.045]$, k=2, 3, 4 it can be used as a satisfactory GM(1, 1) model.

Step3:Accumulate the original data $X^{(0)}$ once to get:

$$x^{(1)} = (19386.8, 39887.4, 61314.5, 82978.5)$$

Step4:Construct data matrix *B* and data vector *Y*, there are:

$$B=\begin{bmatrix} -\frac{1}{2}\left(x^{(1)}(1)+x^{(1)}(2)\right) \\ -\frac{1}{2}\left(x^{(1)}(2)+x^{(1)}(3)\right) \\ -\frac{1}{2}\left(x^{(1)}(3)+x^{(1)}(4)\right) \end{bmatrix}, Y\begin{bmatrix} x^{(0)}(2) \\ x^{(0)}(3) \\ x^{(0)}(4) \end{bmatrix} \quad (5)$$

Calculation

$$\hat{u}=\begin{bmatrix} \hat{a} \\ \hat{b} \end{bmatrix}=\left(B^T B\right)^{-1} B^Y Y=\begin{bmatrix} 0.59 \\ 0.09 \end{bmatrix} \quad (6)$$

So get: $\hat{a} = 0.59, \hat{b} = 0.09$.

Step5:Modeling:

$$\frac{\mathrm{d}x^{(1)}}{\mathrm{d}t}+\hat{a}x^{(1)}=\hat{b} \quad (7)$$

Step6:Solve the forecast equation for the total amount of US GDP data under Trump's re-election:

$$X^{(1)}(k+1)=3.808e^{0.04983t}-2.294e^{1.983t}-3.623\times10^5 \quad (8)$$

In the same way, the GM (1, 1) prediction model relational expressions of other five aspects that affect economic development are obtained:

$$\begin{cases} A.X^{(1)}(k+1)=95899.0e^{0.03451t}-0.0001518e^{3.547t}-92544.0 \\ B.X^{(1)}(k+1)=11200.0e^{0.04065t}-0.02691e^{2.119t}-10755.0 \\ C.X^{(1)}(k+1)=12600.0e^{0.02057t}-4.366e-7e^{4.195t}-12355.0 \\ D.X^{(1)}(k+1)=13222.0e^{0.05558t}-48.07e^{0.7432t}-12466.0 \\ E.X^{(1)}(k+1)=4627.0e^{0.009807t}sin(0.1268t)-3307.0e^{0.009807t}cos(0.1268t)+4327.0 \end{cases}$$

In addition, according to the GM (1, 1) model, during Trump's administration from 2017 to 2020, the US national fiscal revenue, environmental protection, development of new energy, national defense construction, external construction, and peoples livelihood infrastructure can be obtained from 2017 to 2020. Figure 3 shows the state's financial investment in medical treatment and its trend of change.

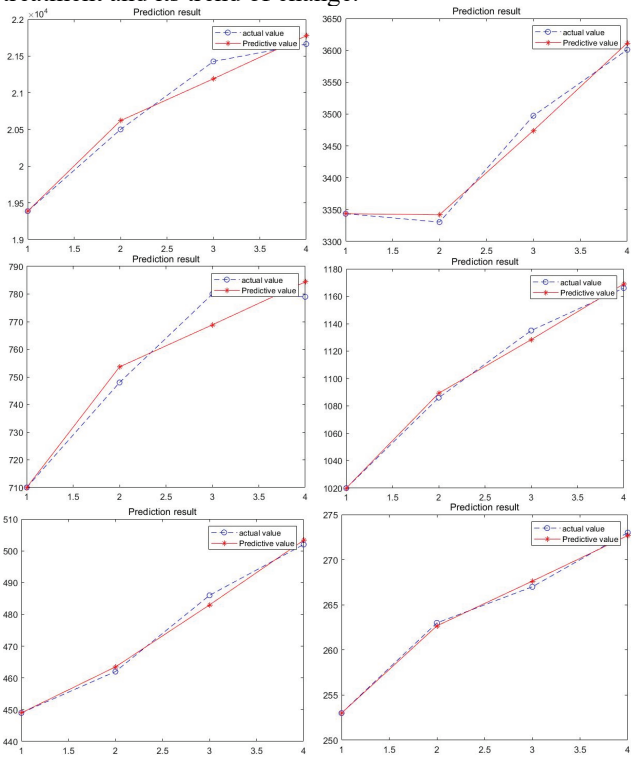

Figure 3 Economic development forecast for Trump's re-election in 2021

From top to bottom, from left to right, they are GDF, *A., B., C., D., E.* aspect.

It can be seen from Figure 3 that during Trump's administration, the capital investment in national construction and people's living infrastructure has shown an increasing trend year by year. In fact, during his tenure, the U. S. economy showed an upward trend year by year, and the social unemployment rate also broke a 50-year low in U. S. history, which is in line with actual conditions. Finally, the GM (1, 1) model predicts the situation of Trump's re-election in the 2020 U. S. election, corresponding to the state and society's construction capital investment in all aspects of the country and society in 2021 and the forecast data of U. S. GDP, as shown in Table 2. Shown.

Table 2 Economic Status of Trump's Re-election in 2021 (Unit: USD 1 billion

Project	*A.*	*B.*	*C.*	*D.*	*E.*	GDP
Capital investment	3699	521	274	792	1209	23086

2.3 U. S. ECONOMIC IMPACT BASED ON MULTIPLE LINEAR REGRESSION

Candidates' policy propositions in different fields have their own priorities. the two parties have certain differences in the formulation of economic blueprint policy plans for the United States after taking office. Through their policy guidelines, they act on various factors affecting the economy, and quantitatively analyze the influence of different candidates on the United States.

1. TRUMP IS ELECTED:

Step1:Trump's tenure as President of the United States is roughly from 2017 to 2020. Only a 4-year period is not very accurate for multiple linear regression to a certain extent. In order to make the quantitative analysis of Trump's impact on the US economy after his re-election more accurate, First use the GM (1, 1) model to predict the annual GDP and various data of the United States from 2014 to 2016. If Trump has been in power for 7 consecutive years, the impact of his policy propositions and policy guidelines on the US economy will be more significant. as shown in Table 3.

Table 3 Forecast of economic data from 2014 to 2016

Year	GDP	*A.*	*B.*	*C.*	*D.*	*E.*
2014	17418.9	3093.4	420	231.59	690	920
2015	17937.8	3274.8	430	232.63	700	950
2016	18566.9	3241.8	436	243	705	984

Step2:Draw a scatter plot of the independent variables of fiscal, environmental, external, people's livelihood and medical aspects of the new crown pneumonia epidemic and the dependent variable of the US GDP to observe whether there is a linear relationship, as shown in Figure 4.

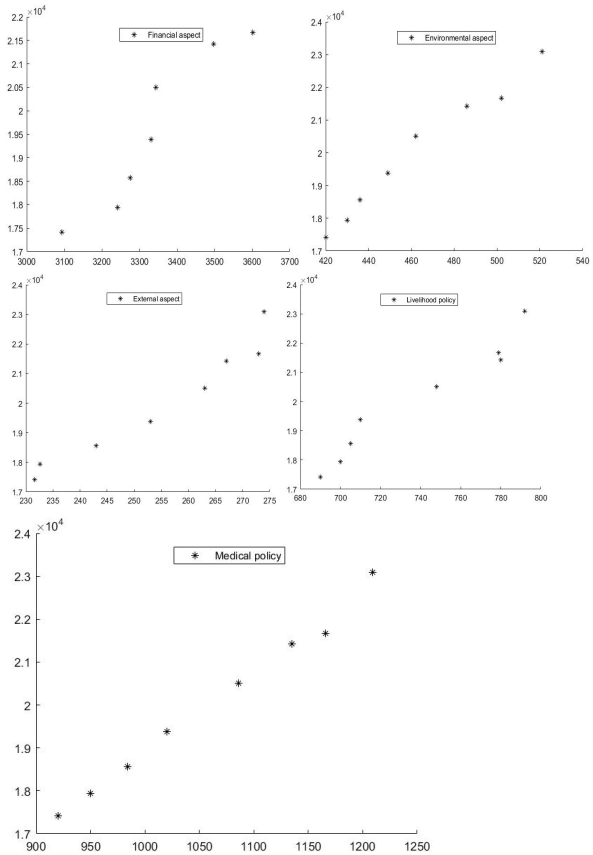

Figure 4 Scatter plot of dependent and independent variables

From top to bottom, from left to right, they are *A.* \ *B.* \ *C.* \ *D.* \ *E.* aspect. According to Figure 4, it can be obtained that the relationship between the independent variables and the dependent variables is roughly linear.

Step3:The model of multiple linear regression analysis is:

$$\begin{cases} y = \beta_0 + \beta_1 x_1 + \beta_m x_m + \varepsilon \\ \varepsilon \sim N\left(0, \sigma^2\right) \end{cases} \quad (9)$$

Among them, $\beta_0, \beta_1, \ldots, \beta_m, \sigma^2$ are unknown parameters irrelevant to $x_1, x_2, \ldots x_m (m = 1, 2, 3, 4, 5)$. Among them, $\beta_0, \beta_1, \ldots, \beta_m$ is called the regression coefficient of the model.

Step4:Considering all the independent variables, the multiple linear regression equation is obtained:

$$y = 232.9 - 2.2A. + 26.2B. + 1.9C. + 18.1D. + 1.4E. \quad (10)$$

Step5:It shows that this multiple linear regression equation is highly significant, indicating that the overall independent variables of fiscal, environmental, external, people's livelihood and medical aspects of the new crown pneumonia epidemic have a highly linear relationship with the dependent variable U. S. GDP, and the model fits well.

According to the above linear regression equation, if trump is re elected as president of the United States in 2020, it will have the greatest impact on the U. S. economy in terms of environmental protection, national defense construction, social infrastructure, education investment, etc. In addition, Trump's attitude towards polarization between the rich and the poor and class gap is also quite different. the implementation of the policy is to shape the dividend coverage through continuous tax reduction. the continued implementation of this policy may affect the development of national finance and taxation to a certain extent, resulting in its side effects on the sustained growth rate of the U. S. economy.

2. BIDEN IS ELECTED:

Two elections for president in 1988 and 2008 ended in failure. Although Biden had no previous experience in running for the president of the United States, he served as Vice President during Obama's term of office from November 2008 to January 2017 for an eight-year term [5]. In the 2020 U. S. election, predicting that Biden's impact on U. S. economic development after the election cannot be the same as the evaluation method of Trump's election, and there is no data during the president's administration. Therefore, the economic data during Obama's administration is used as the observation value, as shown in Table 4. Through multiple linear regression analysis, it studies the impact of Biden's campaign platform and policy propositions on the US economy in 2021 after his election.

Table 4 U. S. economic observation data from 2009 to 2016

Year	*A.*	*B.*	*C.*	*D.*	*E.*	GDP
2009	2044	306	124	432	702	13939
2010	2205	324	178	459	733	14526.5
2011	2326	347	159	501	769	15094
2012	2509.2	362	190	541	797	15684.8
2013	2882.3	375	226	578	838	16768.1
2014	3093.4	426	231	619	883	17418.9
2015	3274.8	430	232	655	935	17937.8
2016	3241.8	436	243	682	982	18566.9

Step1:Biden served as the Vice President of the United States for eight years. In the same way as described above, draw a scatter plot of independent variables of fiscal, environmental, external, people's livelihood and medical

aspects of the new crown pneumonia epidemic and the dependent variable of the US GDP to observe whether it is It has a linear relationship, as shown in Figure 5.

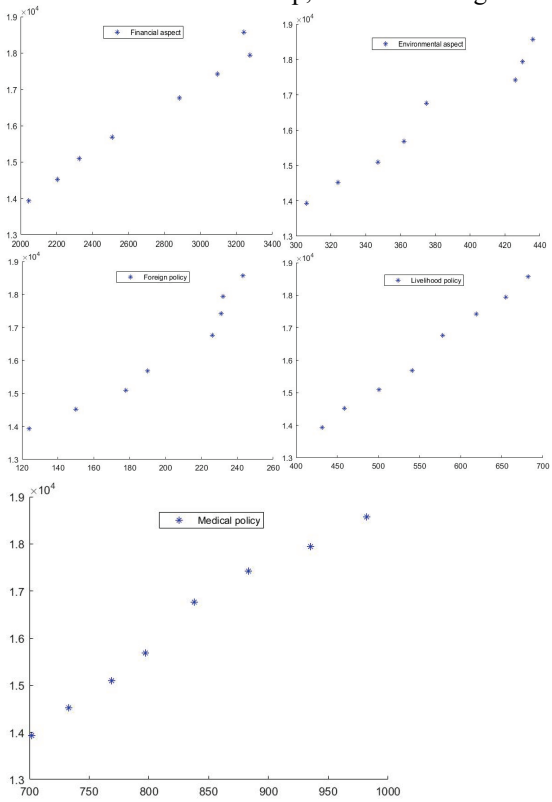

Figure 5 Scatter plot of dependent and independent variables

From top to bottom, from left to right, they are *A.* \ *B.* \ *C.* \ *D.* \ *E.* aspect. According to Figure 5, it can be obtained that the independent variable US economy and the dependent variables are roughly linear.

Step2:Considering all the independent variables, the multiple linear regression equation is obtained:

$$y = 5155.5 + A. + 2B. + 3.C. + 6.7D. + 5.8E. \quad (11)$$

Step3:Statistical analysis: F=213, P=0.00004133<0.01, R2=1.04 is very close to 1. It shows that this multiple linear regression equation is highly significant, indicating that the overall independent variables of fiscal, environmental, external, people's livelihood and medical aspects of the new crown pneumonia epidemic have a highly linear relationship with the dependent variable U. S. GDP, and the model fits well.

According to the above linear regression equation, if Biden is elected as the President of the United States in the 2020 U. S. election, his policies in social infrastructure, education investment, and medical care will have the greatest impact on the U. S. economy. As we all know, Biden and Trump have the greatest influence on the new president. the virus epidemic has very different attitudes towards air defense and vaccines. At the same time, the government's fiscal revenue has remained stable to a certain extent, which is conducive to the sustained and stable growth of the US economy.

3. CONCLUSIONS

Trump was re-elected as President of the United States, and Biden was elected President of the United States. the total amount of US economic data and linear prediction results in 2021 are shown in Table 5.

Table 5 Comparison of Economic Data Volume (Unit: USD 1 billion)

Project	*A.*	*B.*	*C.*	*D.*	*E.*	GM(1, 1)GDP	Linear GDP
Trump	3699	521	274	792	1209	23086	22294.0
Biden	3601	502	273	779	1166	-	22752.7

According to Table 5, after Trump's re-election, the US GDP in 2021 is 22, 294, and the GM (1, 1) result is 23, 086, indicating that Trump's re-election may lead to US economic output if the current political propositions continue. the decline is not conducive to the development of the U. S. economy. After Biden's election, the U. S. GDP in 2021 is 22752.7, and the result obtained through the multiple linear regression model is 21644. the international economic structure has given the US economic aggregate a certain increase, which is conducive to the healthy and sustainable development of the US economy.

Biden and the Democrats have been pushing for a new round of economic stimulus since a new crown pneumonia epidemic hit in 2020, and plan to appoint Fed doves Brainard as Treasury secretary. Biden will continue in his new role next year. the US is expected to continue to release liquidity to hedge against the impact of the pandemic, which will help the us recovery to some extent. Moreover, emerging markets have the comparative advantage of higher yields against a background of zero or even negative funding rates in developed markets. If Mr Biden wins the US presidential election in 2020, a flood of money is likely to pour into emerging markets, according to bank analysis. Before the new coronavirus epidemic, tariffs and Chinese procurement commitments slightly reduced the U. S. trade deficit with China, but the epidemic fully reversed that deficit.

Politics, especially political leaders, are the chief helmsman of the economy. If Trump is re-elected in the U. S. election in 2020, his future will be obsessed with economic liberalism. the U. S. economy can still evolve smoothly in the capital market; if Biden is elected, the New Deal liberalism he advocates can be after Obama. A second sprint can gain ground, and it will also lead to a more open trade policy [6]. It may improve the US trade environment in the world structure, but its open and free attitude towards Wall Street will cause more uncontrollable capital markets.

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Food System Committed to Fair and Sustainable Development

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Abstract: Food security issues identified in the Global Food Crisis Report will create new risks for some countries. In order to implement the concept of sustainable development and reduce food waste, this paper constructed a food system evaluation model based on time series model. the model by using the principal component analysis, KMO and Bartlett sphericity test for data preprocessing, after will get the data using the time series models to forecast, finally compared with the actual and estimated values, found the model for China, the United States and Algeria regions such as the food system evaluation has good applicability.

Keywords: Principal Component Analysis; Food Security; Time Series Model

1. BACKGROUND

The disasters of the past year have shown the fragility of the human food system and the suffering it inflicts on the world. Modern food systems are more efficient and profitable, but even with enough food to feed everyone, more than 800 million people around the world go hungry. on top of that, the current food system has a huge negative impact on biodiversity, accounts for a large proportion of freshwater use, and has a huge impact on the natural environment in which we live. Therefore, this paper constructs a food system evaluation model based on time series model.

2. FOOD SYSTEM EVALUATION

Efficiency and profitability are the mainstream mode of business today, but environmental damage is becoming more and more serious as the price of rapid economic development. So sustainable development should begin to become more valued.

According to surveys, rice is the staple food of about 50% of the world's population, and wheat is also one of the staple foods established by the United Nations, which can produce flour, which can then be made into various products such as bread, steamed bread, noodles and so on. In addition, the world's wheat has a large planting span and a long vertical, mainly distributed below 3000 meters above sea level. In order to simplify the model, we mainly choose agricultural crops such as wheat and rice as representatives of the food system. By analyzing some data from the three countries of the United States, China and Algeria, we have established a food system evaluation model.

2.1 CURRENT PARTIAL FOOD SYSTEM

Food waste will generate huge carbon dioxide emissions, which is equivalent to a large- scale and rapid industrial development of greenhouse gas (GHG) emitters. We know that the amount of carbon dioxide produced by the food loss caused by the not advanced and not green agricultural production is much lower than the amount of carbon dioxide produced by food waste at the consumer level [1]. This indicates that changes in consumer behavior may have a greater impact on reducing greenhouse gas emissions, thereby improving the fairness and sustainability of the food system.

3. NATIONAL INITIATIVES

And we know that the laws of China, the United States and other major countries do not enact severe penalties for the waste of food. At most, they only discourage the waste or encourage the people to save food. According to the survey, in real life, more people throw away food as simple as throwing away garbage. But what we should not ignore is that many people in the world are still starving.

In the face of massive food waste, many countries have also adopted their own measures. For example, the US Food and Drug Administration requires companies to use the "best before date" to standardize the expiration date to reduce food waste; France stipulates that supermarkets must not discard or destroy unsold food, but can donate it to charities and food bank. Japan began to introduce the concept of a food bank around 2000. Food banks usually collect safe and edible food from retailers and distribute them to those in need [2].

3.1 OUR IDEA-TO RESIST DISASTERS TO BE SELF-RELIANT

The current food system is restricted by different laws due to different countries, but it still cannot stop the occurrence of food waste, making food insecurity exist all over the world. Through the survey data [3], we believe that the behaviors that can guarantee food security are mainly to prevent natural disasters and develop agricultural technology. In addition, the most basic way to ensure food security is to be self-sufficient, so we suggest that different regions adopt different treatment methods to ensure food production and sustainable development.

Therefore, we suggest building water conservancy projects in flooded areas, locust-prone locusts, actively controlling locusts in advance, developing drip irrigation technology in dry areas, developing greenhouse economy in cold but fertile soil areas, and areas lacking education should focus on the local government.

4. MODEL SOLVING

4.1 CALCULATION OF INDICATORS

We use SPSS to perform principal component analysis on various indicators of efficiency, profitability, fairness, and sustainability. First, import the data into SPSS and select the facto analysis in the dimensionality reduction analysis. Import the various indicators of efficiency, profitability, fairness, and sustainability into the variables, and then select the description, and select the univariate description and initial solution in the statistics and the coefficients in the correlation matrix, the significance level, KMO and Bartlett Check the sphericity, and then select the correlation matrix, the unrotated factor solution and the gravel map in extraction After running, it is found that two principal components will be extracted, so return to the extraction and select the fixed number of factors to be extracted as 2. After running, the KMO and Bartlett sphericity test and the gravel map are as follows:

Table 1. KMO and Bartlett test1

KMO and Bartlett test		
KMO Sampling suitability		. 635
Bartlett sphericity test	Approximate chi-square	57.126
	Degree of freedom	10
	Significance	. 000

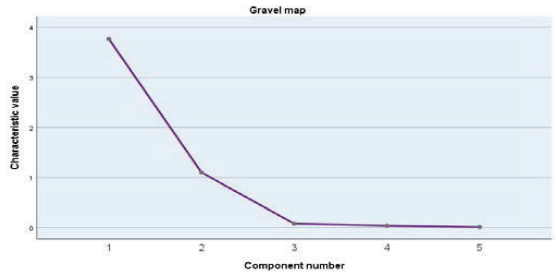

Figure 1: Component number first

Table 2. KMO and Bartlett test2

KMO and Bartlett test		
KMO Sampling suitability		. 461
Bartlett sphericity test	Approximate chi-square	35.754
	Degree of freedom	10
	Significance	. 000

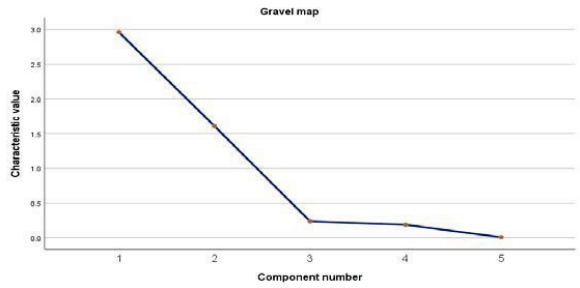

Figure 2: Component number second

According to the SPSS operation, the principal components obtained after the efficiency and profit operation are the same, the principal components obtained after the fair and sustainable operation are the same, and according to the KMO and Bartlett sphericity test, the significance of the chi-square test is less than 0.5, Reject the null hypothesis, so factor analysis can be used. According to the gravel chart, two principal components can be extracted, so in this question we choose the output of wheat as the main indicator of efficiency, the import price of wheat as the main indicator of profitability, and the producer price of wheat as the main indicator of fairness. t h e CO_2 emissions are the main indicators of sustainability.

4.2 IMPLEMENTATION TIME

For the time when the system can be implemented, we use the time series model in SPSS to predict the CO_2 emissions of rice from 2020 to 2030 and the producer price of wheat. First, we will calculate the CO_2 emissions of rice and the production of wheat from 2010 to 2019 The price of each is imported into SPSS, Position the time in 2010, then choose to create a traditional model in the time series forecast, import the CO_2 emissions of rice and the producer price of wheat into the dependent variable, and import the time into the independent variable. t h e conditional model selects all models, Select additive, level change, innovation, transient, local trend, additive repair for outliers, select the parameter estimates in the statistics of a single model in the statistics, select the sequence of the single model in the figure, and the measured value, Predicted value, fitted value, confidence interval of predicted value, confidence interval of fitted value, residual autocorrelation coefficient, residual partial autocorrelation coefficient, Then select the saved forecast, and select 11 years of forecast in the options [4]. After running, if each forecast value is the same, return to delete the time in the independent variable, select the exponential smoothing model, run again, and finally get the forecast result as shown in the figure Show:

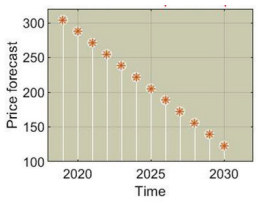

Figure 3: Forecast of wheat producer price

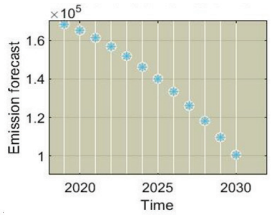

Figure 4: Prediction of CO_2 emission from Rice

According to the figure, if the food system is optimized for fair and sustainable development, the producer price of wheat and the CO_2 emissions of rice will continue to decline. According to national policies, it is estimated that when the producer price of wheat is between 100-150 US dollars, It will be fairer, that is, the number of hungry people will decrease. According to the picture 3, it can be seen that the system may be realized in 2029; At the same time, when the CO_2 emission of rice is about 160, 000 or less, the emission standard will be met, that is, the pollution degree may have a degree of decline. According to picture 4, it can be seen that the system may be realized when the time is 2029. As mentioned above, if the food system is optimized for fair and sustainable development, the system may be realized in 2029.

4.3 Entropy Method To Measure Weight

The steps of entropy method to calculate weight are as follows:

step 1: Because there is a big difference between the data values of the indicators and the indicators, we first normalize each indicator to determine whether the indicator is a positive indicator or a negative indicator. For example, we hope that the larger the crop yield, the better, and the crop yield is a positive indicator. It is hoped that the smaller the carbon dioxide emissions, the better, and the carbon dioxide emissions are a negative indicator.

$$x_{ij}^{'} = \frac{x_{ij} - min(x_j)}{max(x_j) - min(x_j)} \text{ Or } W_j = (1 - e_j)/\sum(1 - e_j), j = 1, 2, \cdots, n$$

The first formula is a positive indicator, and the second formula is a negative indicator. Xij represents the i-th evaluated value under the j-th index under the food system, min(xj) represents the minimum value under the j-th index under the food system, and max(xj) represents the maximum value under the j-th index under the food system value.

Step 2: Calculate the proportion of each indicator

$$p_{ij} = \frac{x_{ij}}{\sum_i x_{jj}}$$

Among them, p_{ij} represents the proportion of the i-th evaluated value under the j- th index in the food system to the index.

Step 3: Calculate the entropy value of each indicator

$$e_j = -k \sum_{p_{ij}} \ln p_{ij}, k = 1/\ln m$$

Where e_j represents the entropy value of the j-th index under the food system, and k is a constant.

Step 4: Calculate the weight of each indicator

$$W_j = (1 - e_j)/\sum(1 - e_j), j = 1, 2, \cdots, n$$

W_{ij} is the weight of each indicator under the food system. We use matlab to calculate efficiency, profitability, fairness and sustainability of the various indicators in the food system to account for the weights, first import the data into matlab, write the code according to the above steps, the weight results are as follows:

Table 3. Weight result

	Efficiency	profitability	fairness	sustainability
index	Wheat yield	Wheat import prices	Producer price	CO_2 emissions from rice
W	0.1955	0.4409	0.1391	0.2243

4.4 ANALYTIC HIERARCHY PROCESS TO MEASURE WEIGHT

The process of analytic hierarchy process to obtain index weight is as follows:

Step 1 Analyze the research problem, determine the overall goal of the system, collect the criteria that affect the decision-making of the goal, and use efficiency, profitability, sustainability, and fairness as the criterion layer.

Step 2 Establish a hierarchical structure model, divide each element related to decision- making into different levels, and upper-level elements are used as guidelines to dominate lower-level elements.

Step 3 Construct a pair of judgment matrices to determine the relative importance of each element in a certain layer to the upper-layer element, which is expressed by the relative scale a_{ij}.

Step 4 Calculate the single ranking weight vector and perform consistency check. If the test passes, the feature vector (after normalization) is the weight vector: if it fails, it needs to be reconstructed into a pair comparison matrix. The maximum eigenvalue solved by matlab2017 is 4.0260, and the consistency test is performed. the random consistency index is 0.0087, which is less than 0.1, so we think it passed the test, and then solve the eigenvector of the maximum eigenvalue and normalize the weight vector of each indicator is W=(0.0970, 0.1637, 0.4020, 0.3372).

The steps to check the consistency of the judgment matrix are as follows:

i. Calculate the consistency index Cl

ii. Find the corresponding average random consistency index RI. For n = 1,....., 9, Saaty gives the value of RI, as shown in Table 2:

Table 4. the value of RI

n	1	2	3	4	5	6	7	8	9
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45

iii. the value of RI is obtained by using a random method to construct 500 sample matrices: randomly select numbers from 1 to 9 and its reciprocal to construct a reciprocal matrix, find the average value of the largest eigenvalue, and define

$$RI = \frac{\lambda^{'} - n}{n - 1}$$

Calculate the consistency ratio CR:

When CR <0.10, the consistency of the judgment matrix is considered acceptable, otherwise the judgment matrix should be appropriately modified.

$$CR = \frac{CI}{RI}$$

Among them are the CI consistency index, RI random consistency index, and CR consistency ratio.

In order to make up for the shortage of arable land resources, a large number of elements such as fertilizers and pesticides are used in food production to replace arable land resources. Although this has alleviated the contradiction between grain and cultivated land, it has aggravated the depletion of resources and ecological damage caused by grain production.

The weight comparison before and after optimization is shown in the figure:

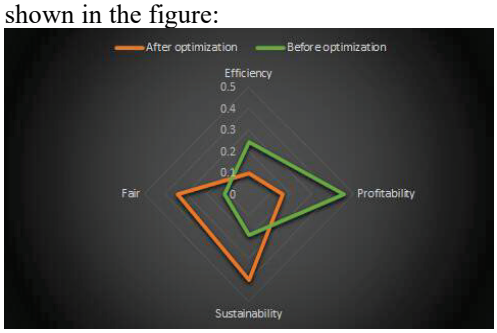

Figure 5. Weight comparison

5. FOOD SECURITY

Countries around the world have made many efforts to ensure food security, but the global food security situation is still very serious. the current food system is dominated by efficiency and profitability, and the four staple foods established by the United Nations are all grown on the ground, so we will discuss the changes in the food system in terms of changes in agricultural production.

Change the weight, Consumers will have an impact: it will reduce food waste caused by consumers due to different economic levels. In order to ensure fairness, the government should reduce the problem of food insecurity caused by income disparity, and avoid the occurrence of fiscal deficits that make food price control impossible [5].

5.1 THE PRICE PAY

Cost: We use the time series model to predict wheat production and wheat import prices as shown below:

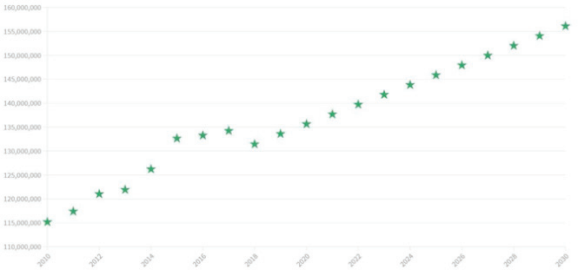

Figure 6. Prediction of wheat production

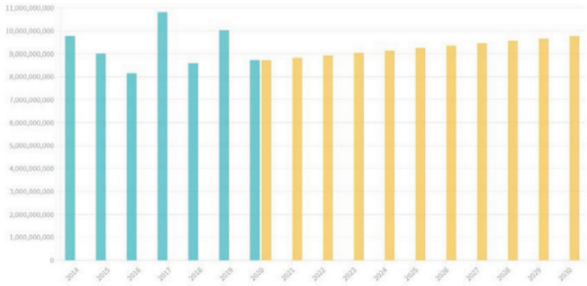

Figure 7. Prediction of wheat import prices

It can be seen from the figure that the overall economic growth trend before 2021 is an upward trend, but it is extremely unstable. After optimization, the entire curve is smoother, but the overall growth rate has become slower. That is to say, although the optimized food system can meet the country's food needs under normal conditions and its growth trend has become more stable, its growth rate is lower than the current development speed under the food system. It takes about ten years to complete the overall economic growth.

In addition, this policy has certain flaws. For China, the current food system is sufficient to provide sufficient food when some small natural disasters occur. But when an accident happens, no matter how big or small the accident is, it will always cause panic among many people, leading to panic incidents such as snapping up food and salt.

For the time when the system occurs, we use the time series model in SPSS to predict the import price of wheat and the output of wheat from 2020 to 2030. and finally get the predicted result as shown in the figure below:

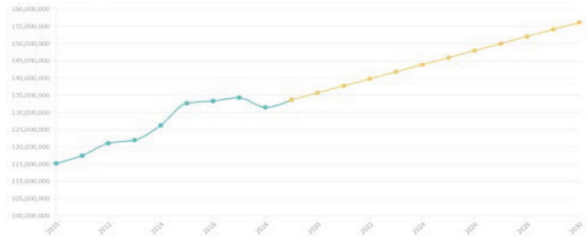

Figure 8. The prediction of the output of wheat from 2020 to 2030

According to the figure, if the priority supply order of the food system is changed, the import price of wheat and the growth of wheat production will slow down. According to the country's policies over the years, the efficiency of wheat production at around 150 million is low. According to Figure 8, it can be seen that it may be realized in 2028; for the same reason, according to the import price of wheat over the years, when the import price of wheat is around 950, the profit will be lower, that is, when the profit will be lower in 2027 or 2028, and According to question 1, the CO_2 emissions of rice and the producer price of wheat will reach a relatively satisfactory level in 2029. In summary, the priority order of supply in the food system will be changed from 2028 to 2029. the benefits and costs may occur.

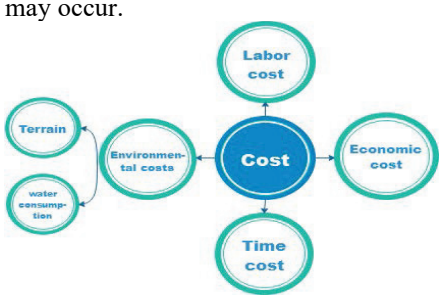

Figure 9. Influencing factors of cost

6. SENSITIVITY ANALYSIS

The data is obtained through statistical observation, so we need to consider the possibility of inaccurate data. on the basis of the food system evaluation model, we first select the three indicators of food production, producer price, and CO_2 emissions to represent profitability, and fairness and sustainability as variables for local sensitivity analysis. In the analysis process, only the CO_2 emissions are changed under the condition that the grain output and the producer price remain unchanged, and the sensitivity of the model is measured by calculating the change in the output value of the model when the parameters change. the parameters are slightly disturbed during the calculation, such as a 5% change, the response fluctuation of the model output to a single input is the sensitivity index. the sensitivity analysis result is shown in the following figure:

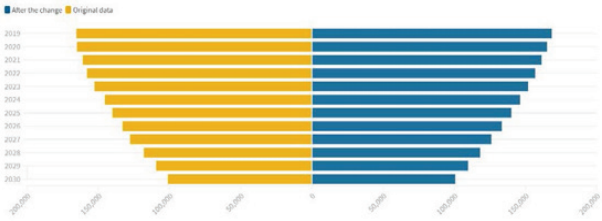

Figure 10. the result of sensitivity analysis

As can be seen from the figure, the trend of each color in the figure has not changed much, and the general trend after the change is the same as the data trend before the change. In summary, the sensitivity is superior.

7. CONCLUSION

Model evaluation:

In the process of solving the problem, we used the principal component analysis method, time series forecasting model, analytic hierarchy process and entropy weight method.

Advantages:

1. The principal component analysis method can eliminate the relative influence between evaluation indexes and reduce the workload of index selection.

2. In the analytic hierarchy process, the degree of influence of each factor in each level on the results is

quantified and very clear.

3. The data used are all real-time updated data with high accuracy.

Disadvantages:

1. The interpretation of principal components generally has a somewhat vague meaning, not as clear and precise as the meaning of the original variables.

2. The time series forecasting method does not consider the influence of external factors, so it has the defect of forecast error and is not suitable for long-term forecasting.

3. The analytic hierarchy process has less quantitative data and many qualitative components, which is not easily convincing.

The model has limitations in its adaptability in some special countries.

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Research on Credit Decision Based on BP Neural Network-Decision Tree

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Abstract: This paper establishes a decision tree-credit risk level assessment model. Selecting the corporate credit rating and the stability of supply and demand as the primary goals, and not lending to unstable companies with a rating of D, using the four indicators of the average value of incoming invoices, the average value of outgoing invoices, credit rating and default to quantify the credit risk, giving the bank's credit strategy to enterprises when the annual total is fixed. Finally, this model is instantiated, and a restriction factor is introduced: the total annual credit is 100 million yuan. Using the BP neural network, three indicators are selected: the average value of incoming invoices, the average value of outgoing invoices, and the ratio of sales to sales, and the corresponding credit ratings of 302 companies are mapped out. Introduce environmental factors and establish an environmental factor-decision tree-credit risk level assessment model. Consider the impact of emergencies on different industries and different types of enterprises. First, all enterprises are divided into eight categories according to their nature. Then, under the restriction of environmental factors, the opening rate and turnover are selected as indicators and brought into the credit risk rating model to compare the changes in various industries under the new crown epidemic, reflect the impact of the epidemic on different industries, and propose credit adjustment strategies based on the economic characteristics of different industries.

Keywords: Credit risk level assessment; Classification decision tree; Environmental factors; BP neural network

1. INTRODUCTION

With my country's economic development, the number of small and medium-sized enterprises has grown rapidly, reaching more than 99% of the total number of enterprises in my country, playing an increasingly important role in promoting economic growth, absorbing labor force and technological innovation. It contributes up to 60% of China's GDP, nearly 50% of tax revenue, and provides more than 80% of employment opportunities in cities and towns. Small and medium-sized enterprises have become an important pillar for national economic growth and employment expansion, and play an indispensable role in macroeconomic policies.

At present, there are two main sources of funds for domestic SMEs: direct financing and indirect financing. Due to the immature development of my country's domestic capital market, most small and medium-sized enterprises do not have capital market financing capabilities, but can only choose bank financing, that is, indirect financing. However, on the one hand, small and medium-sized enterprises are constrained by their small scale, low reputation, and insufficient mortgage guarantees; A more cautious approach was taken to credit to SMEs.

Nowadays, there are certain credit risks in bank lending to small, medium and micro enterprises. Therefore, quantifying loan risk indicators and adjusting credit strategies according to different situations is an urgent problem that we need to solve. At present, small, medium and micro enterprises have gradually become an important force in my country's economic development, and their financing issues have received extensive attention from all walks of life. Due to the unclear understanding of the characteristics of small and medium-sized enterprises in the process of reviewing the loans of small and medium-sized enterprises, the bank applied the previous loan decision-making plan for large and medium-sized enterprises, which increased the credit risk. Therefore, finding a credit review decision-making plan suitable for small and medium-sized enterprises is not only conducive to using more refined and reasonable credit decision-making plans for banks, improving the reliability and security of credit funds, but also helping to solve the problem of financing difficulties for small and medium-sized enterprises in my country. the development of enterprises provides reliable credit funding support.

For a certain bank, the loan amount to the enterprise determined to be loaned is 10-1 million yuan; the annual interest rate is 4%-15%; the loan term is 1 year. Annexes 1 to 3 respectively give the relevant data of 123 companies with credit history, 302 companies without credit history, and the 2019 statistics on the relationship between loan interest rates and customer churn rates. the bank asked your team to study the credit strategy for small, medium and micro enterprises by establishing a mathematical model based on the actual data and information in the attachment.

2. CREDIT RISK ASSESSMENT DECISION TREE MODEL

It is required to quantitatively analyze the credit risks of 123 companies based on the relevant data of 123 companies with credit records and the 2019 statistical data on the relationship between loan interest rates and customer churn rates, and give the bank's total annual credit when the company's total credit is fixed. credit strategy. To determine the overall credit strategy, consider whether or not to lend, the amount of the loan, the interest rate, and the term.

2.1 Model building

Firstly, according to the credit rating of 123 companies, the companies with a rating of D were removed, and the number of companies that were removed was 24. Secondly, the stability of the supply and demand relationship of the remaining 99 companies was tested. the data are all from the National Mathematical Modeling Contest C question.

Comparing the changes in the supply and demand ratio of the remaining 99 companies with credit ratings of A, B, and C in 2017, 2018, and 2019 for three consecutive years, respectively, in the upper and lower quarters of each year.

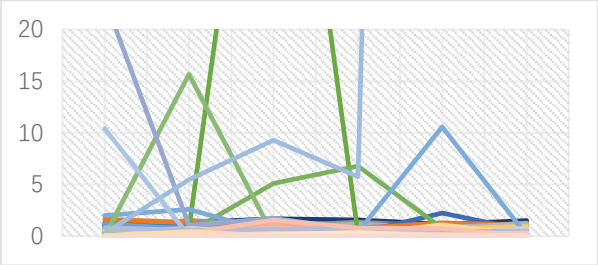


Figure 1 Graph showing the stability of supply and demand relationship of 99 companies

The CART classification tree model replaces the information gain ratio with the Gini coefficient. the purity of the model is represented by the Gini coefficient. the lower the impurity, the smaller the Gini coefficient, the better the characteristics, and conversely, the lower the Gini coefficient, the better the Gini coefficient. Specifically, in terms of classification, if there are K categories, and the probability of the k-th category is pk. Then the expression of the Gini coefficient is:

$$Gini(p)=\sum_{k=1}^{K}p_k(1-p_k)=1-\sum_{k=1}^{K}p_k^2$$

If the probability of belonging to the first sample output is p, then the Gini coefficient can be expressed as:

$$Gini(p)=2p(1-p)$$

For a given sample D, assuming that there are K different categories, and the number of the kth category is counted as CK, the Gini coefficient for sample D can be expressed as:

$$Gini(D)=1-\sum_{k=1}^{K}\left(\frac{|D_2|}{|D|}\right)^2$$

In particular, if the sample is divided into two parts according to some value a of feature A, then under the condition of feature a, the expression of the Gini coefficient is as follows:

$$Gini(D,A)=\frac{|D_1|}{|D|}Gini(D_1)+\frac{|D_2|}{|D|}Gini(D_2)$$

Using the average value of incoming invoices, the average value of outgoing invoices, credit rating, and default of each enterprise, a decision tree model was established using SPSS software. the results are as follows:

Table1 Node's Gain Summary

Number of nodes	Credit risk level	Number of cases	Average value
5	lowest	18	17.78
6	lower	45	45.30
8	Medium	10	65.17
7	Higher	12	77.14
3	Highest	8	99.38

It is not difficult to see from the model results:

(1)In node 5, the credit risk level of individual cases is the lowest, in which the average sales value of in dividual cases is greater than 26054.07195, and the credit evaluation grades are all A (reputation grades A, B, and C are replaced by numbers 4, 3, and 2, respectively);

(2)In node 6, the credit risk level of the cases is relatively low, and the average value of the case sales is greater than 26054.07195, and the credit evaluation level is B or C;

(3)The credit risk level of the cases in node 8 is medium, in which the average sales value of the cases is less than 26054.07195 and greater than 14236.00165, and the average input value is greater than 2443.74531;

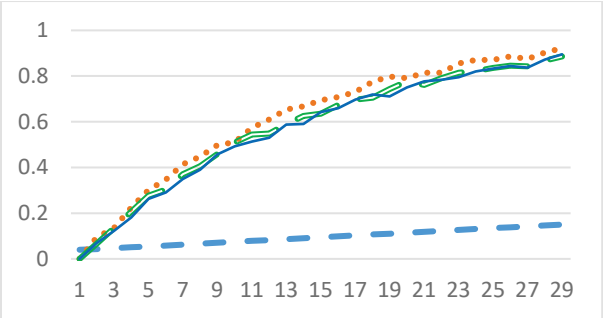
(4)The credit risk level of the cases in node 7 is relatively high, in which the average value of case sales is less than 26054.07195 and less than or equal to 14236.00165, and the average value of input items is greater than 2443.74531;

(5)Node 3 has the highest credit risk level of cases, and the average value of case sales is less than 26054.07195 and the average input value is less than 2443.74531.

2.2 Loan Amount and Interest Rate Allocation Strategy

According to the 2019 statistics on the relationship between loan interest rates and customer churn rate, it is not difficult to find that as the annual interest rate of bank loans increases, the churn rate of customers with different credit ratings will increase, and the churn rate of customers with higher ratings is relatively high.

Figure 3 The relationship between loan annual interest rate and customer churn rate



According to the requirements of the bank, preferential interest rates will be given to enterprises with high credit and low credit risk, and the loan amount for enterprises that are determined to lend is 10, 000 yuan; the annual interest rate is 4% to 15%; the loan term is 1 year.

When the interest rate of the loan is high, the churn rate of customers is relatively large, which is not conducive to the profitability of the bank. Therefore, the interest rate should be adjusted within a reasonable range. This article makes Figure 4 according to the real data, and the observation image shows that when the interest rate is between 4% and 7% At this time, the customer churn rate is relatively low, so the 4% to 7% range is intercepted as the consideration range of the interest rate. and because the credit risk is divided into 5 different grades, the interval is divided into 5 different values according to the weight of the different grades to replace the interest rate of the five grades.

Table 1 Loan Amount and Interest Rate Allocation

Credit Risk Ratings/Indicators	Highest	Higher	Medium	Lower	Lowest
loan amount	0.0592N	0.1481N	0.2138N	0.2532N	0.3257N
interest rate	6.87%	6.52%	6.13%	5.25%	4.27%
Term (years)	1	1	1	1	1

2.3 The annual total credit is 100 million yuan credit risk evaluation model

The basic information of 302 companies without credit records. According to the above model, the average value of incoming invoices and the average value of outgoing invoices can be calculated. the credit rating has been quantitatively analyzed, and the quantitative analysis of grades A, B, C, and D is 4, 3, 2, 1. A BP neural network model is established to predict the relationship between the average value of incoming invoices, the average value of outgoing invoices and credit rating in the known 123 data. In order to make the fitting effect better and reduce the error, it is found that the training set is 70%, 15% is used as the validation set, the test set is 15%, and the hidden layer is set to 20 layers. the training effect is the best. the resulting neural network model is shown.

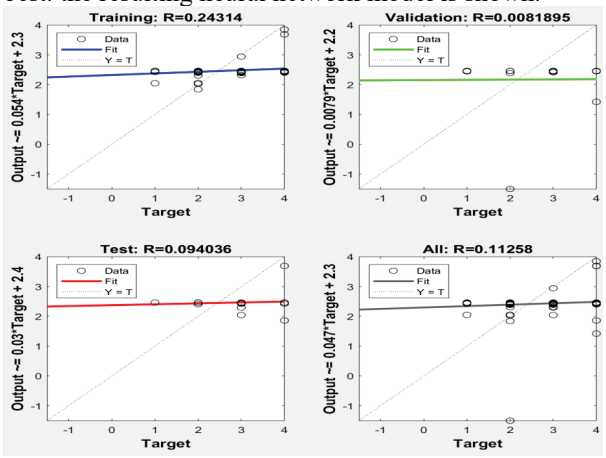


Figure 4 Fitting effect chart

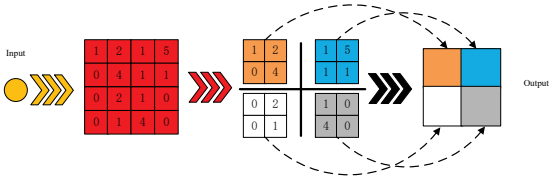


Figure 5 Neural network model diagram

In the process of predicting the credit rating of various companies, companies with a rating of D and unstable supply and demand relationships have been excluded, and no loans will be given to them. Therefore, it is only necessary to establish a classification decision tree according to the processing method of problem 1 by considering the average value of input items, the average value of output items, and the credit rating, and the following results are obtained:

Table 3 Independent variable importance

Independent variable	Importance	Normalization Importance
Credit rating	470.833	99.5%
Input mean	177.907	37.8%
Sales mean	99.613	21.2%

It is not difficult to find that, compared with Question 1, the weight of credit rating in Question 2 is higher, and the following improvements are now made:

Table 4 Improvements in loan amount and interest rate allocation

Credit Risk Ratings/Indicators	Highest	Higher	Medium	Lower	Lowest
Loan Amount (10, 000 Yuan)	0.0530N	0.1687N	0.2589N	0.3415N	0.1779N
Interest rate	6.52%	5.97%	5.61%	4.45%	4.13%
Term (years)	1	1	1	1	1

The specific quota allocation is as follows:

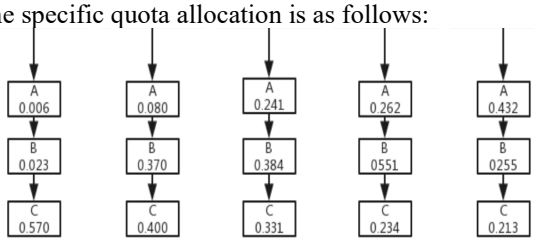


Figure 6 Quota allocation

When the quota allocation is 100 million yuan, it is divided into five grades according to the credit risk: highest, high, medium, low and lowest. Under the five categories, the proportions of the three categories of credit ratings A, B, and C were calculated.

3. CREDIT RISK RATING MODEL

3.1 Evaluating the opening rate from the perspective of enterprise category

Observing the data in Annex II, we can see that due to the unexpected factors of the new crown epidemic in 2020, different types of enterprises will have different openings in 2020. Since most of the 302 enterprises given in the annex have specific names, we can the name of the company roughly divides the companies into 8 types and counts the number, and makes statistics on the number of openings of different types of companies in 2020. Compare the total number of businesses in the same category in 2020 with the total number of businesses in that category to get open rates for different types of businesses. Enterprises with a high opening rate are less affected by the epidemic, which is equivalent to lower credit risk, while companies with a low opening rate such as self-employed enterprises are seriously affected by the outbreak of the epidemic and have a higher credit risk (other categories will not be analyzed in detail).

Table 5 Comparison table of the opening rate of different enterprises

Business category	Self-employed	Business class	Culture	Medical	Science and technology	Construction	Material
Number of companies opened	0	6	6	3	19	9	3
Total number of companies	56	12	10	5	30	13	4
opening rate	0	0.5	0.6	0.6	0.6333	0.6927	0.75

3.2 Risk analysis from the perspective of turnover change

Further analysis of the above problems shows that

although different categories have different openings in 2020, it has been observed that the amount of sales invoices of the same category has changed significantly in 2020. From 2017 to 2020, the amount of all sales invoices is averaged in units of years. It can be seen that the turnover of other companies except medical care is on a downward trend. Therefore, banks should adjust credit in time for different emergencies. Strategy to allocate most of the funds to businesses with low risk and good turnover at different times.

Table 6 Annual turnover table of different companies

Business category	Business class	Culture	Medical	Science and technology	Construction	Material
2017	27006.62	36382.57	37452.0	44057.55	49024.23	15678.94
2018	26939.69	36515.21	37613.74	44059.74	48867.17	15381.20
2019	26745.63	36550.18	37715.94	44003.61	48797.28	15010.12
2020	26600.60	36520.60	37757.1	26255.19	48507.34	14740.44

According to the above results, it can be seen that the assessment of credit risk should comprehensively consider various factors. In the face of the sudden factors of the new crown epidemic, the turnover of different types of enterprises has changed with the supply and demand relationship in the market. At this time, banks should target individual types of enterprises. on the basis of question two, make corresponding adjustments to make the 100 million yuan fund reasonably allocated. For example, the basic turnover of self-employed households during the epidemic is generally 0, but the turnover of medical companies has increased. Banks can find the corresponding risk level of medical companies and give them more interest rate discounts and larger loan limit.

4. EPILOGUE

This model gives different credit strategies under various conditions, so it has certain reference significance for various situations in actual credit. the decision tree model is simple and easy to understand. Data yields good results. Using the classification decision tree, by detecting the input data of the model, and by measuring the degree of reduction of the heterogeneity produced by each division, the optimal division is found. Poor performance when dealing with data with highly correlated features. the model does not carry out quantitative analysis on all indicators, and only uses reasonable language to analyze the impact of indicators on the results for some indicators. In this paper, a BP neural network-decision tree evaluation model is established, and the bank's credit risk assessment for small and medium-sized enterprises is given. and according to the real data simulation, the different loan risk degrees brought by the risk ratio of different credit ratings are obtained, which provides a reference for the bank's lending problem, and can be used for the bank to establish a more comprehensive enterprise evaluation system. It can also be used for simple decision-making problems in everyday life. At the same time, the model also plays an important role in the evaluation of users' reputation. With the rise of bicycle sharing, online shopping and other industries, the reasonable construction of the user's reputation system will play a role in promoting enterprises to provide personalized services for different users.

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Measures To Cultivate Students' Innovation Ability in Higher Vocational Machinery Teaching

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Abstract: At the present stage, the continuous development of social economy, promote the progress of the machinery industry, at the same time, the industry for professional machinery talents also put forward higher requirements, not only need relevant talents to have high professional ability, but also requires the corresponding innovation quality, make it can in the development process of the machinery industry, inject a new vitality. Based on this, when the relevant higher vocational colleges should conduct mechanical teaching to students, they should scientifically improve the traditional teaching methods, combine with the specific mechanical teaching content, formulate scientific and reasonable teaching strategies, introduce advanced teaching technology means, and realize the effective cultivation of students' innovation ability.

Keywords: Higher Vocational Machinery Teaching; Innovation Ability; Training Measures

1. INTRODUCE

Higher vocational colleges themselves are an important place for social training and conveying professional and technical personnel, and it can be said that they have played a positive role in the construction and development of China's social economy and development. With the continuous development of the social era, various social industries and fields have a greater demand for innovative professional and technical talents, including the machinery industry. In this case, the talent cultivation system of higher vocational colleges needs to be improved, and the cultivation of innovative technical talents should be strengthened, the current situation of mechanical teaching should be clarified, and the appropriate teaching methods should be adopted according to the actual teaching needs, so as to promote the improvement of students' innovation ability.

2. WE SHOULD USE INFORMATION TECHNOLOGY TO CULTIVATE STUDENTS' AWARENESS OF INNOVATION

On the traditional mode of higher vocational machinery teaching, is generally the teacher as the main body of teaching, and led by the teacher to related teaching activities, it will be the students innovative thinking consciousness and innovation ability development greater restrictions, but also reduce students 'learning efficiency and quality, and affect the effect of students' innovation consciousness. In the face of this situation, the relevant teachers need to improve the previous teaching mode, update their own traditional teaching ideas, introduce advanced teaching technology means, improve the interest and education of teaching, so as to better cultivate students' awareness of innovation. Based on this, higher vocational teachers can introduce information technology into the mechanical professional teaching, use information technology to stimulate students 'enthusiasm for learning, mobilize the activity of students' thinking, so that students can establish a high sense of innovation in such teaching [1].

In the specific mechanical professional teaching, teachers can with the help of information technology, improve and innovate the current book, teaching type teaching mode, multimedia teaching mode, rich mechanical professional teaching content, through the effective fusion between information technology and professional teaching content, create a reasonable teaching situation, the students 'learning attention, further improve students' own thirst for knowledge and explore. Higher vocational teachers, for example, in the students on "three view painting" the mechanical professional knowledge, can Master Cam the software applied to teaching, apply multimedia this equipment for student demonstration, about three view specific painting and corresponding steps, make students can have an intuitive understanding of three view this understanding, deepen students' understanding of the knowledge, prompting students to quickly grasp the knowledge. Moreover, through the three animation software functions in information technology, some abstract knowledge can also be concrete to guide students to develop their thinking, which is also conducive to exercising students' thinking ability and producing a certain sense of innovation consciousness.

3. WITH THE HELP OF PRACTICAL TEACHING ACTIVITIES, CULTIVATE STUDENTS' INNOVATION ABILITY

For higher vocational mechanical courses, itself has a certain practice, therefore, if you want to cultivate students 'own innovation ability in the specific teaching, you can carry out practice teaching activities, realize the effective combination of theory and practice, to exercise students' operation ability, make it can also in the process of specific operation, improve their own innovation practice ability. Based on this, higher vocational teachers in mechanical professional teaching, need to make full use of mechanical training room, in this place for effective mechanical training, can also be in practice teaching, organize students to carry out mechanical innovation activities, require students to use knowledge, bold imagination, make innovative mechanical model, in this

process, the teacher should pay attention to the guidance of students, avoid students in the process of activities, deviate from the theme, but also can keep the right direction, to improve the students' innovation practice ability [2].

In addition, higher vocational teachers in the specific mechanical training teaching, can also use the group cooperation mode, the students scientific group division, and set the corresponding mechanical operation questions, encourage the group members for the mechanical operation process, discussion analysis, can try to use the right way to improve mechanical operation mode, which also helps to exercise students' innovative thinking and innovation ability. In addition, higher vocational colleges can organize and carry out the corresponding "mechanical design competition", "mechanical innovation competition" and other related activities, and set up corresponding awards to provide both material and spiritual rewards, so as to attract more students to participate, and also enhance students' innovative practice ability.

4. ADOPT THE APPROPRIATE WAY TO REFORM THE SCIENCE OF MACHINERY PROFESSIONAL CURRICULUM TEACHING

From the perspective of the teaching system of mechanical major in higher vocational colleges, the curriculum foundation is the theoretical knowledge of mechanical major. If we simply teach the corresponding theoretical knowledge to the students, it will be difficult to cultivate the students' own innovation ability. Therefore, the relevant higher vocational colleges should improve the original teaching system of mechanical major curriculum scientifically. Based on this, higher vocational schools should have a comprehensive and in-depth understanding of the demand for mechanical talents in the current social and economic development, so as to do a good job in the corresponding curriculum reform. In the specific reform process, the school should make an effective breakthrough in the original mechanical professional knowledge system, and build a new mechanical professional curriculum system that meets the requirements of talent training. Therefore, the school should introduce new knowledge and ideas in the mechanical professional courses, to expand the scope of students 'knowledge, but also to use the advanced mechanical professional concepts, to stimulate the students' innovation consciousness. In addition, the school should also incorporate practical teaching into the curriculum system, and strengthen the full integration of mechanical professional theory and practice teaching, so as to conduct scientific training of students' practical innovation ability [3].

In addition, the school in the practice teaching, can combine the actual teaching needs, strengthen the cooperation of related enterprises, to provide students with suitable practice exercise platform, through the cooperation between the two sides, the school can clear enterprise for innovative mechanical professional and technical personnel, to the reasonable adjustment of specific teaching, can also organize students to visit the corresponding production process, make it understand the specific use of mechanical professional, further improve the effectiveness of teaching, talent training. and enterprises can also screen the required technical talents for themselves, to meet their own talent needs, to achieve mutual benefit and win-win results.

5. CONCLUSION

With the passage of time, professional and technical talents are paid more and more attention. At the same time, the requirements for this talents are also improving, especially in the current situation of steady social and economic development, innovative professional and technical talents are needed to inject fresh blood into it. Based on this, higher vocational colleges should make clear the requirements of the current social and economy for professional and technical personnel, choose effective methods for mechanical teaching, and cultivate students' innovation consciousness and ability.

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Risk Analysis of Digital Rmb Cross-Border Payment

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Abstract: the use of digital renminbi for cross-border payments will overcome the deficiencies of the existing agency banking system, such as delays, limitations, and excessive costs. Through analysis of the deficiencies in the distribution and supervision of central bank sovereign currencies that exist in digital renminbi cross-border payments the competition between the digital renminbi and other legal currencies, in view of the existing risks, proposes measures to strengthen personal identification, clarify the dual legal compensation at home and abroad, and improve the basic laws and regulations of the digital renminbi to prevent these risks. Make a useful attempt at cross-border payment.

Keywords: Digital Cash; Cross-Borderpayment; Risk Prevention and Control

1. INTRODUCTION

On July 28, 2021, the Shanghai Municipal People's Government issued the "14th Five-Year Plan for the Construction of Shanghai International Financial Center. " the plan will strengthen the promotion of digital renminbi, payment and clearing, cross-border payment, financial technology, technology supervision and other aspects.

The digital renminbi is a legal currency, endorsed by the state, has unlimited legal compensation, and supports controllable anonymity. the digital renminbi's banknotes and coin equivalents are currently mainly positioned as cash payment vouchers, and will coexist with the physical renminbi for a long time. [1]

The most important application scenario of digital currency for China is in the cross-border field. Technically speaking, it is not difficult for foreign companies to realize cross-border payment and settlement of digital renminbi. They only need to install a digital renminbi app on their mobile phones or computers. the key question is whether foreign businessmen and ordinary foreign consumers are willing to accept RMB. This is actually a problem of RMB internationalization. Generally speaking, ordinary cross-border payment takes 3-7 days. If the time of cross-border payment using blockchain-based digital currency can be shortened to within a day or even a few minutes, theoretically the cost can be reduced to nearly zero. At the same time, the cross-border payment of digital currency also needs to solve some problems. First, effective supervision must be implemented; secondly, interoperability issues must be resolved. How to realize the compatibility problem between different countries and different types of digital currency cross-border payment systems is a key link to solve the interoperability problem. Third, we must also consider encouraging market-oriented institutions to develop and use renminbi stablecoins that are anchored to the renminbi under the effective supervision of the central bank. If in the future, under the supervision of the central bank, China can also allow market-oriented institutions to launch a cross-border payment system based on RMB stablecoins developed and used by itself, then this is a financial innovation and development that is very good for China.

2. THE INTERNATIONALIZATION TREND OF DIGITAL CURRENCY

2.1 The development of digital currency at home and abroad

On October 31, 2008, Satoshi Nakamoto released the Bitcoin white paper. the world's first encrypted currency launched by Satoshi Nakamoto in January 2009, and the types and transactions of encrypted digital currencies have subsequently developed rapidly (see Table 1). In 2020, the Bank for International Settlements conducted a survey of the central banks of 21 advanced economies and 45 emerging market economies, which showed that approximately 80% of central banks are engaged in legal digital currency related work, and 40% of central banks have progressed from analysis and research to experiments or concepts Prove the motivation for issuing legal digital currency. Mainly includes: Provide an alternative cash and ensure public access to government-guaranteed payment methods; Reduce the cost of handling cash; Promote inclusive finance, especially for the unbanked population; Improve the efficiency and security of domestic, especially cross-border payments.

Table 1 The transaction status of the top five digital currencies

Digital currency	Market value (100 million U. S. dollars)	24-hour trading volume (100 million U. S. dollars)	Price (USD)
Bitcoin(BTC)	9023.1	329.6	47834.80
Ethereum(ETH)	4025.2	254.0	3408.36
Cardano(ADA)	904.6	54.3	2.81
Binance Coin(BNB)	791.4	24.0	468.28
TEDA(USDT)	655.3	81.1	1.00

Source of information: the author summarized it based on relevant information.

Annotation: the data in the above table is from the closing data of the coinmarketcap website on August 24, 2021.

In 2014, the People's Bank of China established a dedicated team to conduct special research on issues such as the digital currency issuance framework, key technologies, and related international experience. In

2019, digital renminbi will launch pilot tests in Shenzhen, Suzhou, and future Winter Olympic scenes. By October 2020, six pilot test areas including Shanghai and Hainan will be added. on August 1, 2021, Beijing Rail Transit will newly support digital RMB offline ticket purchase cards, fare replenishment and recharge, as well as applications in scenarios such as online ticket purchase on the Yitongxing APP.

2.2 Current regulatory status of digital currency

At present, more and more countries are introducing digital currency into the regulatory system, but their positions are different. Every country has stricter supervision of digital currencies, but the differences in supervision are still very different. Refer to Table 2.

Table 2 Supervision of digital currencies in various countries

country	Regulatory policy
China	Prohibit ICO and actively explore the blockchain.
America	License management, digital currency transactions require license operations.
Japan	Digital currency is friendly, allows ICO, license management.
South Korea	Accept and recognize digital currencies and pursue compliance.
Singapore	The regulation is becoming clearer and the MAS license can be applied for.
Canada	The legislation is transparent, the policy is open, and the supervision is clear.
Russia	Cautious attitude and strict supervision.
Australia	Digital currency friendly and license management.

Source of information: the author summarized it based on relevant information.

It can be seen from Table 2 that the regulation of digital currencies in various countries differs greatly in general. Even some countries prohibit the use of digital currencies for transactions. For example, Russia prohibits the use of encrypted digital currency as a means of payment within its territory.

3. THE RISKS OF TRADITIONAL CROSS-BORDER PAYMENT

With the increasingly prosperous cross-border e-commerce industry and the continuous acceleration of the internationalization of the RMB, the RMB is involved in more and more cross-border payment fields, and there are more and more cross-border payment businesses, which has led to the accumulation of cross-border payment systems more and more risks. the specific risks are as follows:

3.1 Credit risk

Due to geographical reasons, poor information, trading habits and other reasons, delays in transactions in the netting system have a greater probability of occurrence. This type of settlement is cyclical, and it may happen that the participant has lost the ability to fulfill the debt before the netting settlement. If there is no special arrangement in the payment system, the risk can only be borne by oneself. In particular, if the transfer of the subject is carried out in different countries, and how to coordinate national laws and supervise the transfer of the transfer subject to prevent moral hazards in the transfer process, this will bring risks to the payment and the entire payment system.

3.2 Foreign exchange transactions are too concentrated in the U. S. dollar

From the perspective of foreign exchange transactions, in September 2021, the monthly RMB-to-foreign exchange volume in the inter-bank foreign exchange market was close to 5.5 trillion yuan. Among them, the transaction volume of RMB and US dollars accounted for 94.55%, which is higher than the same period in 2019-2020. It can be seen that the US dollar occupies a dominant position in China's foreign exchange market. Behind the U. S. dollar is the Euro (3.10%), and the Japanese Yen accounts for 0.36%. [2] Some listed currencies have only sporadic transactions. For example, although the transaction between South Africa and the RMB is listed, there is no transaction.

3.3 Anti-money laundering risks

Anonymized transactions can easily be exploited to hide money laundering crimes. In the above comparison between digital renminbi and third-party payment, we mentioned that the payment path of digital renminbi payment is short, without any third-party platform, only the payer and the receiver, and its controllable anonymity, to protect consumer privacy. Except for investigations conducted by government agencies within the scope of authority, merchants and third-party payment platforms have no right to obtain consumer payment data. It is difficult to determine the identities of transaction participants because they have not disclosed their identities from the digital currency. This makes it easier to conceal money laundering activities with criminals.

3.4 Operational risk

During the payment process, due to participant operation errors or external factors being the terminal of the payment system, there is a risk of payment failure. the risk of foreign currency debt increases, and it is difficult to improve macro management. the cross-border application of digital currency involves currencies, financial assets and legal tenders of different countries, and cross-border operations are also more complicated.

3.5 Money laundering risk

Third-party payment not only brings convenience to cross-border payment, but also brings new channels for criminals to cross-border money laundering. Because the identification of customer identity information in different countries and regions will be more difficult to identify its authenticity. In the cross-border payment business, third-party payment institutions lack effective means to verify the authenticity of each transaction in a timely manner, which will affect the monitoring effect of the anti-money laundering system.

4. THE INNOVATIVE APPLICATION OF DIGITAL RENMINBI IN CROSS-BORDER PAYMENTS

4.1 Advantages of digital RMB cross-border payment

First, digital renminbi can reduce the cost of paper money printing. Secondly, the issuance of digital renminbi improves currency security and anti-counterfeiting level, and resists counterfeit banknotes. the emergence of digital renminbi has changed the participation of third-party platforms to save transaction fees. Finally, the digital renminbi is more convenient and traceable. the central bank can clearly grasp the currency flow. Strengthening the supervision of capital flow can prevent money

laundering, terrorist financing, and tax evasion. Digital RMB has the anonymity of small transactions and traceability of large transactions, which can improve the efficiency and convenience of cross-border payment and settlement under macro management.

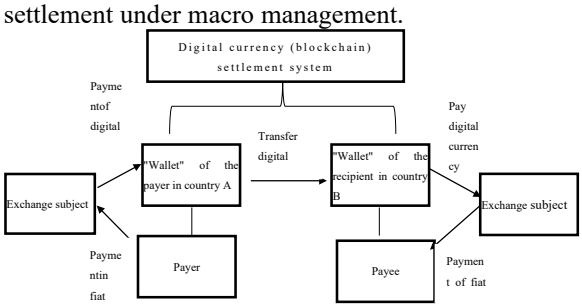

Figure 1 Private digital currency cross-border payment model

At present, the main currency used for cross-border payments is still the U. S. dollar, but with the United States' long-arm jurisdiction over global transactions, the digital renminbi built by the central bank based on digital currency can even more demonstrate its special strategic significance. Central bank digital currencies such as the digital renminbi can use offline transactions or blockchain transactions. They can also complete overseas settlements without relying on the support of overseas clearing banks and other banking institutions, which can better avoid compliance risks from overseas countries.

Note: the rectangle in the figure represents (not) a specific blockchain "node"

Source: Kodak. the construction of blockchain digital currency cross-border payment mechanism under the background of RMB internationalization [J]. Journal of International Economic Law, Issue 3, 2021, p. 7.

It is not difficult to see from the above picture that in essence, private digital currency is a medium that can be paid directly to beneficiaries without having to go through a third-party clearing system. This saves a lot of links, which is more convenient and faster than the current cross-border payment system. [3]

The continuous advancement of digital technology makes the digital renminbi more convenient and faster than traditional electronic tools, especially in cross-border payments. the digital renminbi will not incur expensive overseas transaction fees, which to a certain extent reflects that it does not require the multi-level clearing and settlement infrastructure behind credit card transactions. In addition, it can bypass the relationship with the correspondent bank and transfer money in real-time around the clock on a peer-to-peer system. Compared with traditional payment methods, the volatility of digital renminbi is smaller.

4.2 Insufficiency of digital RMB cross-border payment

In the digital situation of the renminbi, payment speed and payee cost are absolute advantages, but there are credit risks. In addition, there will be issues of regulatory coordination and monetary sovereignty. Digital RMB cross-border payment means the need to accept the dual supervision of the location and the country where the digital currency is issued, which means that it will bring additional compliance costs. However, adjusting compliance costs through cross-border supervision will bring about many uncertain political risks.

4.2.1 The issue of central bank sovereign currencies

Many countries are wary of the foreign currency and dollarization of their own assets, there are anti-money laundering and anti-terrorism problems, and there are ideas for the independence of monetary policy. Cross-border payment involves different financial policies of various countries, making cross-border payment inefficient. In this case, cross-border use of digital renminbi must consider the complexity of interoperability and respect the monetary sovereignty of central banks of various countries.

4.2.2 There are shortcomings in supervision

In terms of international financial supervision, supervision standards vary from country to country, and some countries have relatively loose regulatory policies, and some countries have relatively strict regulatory policies. Without an international unified regulatory system, regulatory arbitrage will inevitably occur. [4]

4.2.3 There is competition between digital renminbi and other legal digital currencies

Digital currency not only has an important position in the economic field, but also an important means of international discourse in the digital age. This kind of competition will increase the instability of the financial system, and the accumulation of superimposed systemic risks will affect the stability of the money market and the financial market. Therefore, how to balance the relationship between the digital renminbi and other digital currencies is a problem that must be solved in future development. [5]

Table 3 Overview of risks in typical cross-border payment models

Cross-border payment risks of the agency bank model	Cross-border payment risks of private digital currencies (payment tokens)	Cross-border payment risk of private digital currency (stable)	Cross-border payment risk of legal digital currency
Credit risk to the account bank	Credit risk to system participants	Credit risk to system participants, issuers, and fiat currency custodians	Credit risk to issuers and system participants
Exchange rate related market risk	Market risks associated with imperfect markets	Exchange rate related market risk	Exchange rate related market risk
The credit risk and liquidity risk of the settlement participant to the settlement counterparty	Liquidity risk of settlement participants to settlement counterparties	Liquidity risk of settlement participants to settlement counterparties	Liquidity risk of settlement participants to settlement counterparties

Source: Kodak. the construction of blockchain digital currency cross-border payment mechanism under the background of RMB internationalization [J]. Journal of International Economic Law, Issue 3, 2021, page 10.

The operation of the digital renminbi system is inseparable from the support of blockchain technology, and if the blockchain system operates passively and the information in the information system is malicious, then positive sincerity is required during the construction of the information system. Otherwise, it will inevitably bring

trust risks to the beneficiaries. When the blockchain settlement system finally performs real-time full settlement, the settlement system and the participants' liquidity requirements are extremely high, so liquidity risks will inevitably occur.

5. PATH OPTIMIZATION OF DIGITAL RMB CROSS-BORDER PAYMENT

The cross-border use of digital renminbi will increase the difficulty of macro management. Macroeconomic management and foreign economic cooperation will become more complicated, and the supervision of illegal acts such as tax avoidance will face challenges. the disorderly flow of domestic and foreign currency digital renminbi will aggravate market volatility.

5.1 Strengthening the innovative application of digital technology

Promote general integrated research and development, cloud computing systems and basic software and technology. Speed up the progress of basic theoretical research, equipment and materials. Encourage companies to develop source code software, hardware design and applications. Promote innovation in basic sciences such as information science, life science and materials.

5.2 Improve the efficiency of digital government services

Accelerate the establishment of digital technology to support government decision-making agencies, and strengthen digital technology to respond to public emergencies such as natural disasters and social security. Comprehensively improve early warning and emergency response capabilities.

5.3 Improve the legal system to protect the rights and interests of financial consumers

First, do a good job in protecting digital RMB transaction information. At the same time, we should pay more attention to the legislation on the protection of RMB digital information and draft relevant laws and regulations in order to strike a balance between the protection of privacy and the inviolable legal rights and interests of consumers. Second, ensure the security of the digital renminbi. Finally, purify the virtual currency market. It is suggested that the People's Bank of China must unite with the market supervision bureau to strengthen control and create a healthy digital RMB trading environment. [6]

5.4 Improving the basic laws and regulations of digital renminbi

In China's existing legal system for digital RMB cross-border payments. Strengthen the effective connection between the innovation of digital renminbi rules and the existing legal norms. At present, China's relevant laws and regulations are far from meeting the requirements for the internationalization, issuance and circulation of digital renminbi. This not only requires consideration of payment settlement and settlement rules, but also needs to strengthen the legal system consistent with the internationalization of the renminbi, clarify regulatory responsibilities and regulatory concepts, and form a continuous and stable regulatory system for the new and old systems. [4]

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Exploration and Practice of Practical Teaching Mode Based on Vocational Ability Training

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Abstract: Under the background of the new situation, the society has put forward high standards and high-quality requirements for talents, emphasizing that students have on-job vocational ability, higher vocational colleges should keep pace with the Times, pay attention to practical teaching, actively improve the traditional disadvantages, and provide a good environment for the ability improvement in the future. With practical teaching, this paper discusses how to reform the preschool education major and carry out a new round of exploration and practice, hoping to provide suggestions for education.

Keywords: Higher Vocational Colleges; Vocational Skills; Practical Teaching; Preschool Education

1. INTRODUCTION

Higher vocational colleges are gathering places for talent training, conveying a large number of preschool education talents to the society, and laying the foundation for national education. However, due to too much attention to professional theoretical teaching, practical courses are reduced, and professional ability cannot be well cultivated, so it is difficult for students to effectively connect their posts. Next, colleges and universities should pay attention to this problem, and focus on the innovation and reform of the teaching mode, so as to promote the progress of the preschool education major and enhance the output rate of applied talents.

2. IMPLANING AND CONSTRUCTION PRINCIPLES OF PRACTICAL TEACHING MODE IN HIGHER VOCATIONAL EDUCATION

2.1 Implaning of Practical Teaching Mode in Preschool Education

Objectively speaking, the practical teaching of preschool education major should be divided into broad and narrow two points. First of all, in the broad sense, including the content, purpose, process, composed of the whole, emphasizing the connection of each link, to achieve the purpose of education; the second, to cultivate the purpose, improve the lack of curriculum, add new practical content, form the daily teaching and learning system. According to the above elaboration, it can be found that the practical teaching mode needs to be carried out with the broad characteristics, so as to better meet the needs of talent training.

2.2 Principles of Practical Teaching Mode in Higher Vocational Education

After determining the purpose of practical education based on the principle of vocational ability, colleges and universities should consider the characteristics of preschool education major, and standardize the development of activities within a certain scope. First, the normal principle, preschool education object is young children, students should do theoretical knowledge guidance, enlightenment, in daily activities, second, professional principle, preschool enlightenment education stage, vocational students should establish a noble career view, and practice; finally, the goal principle, for education, should have goals to go forward, students have independent goals, can become the future career lighting, always guide themselves [1].

3. ANALYSIS OF THE VOCATIONAL ABILITY OF PRESCHOOL TEACHERS

Objectively speaking, higher vocational preschool education has two characteristics of professional and normal education, which requires students to have both skills and quality, so as they can well serve their own industry and contribute to the national education cause. Therefore, during the formulation of practical teaching mode, social needs, job functions, knowledge and ability and other factors should be considered. In short, as a member of preschool teachers, they should have good character, professional ethics, truly love position and students, provide excellent enlightenment education; a wide range of knowledge, knowledge, curiosity, and guide them to organize and manage daily life, and guide education, develop new elements, and make a good start for the future learning career.

4. CONSTRUCTION OF PRACTICAL TEACHING MODE IN HIGHER VOCATIONAL EDUCATION

4.1 Take it for the purpose of cultivating students' professional ability

In the face of the new situation, preschool education majors should build a correct talent training system to maintain professional ability guidance and enrich the practical teaching mode. Simply put, it is to meet the social needs and values, and thus build a practical teaching system. According to the experience analysis, the vocational ability of preschool education major is divided into the following points: artistic ability, communication ability, educational ability, organizational ability, practical ability, computer application ability, etc. Colleges and universities can integrate the above factors to carry out practical teaching activities to ensure the feasibility of students receiving education.

4.2 Combine physical practice to build a professional practice teaching system

During the development of theoretical courses, practical content can be appropriately added, and cannot be limited to professional knowledge teaching links, which is in line with the concept of education in the new era, and truly meets the needs of students and the society. In this regard, Universities can learn from the successful teaching experience at home and abroad, Adding new mechanisms into the practice course, for example: increase the total

proportion of practice courses, Reduce cross-subjects accordingly, Avoid overlapping knowledge points and learning, Not only a waste of time, It also causes a waste of resources, At the same time, the main body status of students is emphasized, the teacher plays the "guide" identity, To this end, strengthen the vocational ability training; Create a practice activity situation or venue for young children, Arrange students to enter the kindergarten to observe and understand the daily activities of education work, Responsible for in-service education practice activities, To do so, you have the real experience and feeling, Summarize the experience for the next learning, and then to better cultivate organizational ability; Guide students to participate in vocational skills competitions, in the daily study and life, Not only to arrange practical courses and related activities, More important to integrate the competition mode, Let the students actively communicate with them abroad, broaden the horizon, Provide experience for future learning; Research and training is equally important, As a part of the future cause of preschool education, Having scientific research ability is very critical, Can guide young children well, and enhance your own ability; Social practice ability, the vocational ability cultivation repeatedly mentioned in the article, in fact, it has a certain similarity with the social practice ability, Because students always have to enter the society to work, Therefore, this link should be added in the daily practice teaching, Guide students to actively enter social practice during winter and summer vacations and National Day holidays, Such as: nursing home, orphanage, public welfare activities, etc [2].

4.3 Establish a stable practice teaching base inside and outside the school

Objectively speaking, it is necessary to avoid the practical training base in carrying out practical teaching in universities, which is the basic site for students to carry out daily activities. Therefore, the next vocational ability training work should be brought into the construction of the base to build a practical environment for students. For example, universities can set up kindergarten bases, such as manual room, bilingual classroom, painting room, music room, etc., to lead the students to cultivate various professional abilities in the scene; if the practice class is extended outside the school, they should sign a contract with the docking unit to ensure the legitimate rights and interests of both parties and the students, and determine the certainty and long-term cooperation.

4.4 Implement the course assessment based on the vocational ability evaluation

Relatively speaking, the course assessment can verify what students have learned, and colleges and universities should pay attention to the professional ability evaluation. According to the social needs and professional requirements, the specific design of knowledge points, practical ability assessment, and the examination mode are closed volume, which is divided into two parts: theory and practice. Moreover, the scope is wider, integrates the students internship experience, school performance, unit guidance, school includes: class clock, classroom performance, daily performance, homework completion degree, skills, theory, etc., thus form a systematic course assessment, both fair, and objective, can summarize student strength.

5. CONCLUSION

To sum up, the preschool education major in higher vocational colleges is relatively special and has two characteristics of professionalism and normal nature. It is very necessary to explore practical teaching, which can improve the limitations of the traditional mode, enrich the curriculum setting, and then provide a guarantee for the cultivation of students' professional ability. the paper analyzed the major of preschool education, and found that students are required to have professional theory, practical ability, organizational ability, singing and dancing ability, so it is urgent to carry out practical classroom to ensure that students' daily transformation. Therefore, the following solutions are put forward: building the classroom, determining the purpose, etc.

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Cultivate Students' Lifelong Awareness of Physical Education in Higher Vocational Physical Education Teaching

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Abstract: Successful education should be accompanied by people's life, so in higher vocational physical education teaching, teachers should not only pay attention to students' physical education performance in a certain period, understanding should pay attention to cultivating students' lifelong physical education awareness, and ensure that students can participate in physical exercise in the whole process of life. Based on this, this paper makes a detailed analysis of how to cultivate students' lifelong physical education consciousness, in order to share and communicate with the majority of educators.

Keywords: Higher Vocational Education; Physical Education Teaching; Lifelong Physical Education Awareness; Training Strategy

1. INTRODUCTION

lifelong physical consciousness is the fundamental goal of modern physical education teaching, advocates students no matter in which stage of life, to clear the significance and value of physical exercise, and develop the perseverance and determination to adhere to physical exercise, so that students always maintain a healthy body and mind and thoughts on the road of life. Therefore, teachers in higher vocational physical education teaching need to realize the importance of cultivating students 'lifelong physical education awareness, and based on the basic current situation of higher vocational physical education teaching, actively find and explore strategies and ways conducive to cultivate students' lifelong physical education awareness, so as to help students develop good physical quality, skills and spirit.

2. THE BASIC SITUATION OF PHYSICAL EDUCATION TEACHING IN HIGHER VOCATIONAL COLLEGES

With the comprehensive promotion of quality-oriented education, various stages of education has improved the attention and support to physical education teaching, but there are still many problems in the concept and direction of physical education teaching, which seriously affects the quality and efficiency of physical education teaching, and hinders the cultivation of students' lifelong physical education awareness. the following takes physical education teaching in higher vocational colleges as an example, emphasizing the current basic situation of physical education teaching: First, the concept of physical education teaching lags behind. the cultivation and development of subject literacy are ignored in the teaching of higher vocational physical education, resulting in physical education teaching only paying attention to students 'physical education performance and skills, which is very unfavorable to cultivate students' lifelong physical education awareness. Secondly, the sports teaching mode is not scientific [1]. For example, in higher vocational physical education teaching activities teachers use the large amount of training teaching method, or use the simple theoretical indoctrination, this method of teaching mode is not only difficult to guarantee the effect of sports teaching, also cannot arouse students 'interest to participate in physical learning and exercise, let alone hinder the students' lifelong sports consciousness and development. Based on this, higher vocational physical education teaching needs to timely update the concept of teaching, as well as reasonable and scientific innovative physical education teaching methods, aiming to provide students with efficient physical education learning conditions and create a suitable lifelong sports consciousness development environment.

3. THE IMPORTANCE OF CULTIVATING STUDENTS' LIFELONG PHYSICAL EDUCATION CONSCIOUSNESS IN HIGHER VOCATIONAL PHYSICAL EDUCATION TEACHING

Cultivate the importance of lifelong sports consciousness, can analyze from the substantive utility of physical exercise, mainly reflected in the following aspects: first, physical exercise has the utility of strong body, and students have lifelong sports consciousness, will actively participate in physical exercise in the whole process of life, so the students 'physical quality will be effectively guaranteed, so as to lay a solid foundation for students' future development. Second, physical exercise has the utility of hone the will [2]. For example, in participating in marathon sports, athletes should not only have good physical strength, endurance and energy, but also have perseverance and never give up willpower. Therefore, the lifelong consciousness of sports can ensure that students form a healthy ideological consciousness and spiritual quality. In addition, the cultivation of lifelong sports awareness from a broader perspective can successfully promote the development of China's sports cause, and provide strong support for China's transformation from a sports country to a sports power. It can be seen that it is very important and necessary significance to cultivate students' lifelong physical education consciousness in higher vocational physical education teaching, which requires higher vocational colleges to accelerate the research work of physical education teaching and devote themselves to finding the path and strategy of lifelong physical education consciousness training.

4. STRATEGIES OF CULTIVATING STUDENTS' LIFELONG SPORTS CONSCIOUSNESS IN HIGHER VOCATIONAL PHYSICAL EDUCATION TEACHING

Based on the importance and necessity of cultivating students' lifelong physical education awareness, teachers need to implement reasonable and scientific renewal and innovation from the direction of physical education teaching ideas and methods, aiming to create a rich, adaptive and efficient physical education learning environment for students, so as to help students gradually develop a good lifelong physical education awareness. the following will put forward the lifelong physical education consciousness training strategy suitable for higher vocational students from the two aspects of updating teaching thinking and innovating teaching methods:

4.1 Timely update the idea of physical education teaching

Teaching ideas affect the direction and goal of teaching to a certain extent, and the teaching direction and goal directly determine the content and form of teaching. Therefore, so in order to effectively cultivate students' lifelong physical education awareness, higher vocational physical education teachers must update their teaching ideas in time. First of all, teachers should clearly clarify the importance and necessity of cultivating students' lifelong physical education consciousness, and regard the lifelong physical education consciousness as the core content of physical education teaching, and design the goals and system of physical education teaching around them. Secondly, in higher vocational physical education to cultivate students' lifelong sports consciousness, naturally to students as the fundamental and the starting point, this requires teachers to fully implement student-based teaching ideas, and follow the actual situation of higher vocational students, innovation of physical education teaching mode and mode, prompting students on the basis of obtaining professional sports knowledge, to participate in physical exercise to form a positive independent and persistent attitude. Finally, the core literacy education concept should be taken as the guiding ideology of higher vocational physical education teaching, to help students develop the necessary character and key ability to adapt to their own and social development, and to provide strong support for the cultivation of students' lifelong sports awareness.

4.2 Reasonably innovate the way of physical education teaching

Higher vocational physical education teaching to cultivate students' lifelong physical education consciousness, must be with the help of reasonable and scientific physical education teaching methods, so teachers need to adhere to the life-based teaching ideas, combining the actual situation of higher vocational students and learning needs, constantly innovating the specific way of sports teaching, for students to create an efficient lifelong sports awareness environment. First of all, it is necessary to ensure that students have a strong interest in physical education learning and exercise, so that students can independently, actively and persistently participate in physical exercise. For this reason, teachers can stimulate students 'interest in physical education learning as a breakthrough to cultivate students' lifelong physical education awareness. Based on this, teachers can reasonably into interesting elements in sports teaching, so as to build for students "play middle school, play" sports class, so that students cannot only master the established sports knowledge and skills, also can get the fun to participate in sports learning and exercise, eventually make the students in the support of interest to form lifelong sports consciousness. In basketball sports teaching, for example, teachers can use the gamification teaching when teaching ball skills, such as "choose two students in the field of the ball, in the process of the ball and steals, and to ensure that the ball and body is always in the circle", under this kind of gaming teaching, students will have strong interest in basketball, so that in the later life and development can adhere to participate in basketball. Secondly, to cultivate students 'lifelong awareness of sports, but also the sports to effectively permeate the students' actual life, so as to help students develop good sports habits. To this end, teachers can use more social practice teaching methods, bring students out of the school to the society, so that students can feel the charm of sports in social practice, and then help students to form a good sense of lifelong sports.

5. CONCLUSION

To sum up, cultivating students' lifelong awareness of physical education in higher vocational physical education teaching has played a very important and necessary significance both for the future development of students and for the development of sports in China. the above article mainly puts forward the relevant strategies of cultivating students 'lifelong physical education consciousness from the two directions of updating students' teaching ideas and innovating teaching methods, hoping to provide effective help for the innovation and development of higher vocational physical education teaching.

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Research and Design of a Multi-dimensional Ideological and Political Teaching Framework for Computer Basic Course

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Abstract: the establishment and implementation of computer basic courses in colleges and universities must consciously assume the responsibility of ideological and political education, actively seek the integration of computer basic courses and ideological education, cultivate students' scientific spirit and humanistic quality, which can sublimate teaching and better meet the needs of talent cultivation in the new era. In this paper, based on the teaching practice of computer basic course, combining the education content and diversity of a variety of teaching modes, we built a multi-dimensional teaching framework. It not only can promote the student with a correct concept of value view but also can improve the teaching methods for the basic computer courses and enhance students' attention to the courses.

Keywords: Computer Basic Course; Ideological and Political Education; Ideological and Political Education; Flipped classroom

0. INTRODUCTION

The teaching goal of basic computer courses in colleges and universities is that students can master the basic knowledge related to computers and have the preliminary ability to operate and use computers through learning the courses. At the same time, to ensure that students can get inspiration in ideological and political aspects, to achieve the best effect of teaching, this requires teachers to seek for the integration of basic computer course and ideological education, design the teaching system of basic computer course reasonably, and excavate the ideological and political resources of the course deeply.

1. OVERALL DESIGN IDEA

The teaching content of basic computer courses carries out the concept of computational thinking and involves the concepts and knowledge of various fields of computer as well as the essential computer application skills the college students need to master. At the begging of designing the teaching framework, we should re-examine the training objectives of the curriculum, fully combine the characteristics of the computer curriculum, and deeply excavate the ideological and political education elements contained in the curriculum. [1-3]. From the course teaching plan, classroom organization and implementation as well as each part of teaching, we should plan systematically, by integrating ability cultivation with thinking mode transformation and value shaping into the teaching system, to achieve the multi-dimensional integrated goal of knowledge imparting, ability cultivation, and value shaping [4-6].

2. DESIGN OF THE MULTI-DIMENSIONAL IDEOLOGICAL AND POLITICAL CURRICULUM FRAMEWORK

The design of multi-dimensional ideological and political course framework integrates the ideological and political elements of the course into offline classes, online platforms, and course competitions, to build a multi-dimensional ideological and political course system [7-9]. the overall framework is shown in Figure 1.

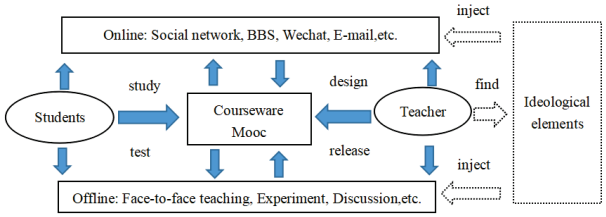

Figure 1 Ideological and political curriculum framework for computer basic course

2.1 Computer basic course offline

In teaching computer basic courses, simply emphasizing the importance of ideological and political learning will reduce students' interest in learning. Colleges and universities should maintain the rationality of ideological and political education for computer basic courses by modifying the curriculum syllabus. Computer teachers should be active in setting up a teaching objective with a definite content, excavating ideological and political elements in computer science and basic courses, and searching for the organic combination of ideological and political education and computer teaching.

At the same time, to ensure the integrity of ideological and political education penetration, teachers should make adjustments in course evaluation, take into account the requirements of ideological and political education and computer ability training, and stimulate students' enthusiasm under the condition of reasonable score ratio [10].

2.2 Enrich ideological and political content of online courses

Online courses are completely free from the constraints of time and space. Teachers can effectively integrate the ideological and political content of courses into computer teaching in various ways.

Make full use of the bulletin board of the online platform to publish teaching plans, homework, videos, pictures, and other multimedia teaching resources. Timely combined with the learning content and progress of the announcement with pictures and text, make it a powerful tool for teachers to send messages to students.

Make good use of the advantages of online platforms. which have no time and space limitations, to expand knowledge and share extracurricular materials. Compared with the limited narration in offline classes, online platforms can provide rich and complete materials with pictures and text for learners to study independently, to achieve the purpose of better patriotic education.

Using the discussion function of the online teaching platform, students from different places can participate in the discussion of many topics and ask questions independently, so that teachers and students can promote together.

2.3 Flipped classroom

Flipped classroom teaching can cultivate students' abilities of independent self-study, time planning, teamwork, language expression, and innovative thinking. Through flip teaching in some courses both theory and experiment, students organize study groups, complete data retrieval, discuss, and study on their own according to the teachers' arrangement in advance. Then they form the lecture content for the class under the guidance of teachers and take it to the podium to flip finally. the students accept ratings of the other ones and teachers to achieve goals of learning.

Through flipping, students will change the passive learning into an active one, further master data retrieval tools and computer application skills, and urge each other to learn from each other to achieve the goal of ability cultivation [11-12].

2.4 Homework and Assessment

By incorporating ideological and political content into homework, students can receive education and inspiration in the process of completing homework. In the process of assigning homework, teachers should properly add ideological and political requirements in homework assessment. Multimedia works designed and completed by students in groups or independently can stimulate students' creative enthusiasm and promote the emergence of many excellent works [13]. the teacher will summarize the homework and organize the students to evaluate each other according to the evaluation criteria designed in advance, and show the excellent works. According to the completion of students' homework, teachers give the usual performance in the formative evaluation.

3. Exploration of ideological and political elements

Various forms of ideological and political elements exist in computer basic courses. In addition to adding ideological and political content in teaching themes and evaluation, ideological and political education and computer basic courses can also be combined with the characteristics of the courses. the mining work of ideological and political elements runs through every part of computer basic courses. Table1 shows different types of ideological and political elements, and how to get these sources.

Table 1 Different types of ideological and political elements

Type of elements	How to get	Targets
Document, Images	Collect Purchase	Train students to establish correct moral values and opinions about value. To cultivate students' professional ethics and patriotic spirit.
Video, Animation	Collect Made by teacher	
Cases, Experiment	Developed by teachers or students	

4. CONCLUSION

The ideological and political education is very important for computer basic courses. the construction of the teaching system with information characteristics is a critical way to realize ideological and political education in computer courses. Ideological and political education is naturally permeated in teaching so that students can improve themselves in the process of mastering computer theoretical knowledge and application skills. At the same time, it also provides a useful reference for other professional courses to integrate ideological and political education.

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Innovation and Enlightenment of Higher Education Management Mode in the Internet+Era

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Abstract: Under the new situation, the Internet is gradually recognized by the public and implemented in various fields. After the "Internet +" was presented to everyone's vision, the education industry has created a dual education pattern of "face-to-face teaching+network" through the combination of online and offline education, and implemented the evolution into a three-dimensional direction. Higher education also needs to seize the development opportunity of the Times, adapt to the needs of the development of the society, change the traditional teaching mode, create a good development path, maintain innovation, and complete efficient reform and upgrading.
Keywords: Higher Education; Internet +; Management Mode

1. INTRODUCTION

With the advent of the "Internet +" era, the current management system of college education under the traditional concept has some disadvantages. Teachers and managers belong to the subject of education management, and students are required to obey, and students are in a passive state of passive development when learning. "Internet +" has brought unprecedented challenges to the management of higher education. It is necessary to re-establish the idea of education management again, move into the era of network management, innovate the education management mode, and put forward a new innovation path of university education management mode [1]. Only by fully exploring and giving full play to the sharing of the Internet+management mode can we reduce the difficulty of education. We should give priority from online education to classroom teaching, focus on users and social practice as the stage, break through the restrictions of regional, organizational and national governments, respect the main position of students, and clarify the talent needs of the society. Based on education, we will implement the "Internet +" behavior plan and expand the space for development.

2. INNOVATION AND ENLIGHTENMENT OF HIGHER EDUCATION MANAGEMENT MODE IN THE "INTERNET +" ERA

2.1 Establish the thought of educational management and move towards the era of network management

With the development of the "Internet +" era, the higher education management mode also needs to use the needs of science and technology development, break through the traditional restrictions, and respond to the country's call for "mass innovation". At this time, the management of higher education also needs to change the way, promote the optimization of the industrial structure, and help everyone develop good habits. the management of college education also needs to start from the idea, according to the actual situation and needs of their own colleges and universities, conform to the development pace of the Times, and reasonably use the platform tools to improve the personal work efficiency. College education management personnel should actively change their own ideas, use the advantages of "Internet +", actively innovate and change, and promote the development and construction of colleges and universities. For example, netease Open Class, I Want to Self-study Network, China University MOOC "and other platforms are all developed in the form of" Internet+" education, and create a dual learning mode according to their own actual learning situation [2]. We will formulate a set of development models that meet the laws and characteristics of "Internet+education", maintain innovation, and implement core content. We should make a strategic plan for deep-level reform, accelerate the management and reform in college education under the background of "Internet +", clearly understand the shortcomings of them, and cultivate more personalized talents for the society.

2.2 Comprehensively build a network management system and innovate the education management mode

In the era of "Internet +", college education managers also need to change their educational methods, build Internet classrooms, realize all-round guidance to students, and maximize the quality of education. Regular education and training should be carried out for professional teachers to clarify the educational advantages of "Internet +", and realize the improvement of comprehensive literacy. For example, multimedia courseware, micro-courses, online platform and other platforms are all current educational means, which can improve the accuracy of financial information based on the emergence of financial risks and reduce the emergence of digital management mode. Establish the advanced management mode of higher education, fully learn from MOOC this business operation model, and use course certification, credit certification and book sales for promotion. Establish the concept of innovative development, optimize the collaborative innovation department, advanced network information technology, and provide an effective information application platform [3]. With the "Internet +" to create open classes and networked classes, to maintain a two-way development channel, to better help and guide students, timely supervision and guidance. All-round monitoring, to maintain an objective evaluation theory, to

ensure the quality of education management, to create a modern classroom teaching, to meet the needs of quality teaching services. Clarify their own learning direction. For example, Harvard University and famous universities such as Harvard University and MIT have gradually realized online teaching methods, integrate MOOC education, provide students with online and offline development space, and increase ideological innovation, strengthen management quality and improve management efficiency. Based on employment education, we will fully adapt to the needs of the Times, give full play to the advantages of online and offline, deeply explore the connotation, and lay a good foundation for the healthy development in the future.

2.3 Improve the network level of management personnel and ensure the quality of education and management

There is a solid system level as the foundation, so that you can "contribute to the system" on this basis. We clearly realize the limitations of "Internet+college education" and use to make college education upgrading and transformation through Internet thinking. In order to meet these basic conditions, then relevant personnel are needed to implement effective strengthening, enhance the information management mode, and maintain the needs of network education reform and construction. Increase the training needs of relevant work management personnel, master the new technologies, meet the current value needs, implement the practice methods, and improve their comprehensive quality. Strengthen the information management technology of college education management staff, innovate important ways, give full play to the active role of the network, and conform to the development needs of the Times [4]. Increase the training of technology, the use of technology training construction, give play to their own value and role. Combine the new mode of education management with education practice to improve the innovative mode of education management. Take the initiative to learn various educational methods relying on the "Internet +" application, optimize the learning port mode, increase the construction of scientific research capacity, to meet the real development needs.

2.4 Pay great importance to the investment in network education management and strengthen the network construction

As a product of the development of science and technology, Internet+needs to pay more attention to it, give priority to solving the problem of big data technology, and increase investment. Increase the research and development of various hardware maintenance software in the network teaching, improve the investment of funds, increase the maintenance efforts of professional maintenance, stabilize the operation mode, and provide a good basic preparation for the future development. In the process of training, many times, universities also need to use the hardware basic equipment, need to increase the investment in software and hardware in the reasonable professional training, to complete the effective upgrading and optimization. the relevant equipment necessary for the higher education management mode can only meet the application of the higher education management mode in the long-term overall planning.

3. CONCLUSION

From the perspective of "Internet +", the management of institutions of higher learning also needs to integrate the network advantages, maintain the innovation of education management mode, make continuous in-depth analysis, establish a scientific development path, and meet the development needs of the Times. Make full use of its advantages, meet the development needs of the current society, deeply realize the needs to be optimized in the current management work, establish a comprehensive development direction, increase investment, improve the management level of teachers, realize information construction, and cultivate compound talents to meet the social needs.

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C Language Programming Curriculum Teaching Reform and Practice

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Abstract: With the continuous development of social economy and science and technology, computer technology in all aspects of people's life, the widely used of computer technology to help some enterprises development also increase the demand of related professionals, the demand of social development for the education of computer courses put forward certain requirements. In the professional knowledge of computer, programming language is an important step to improve the level of computer knowledge, students want to effectively learn computer knowledge, must first master the programming language, C language is the most popular programming language in our country, in computer professional education is also a required course, in the C program, so it is difficult for students to learn the knowledge, in order to improve the effectiveness of learning, must reform the C program teaching. This article is mainly the analysis and research of the curriculum reform and practice of C language programming.

Keywords: C Language Program; Program Design; Curriculum Reform; Practical Application

1. THE IMPORTANCE OF C LANGUAGE PROGRAM COURSE DESIGN

C program is simply a professional course of computer course, is also the basic course of computer course, through the learning of C program can effectively improve students' programming ability and system software writing ability, this is because C program C program not only rich functions and application, but also has very strong language expression ability, through C program can improve the efficiency and quality of programming. C program learning is mainly to the students 'program design concept and some programming education, and these content is the basic content in the computer curriculum, so through C program learning can effectively improve students' computer foundation master ability, but also can lay a solid foundation for the course to follow a computer learning.

The C language program course, due to its important role, Therefore, there is also something related to the C language program in the programmer's examination, in the course of C language program curriculum education, due to the high complexity of C language involved content, and it is flexible in use, So there are often mistakes when learning the knowledge, So that students and teachers have a certain learning of the fear of difficulties, This phenomenon hinders the development of C-language programs, therefore, in order to improve the effectiveness of education in C language program courses, we must reform and innovate the education content and teaching methods in the course of subsequent development, in this way can the C language program education achieve good results.

2. PROBLEMS EXISTING IN THE STUDY OF C LANGUAGE PROGRAM COURSES

Through C program learning can improve students' computer programming ability, but due to the complex content of C program curriculum, and some knowledge application flexibility, so students in C program learning is difficult, led to the C program education cannot be effective, through the education of computer majors in China found that in the C language program education, lead to the effectiveness of students learning mainly has the following reasons:

First, the lack of the ability to deal with practical problems. In the C language program education, some teachers will focus on the learning of grammar rules in the process of education, due to the content of computer grammar rules, students to remember the grammar rules must be through "rote", this unreasonable focus will lead to students unable to learn the practical ability of computer programming design, in encountered problems cannot effectively analyze and deal with problems. Second, the single teaching mode, cannot enhance students' interest in learning. In computer professional education in China, the teaching mode and the student learning mode is the same, is in a classroom through the teacher's main learning, the teacher in the explanation is just according to the content of the textbook, the single teaching method not only cannot improve students' interest in learning, also cannot effectively let students participate in learning, long-term development will let students to C language course learning to lose motivation [1].

3. THE CONTENTS OF THE C-LANGUAGE PROGRAM CURRICULUM TEACHING REFORM

3.1 Reform of the teaching content

In the education of C language program, the main purpose of education is to lay the foundation of students 'programming design and cultivate students' logical thinking ability. Only by improving students 'basic programming ability and logical thinking ability can we provide effective help for students' follow-up learning. Under the condition of the continuous development of science and technology in China, the computer technology is also constantly innovating and developing. Based on this situation, in order to make the C language program teaching can be effective, the teaching content must be reformed, so as to improve the efficiency of students' learning. Due to the previous C program content complexity, so it is difficult for students to understand the knowledge, in order to improve the efficiency of teaching according to each student's learning situation to the focus and content of sorting and division, let C program

difficulty in the curriculum, to simplify the course content of students' learning efficiency and learning ability [2].

3.2 Reform of the teaching methods

In the previous teaching of C language program courses, Usually, the teachers mainly instill the type of education on the students, This kind of education method not only cannot reflect the role of the student main body, Nor can we improve students' interest in learning, Make the C language program course education inefficient, Based on this situation, in order to improve the effectiveness of C program education, Multimedia can be used to assist in the teaching, Education the difficult knowledge of C language program in the form of video, Not only can the video form enhance the students' interest, It can also let students master the knowledge points while watching the video.

4. C LANGUAGE PROGRAM COURSE TEACHING PRACTICE WAY

Computer professional learning to effectively realize the C program education, first should teach reasonable design, through the program design let students in C program course learning cannot only to textbook theoretical knowledge and consolidate, also can extend to other relevant knowledge, make students fully grasp the program design concept and way. In the practice of C language course should be from the computer experiment and course design two parts of course education, C language program course should be according to the difficulty of the content from shallow to deep education, after the classroom of the students, to understand the students' learning situation, through understanding can provide reference for the subsequent classroom teaching scheme [3].

5. CONCLUSION

To sum up, C program is computer basic education for students, so it also has an important impact on students' subsequent learning, in the previous C program course due to unreasonable curriculum content and education methods effectively leads to the C programming knowledge, and in the continuous development of technology, through the reform of C program course teaching content and teaching way can effectively improve the learning efficiency of the course.

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Research on the Integration Development of Block Chain Technology and Fresh Agricultural Products Logistics in the New Era

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Abstract: With the adjustment of agricultural structure and the improvement of residents' consumption level, the output and market demand of fresh agricultural products in China continue to expand, fresh agricultural products logistics has become a hot topic of concern from all walks of life. Under the background of the new period, promoting the integration of blockchain technology and fresh agricultural products logistics has a positive role in solving the problems of low efficiency and high credit cost of fresh agricultural products logistics industry. Based on this, this paper first describes the characteristics of block chain technology and the necessity and feasibility of its application in the field of fresh agricultural products logistics, and puts forward the application of block chain technology in fresh agricultural products logistics, and finally discusses the integration development path of block chain technology and fresh agricultural products logistics in the new era.

Keywords: Fresh Agricultural Products; Logistics; Blockchain Technology

1. INTRODUCTION

Under the background of the development of cloud computing, Internet of Things, artificial intelligence and other new Internet technologies, the "Internet plus" era has arrived in an all-round way, which has promoted the in-depth integration of all industries, accelerated the upgrading and development of traditional industries and spawned the emergence of more new industries. In recent years, as one of the major technology changes in the Internet, blockchain technology has gradually come to the attention of people from all walks of life, and has been widely used in various industries and fields. Agricultural products are an essential material for People's Daily life. With the improvement of national income level and consumption intention, urban and rural residents' consumption demand for fresh agricultural products is more diversified, and the consumption of fresh agricultural products increases year by year, which also greatly promotes the rapid development of cold chain logistics industry of fresh agricultural products [1]. Cold chain logistics of fresh agricultural products is based on the freezing process, the use of refrigeration technology for agricultural product transportation logistics activities, from production to sales of agricultural products under strict temperature control, compared with traditional agricultural product logistics, pay more attention to ensure the quality of agricultural products, control the loss in the process of agricultural product logistics. Fresh agricultural products logistics is not only a supply chain activity, but also a key link to ensure the quality of fresh agricultural products. At the present stage, the development of fresh agricultural products logistics in China has achieved certain results, but there are still high costs and low efficiency in the operation process. How to build a smart, professional and innovative fresh agricultural products logistics mode is an urgent problem to be solved in the field of agricultural products logistics [2]. Therefore, in the new era, it is necessary to take blockchain technology as an important technical support for fresh agricultural products logistics, accelerate the integration of blockchain technology and fresh agricultural products logistics development, and rebuild the new fresh agricultural products logistics mode.

2. BRIEF INTRODUCTION TO THE CHARACTERISTICS OF BLOCKCHAIN TECHNOLOGY

Blockchain technology, in essence, is a technical form used to solve the trust problem, and provides the recorded digital information to the other party participants for access [3]. It is characterized by the use of distributed data storage to achieve the purpose of data cannot be tampered with, the use of point-to-point transmission to record information quickly, and the use of consensus mechanism to greatly improve the efficiency of each participant to identify information, and finally through an equal and transparent mechanism to achieve the full channel of information flow. By combining these technologies in a new way, it effectively avoids the occurrence of tampering with stored data, enables real-time viewing of data and traceability, and significantly reduces the trust cost of multiple parties. Blockchain technology solves the problem of cost and trust of the Internet of everything and real data. It is an important foundation for building data infrastructure and promoting effective interaction among all trusting parties. the value contained in blockchain technology is outstanding, which is embodied in the following three points: decentralization, data tampering prevention and traceability, and node transmission mechanism. First, decentralization mainly refers to distributed database, which can realize the decentralization of data storage and achieve the goal of decentralization of management system by using its own consensus mechanism. Compared with the traditional supply chain business, blockchain can more effectively prevent the emergence of industry monopoly, partial

decentralization and complete decentralization can ensure the fairness of the business platform, by reducing the centralized management can maximize the key role of small and medium-sized enterprises in the supply chain. Secondly, data tampering prevention mainly refers to the use of cryptography and hashing traceability technology to trace the supply chain, which can effectively prevent participants from tampering with data. Compared with traditional databases, distributed databases based on blockchain technology can minimize the modification of stored data by participants. Even if data is tampered with, the original data will not be affected, the authenticity of original data will be maintained, the trust of data will be greatly enhanced, and the cost of data fraud will be reduced. Third, the node transport mechanism is a peer-to-peer, trusted transport mechanism. P2P network is used for point-to-point transmission, intelligent contract is used for programming code, and the contract is automatically executed after it is triggered, forming a perfect trust mechanism. In the contract program, the start-to-point transaction trust environment is automatically established. After digital assets and corresponding values are defined, the corresponding trust network is established in the blockchain, which improves the convenience of circulation in various scenarios. In a word, the core value of blockchain technology lies in the formation of a corresponding technical system through the coordination of several technologies to achieve the circulation of trusted value. Decentralized systems with consensus are established through blockchain technology to further realize the trust of minimizing the cost of data. In addition, the tamper-proof and traceability that blockchain technology uses to store data, coupled with a trusted peer-to-peer transmission mechanism, can achieve the ideal store of value and quantification.

3. THE NECESSITY AND FEASIBILITY OF THE APPLICATION OF BLOCKCHAIN TECHNOLOGY IN THE FIELD OF FRESH AGRICULTURAL PRODUCTS LOGISTICS

In recent years, the scale of China's agricultural products logistics market continues to expand, and the total amount of agricultural products logistics shows a steady growth trend every year. According to the survey data in the Analysis report on Market Foresight and Investment Strategy Planning of China's Agricultural cold chain Logistics Industry, the total amount of agricultural products logistics in 2012 has reached about 3.03 trillion yuan, and the total amount of agricultural products logistics in 2017 increased to about 3.7 trillion yuan, with a year-on-year growth of 2.78%. By 2018, the total amount of agricultural products logistics in China has exceeded 3.8 trillion yuan, and the total amount of agricultural products logistics in 2020 has exceeded 4 trillion yuan [4]. Meanwhile, according to the data forecast, the total amount of agricultural products logistics in China will reach about 4.5 trillion yuan in 2023 [5]. Although the cold chain logistics of fresh agricultural products has achieved rapid development, there are still many shortcomings in the development process of the cold chain logistics industry of agricultural products, and it is an inevitable trend to accelerate its transformation and upgrading. At present, the shortage of fresh agricultural products logistics is mainly reflected in two points. First, the efficiency of fresh agricultural products logistics industry is relatively low. Although China's fresh agricultural products logistics has made great progress, there are still a series of problems such as low efficiency, product loss, information leakage, quality and safety. the traditional logistics mode of fresh agricultural products lags behind, and the logistics cost remains high. Therefore, it is necessary to improve the efficiency of resource utilization, optimize the fresh agricultural products logistics transaction chain, eliminate redundant intermediate links, and constantly upgrade the contract execution, payment, settlement and other key links, which is the key to reduce logistics costs and improve the efficiency of the fresh agricultural products logistics industry. Second, fresh agricultural products logistics supply chain in our country at present stage credit cost is higher, the traditional fresh agricultural products logistics supply chain is mainly by the logistics enterprises to build centralized network structure model, covering various participants in the supply chain, each node enterprise is relatively fragmented, with each other information communication barriers, supply chain lack of trust, Further increase the difficulty of coordination among supply chain members.

Due to its own characteristics, block chain technology has a good feasibility in the application of fresh agricultural products logistics. First, the block chain technology have the characteristics of "high transparency", open to all users worldwide block chain technology, in other words in the chain of the participants to be able to query data through the public port, all data are Shared state, so the whole system showed significant transparency, to ensure the reliability and openness of fresh agricultural products logistics system. Second, blockchain technology has the feature of "decentralization", which is the most basic feature of blockchain technology. Each node in the fresh agricultural products logistics supply chain has an equal relationship, reducing the existence of centralized management agencies, so that the blockchain technology gets rid of the dependence on the third party and can independently complete self-verification, which helps significantly improve the operational efficiency of the fresh agricultural products logistics system and control the operating costs within a reasonable range. Third, blockchain technology has the characteristic of "information traceability". Massive data information can be stored in the blockchain system, historical data in the logistics process of fresh agricultural products can be saved, and convenient information query service can be provided for members of the system. the government, enterprises and consumers can access data at any time. Fourth, blockchain technology has the characteristics of "encryption". While sharing data, it can also ensure the individual rights and interests of members in the supply chain to the greatest extent.

4. APPLICATION OF BLOCKCHAIN TECHNOLOGY IN FRESH AGRICULTURAL PRODUCTS LOGISTICS

4.1 Establish a decentralized fresh agricultural products logistics supply chain system

Based on the characteristics of "decentralization" and "mutual trust", blockchain technology can be widely applied in application scenarios requiring the participation and cooperation of all parties [6]. Fresh agricultural products logistics supply chain covers farmers, suppliers, wholesalers and consumers and many other subjects, and is a comprehensive system connecting various subjects to carry out capital flow, information flow and logistics activities. on the basis of blockchain technology, in order to solve the problem of supply chain coordination, a decentralized fresh agricultural products logistics supply chain system including manufacturers, suppliers, distributors and consumers can be developed. For a supply chain system based on blockchain technology, the most important thing is to make a detailed classification, covering not only the public part that is freely open to all network users, but also some authorized users. Compared with traditional supply chain, the modern supply chain system based on the technology of block chain, no longer rely on third-party intermediary organization, emphasizes the equality between the members of the supply chain system, each main body the fair transactions, and information exchange, so that to ensure the high efficiency, safety and credibility operation of supply chain system.

4.2 Introduce smart contract to establish virtual agricultural products logistics intelligent trading platform

The transformable programming system covered by blockchain technology can use each network node to establish smart contracts with significantly improved efficiency [7]. Through the introduction of smart contract in blockchain technology, can complete fresh agricultural products logistics contract and storage, fresh agricultural products logistics each member through signing smart contract, so as to form agricultural products logistics virtual intelligent trading platform. Block chain technology can be used to real-time monitoring of intelligent real-time state contract, even if the body in the center of the lack of supervision can also realize the fresh agricultural products logistics each node to the execution of contract terms and obligations automatically recognize and automatically reach relevant conditions of contract and contract settlement, it can ensure that each main body in the supply chain order enforce contracts. At the same time, through the platform, all contract transaction information can be permanently saved, cannot be tampered with, to ensure the authenticity and validity of data, to prevent the default of fees and evasion of responsibility.

4.3 Integrate with Internet of Things technology to build a new database

At present, fresh agricultural product safety disputes are common, the quality and safety of fresh agricultural products cannot be fully guaranteed. In the past, the traditional way of supervision of fresh agricultural products mainly relies on artificial monitoring. Although the new supervision system based on Internet of Things technology achieves the purpose of safety traceability, traditional data security technology cannot be fully applied in Internet of Things due to the topology and resource constraints of Internet of Things and other factors [8]. the block chain technology has the characteristics of untampering and high redundancy storage, so it has obvious advantages in storing massive real data. the effective integration of block chain technology and the Internet of Things is conducive to the establishment of credit, speeding up transactions, reducing costs, network collaboration and edge computing, and many other benefits. Help build a decentralized and credible global logistics traceability system. In the field of fresh agricultural products logistics, the combination of blockchain thinking, ideas and the Internet of Things can track various transaction records in a decentralized public database, screen fake information, and ensure the authenticity of the chain. In detail, the technology can block chain store fresh agricultural products in production, harvest, transport, transit, transportation, such as temperature, ten degrees, water content in the process of the various indicators affecting the quality of agricultural products, to facilitate the enterprise according to the circumstance can further verify the archive transaction and delivery details, help ensure fresh agricultural product safety and quality of the goods. At the same time, consumers can also block in the chain store data through the convenient tracking to fresh agricultural products the indicators data, master for fresh agricultural products producing area, quality and other information, also can further understand the information throughout the supply chain of fresh agricultural products, promote the whole process of fresh agricultural products from the producer to market transparency.

4.4 Establish intelligent fresh agricultural products logistics information exchange platform

On the basis of blockchain technology, build intelligent information exchange platform for fresh agricultural products logistics, centralized integration of dispersed resources of small and medium-sized logistics enterprises, improve the real-time communication of small and medium-sized logistics enterprises, and improve the matching and use efficiency of logistics vehicles and equipment [9]. At the same time, it will help optimize the management of the logistics fleet and automatically assign logistics delivery work to drivers through blockchain and artificial intelligence technology, reducing the large demand for dispatchers in traditional management work. In addition, the use of blockchain-based agricultural products logistics intelligent information exchange platform, but also can further expand the specific content of logistics services, through the establishment of a public chain in the platform, customers can implement in the intelligent platform to query personal information, understand the detailed information of goods, automatic tracking points, etc. In addition, it can also change the delivery address and select the delivery time in time, which greatly enhances the user experience.

4.5 Method of integrating digital currency into the system

Fresh agricultural products logistics industry chain is a process of logistics service by a large number of upstream and downstream logistics enterprises. on the basis of block

chain technology, through the digital currency into the system, the collection between individual members, remittances account connected effectively, promote the blocks in the chain of all members of the payments and trading directly to complete the project, can effectively save the participation of Banks or other financial institutions, reduce excess deals, control the deal costs among supply chain members, in particular, cross-border e-commerce can save settlement costs and greatly improve settlement speed in cross-border settlement [10]. At the same time, the security database technology of blockchain technology can ensure that the data of each transaction node is completely preserved and cannot be tampered with. In the process of data interaction, mutual anonymity does not need to be trusted, which makes the behavior of the trust subject be standardized to a great extent and prevent all kinds of violations.

5. THE INTEGRATED DEVELOPMENT PATH OF BLOCKCHAIN TECHNOLOGY AND FRESH AGRICULTURAL PRODUCTS LOGISTICS IN THE NEW ERA

5.1 Establish an innovative mode of fresh agricultural products logistics with block chain+agricultural products logistics as the framework

At the present stage, with the gradual development and improvement of blockchain technology, there is no great difficulty in the technical aspect of blockchain technology. For example, wal-mart, Microsoft and other service providers have increased their r&d efforts on blockchain technology [11]. Currently, the biggest challenge facing blockchain technology is whether enterprises have the business intelligence to re-examine all internal business processes; How to use blockchain technology to deal with the contract, payment, settlement and other commercial activities between transaction subjects in the business process of transportation, storage, distribution and other nodes according to the operation platform of fresh agricultural products logistics industry. For logistics enterprises, they should focus on how to effectively integrate blockchain technology into each link of logistics operation, what kind of blockchain to build, what convenience can be brought by blockchain, and what problems can be solved. Only real promote block chain and the depth of the agricultural products logistics integration, innovation and development to build up the fresh agricultural products logistics mode, can in the fresh agricultural products logistics in the real economy maximizing the role of the chain technology accelerated the block chain technology to serve the real economy, to block chain technology in the practical application in the field of more to provide the reference and fusion.

5.2 Establish and improve the standard system of blockchain application

Although block chain technology has been widely used in various fields in China, the relevant application standardization system is still not perfect, especially the application standard of the integration of block chain technology and fresh agricultural products logistics in the field of agricultural products logistics is still missing. This greatly affects the practical application of blockchain technology in the field of fresh agricultural products logistics and restricts the industrial integration development of blockchain technology in the field of fresh agricultural products logistics [12]. Therefore, it is particularly important to continuously establish and improve a set of scientific and reasonable blockchain technology application standardization system to provide guidance for the integration development of blockchain technology and traditional industries. For block chain technology standardization system, needs the government, Internet companies, logistics enterprises, universities and research institutions work together and together, build a systematic, normative block chain technique is applied to the whole chain of fresh agricultural products logistics standardization system, for example to unified technical coding standards, the intermediate interface standards of application platforms are clearly stipulated to provide important support and guarantee for the integrated development of blockchain+fresh agricultural products logistics.

5.3 Issue policies to guide the application of blockchain technology

Blockchain technology is a significant technology that has a profound impact on society and human production and life style. In order to realize the effective application and deep integrated development of blockchain technology in the field of fresh agricultural products logistics, the government's guidance and input in the early stage is extremely critical. First, the government needs to actively introduce relevant guiding policies, reduce the threshold requirements for the development and application of blockchain technology, and effectively solve the difficulties and problems existing in the process of the introduction of blockchain technology by blockchain technology development companies and traditional enterprises. Second, the government should establish and improve the industry-related application responsibility identification mechanism, immediately divide responsibilities for violations, resolutely crack down on violations, effectively protect the vital interests of relevant stakeholders, and ensure the orderly operation of the market. Third, the government should give full play to its guiding function, based on fresh agricultural products logistics industry on the basis of the objective law of development, encourages the use of chain blocks, and other new technology, actively create block chain+actual cases of fresh agricultural products logistics, constantly sum up experience lesson, and fresh agricultural products logistics integration for block chain technology development provides the basis of the practice of good.

5.4 Establish the compound talent training strategy of block chain+fresh agricultural products logistics

For the development of logistics industry, in the context of economic globalization, in order to ensure the effective application of blockchain technology in the field of fresh agricultural products logistics, that is, compound talents who are familiar with fresh agricultural products logistics and master blockchain technology are important guarantees. But at present, China is relatively short of relevant professionals, which is also one of the key factors

leading to block the development of blockchain technology and fresh agricultural products logistics integration. To solve the block chain+inter-disciplinary talent shortages of fresh agricultural products logistics, the first thing you need to focus on deepening enterprise and social people from all walks of life's related concept, thinking, and actively carry out industry peak BBS, use of textbook compilation and set up professional the block chain, targeted training block chain technology professional talents. Secondly, a professional research team of blockchain should be established to conduct in-depth research on the technology, model, supervision and other aspects of blockchain. Finally, we will vigorously support the exchange and interaction between blockchain technical talents and other sectors of society, so that blockchain technical talents can go deep into practical technology applications and find more entry points for the practical application of blockchain technology. In addition, talents in the industry who understand the advantages and development prospects of blockchain technology should be actively encouraged to provide innovative ideas and opinions for the deep integration of blockchain technology with other industries.

6. CONCLUSION

To sum up, under the background of the annual increase in the output and flux of fresh agricultural products in China at the present stage, the whole society puts forward higher requirements for the quality and safety of fresh agricultural products, and speeds up the development of fresh agricultural products logistics, which is of great significance for increasing farmers' income level and ensuring consumption safety. At present, there are still some problems such as high credit cost and low efficiency in fresh agricultural products logistics in China. According to pain points in the development of fresh agricultural products logistics problem, need to follow the contemporary trend of social development, in the process of fresh agricultural products logistics development, strengthen the block linked more closely with technology and fresh agricultural products logistics, scientific ideas block chain technology in the application of fresh agricultural products logistics, with the support of policy guidance, to establish perfect application block chain standard system, Vigorously cultivate block chain+fresh agricultural products logistics compound talents, build fresh agricultural products logistics innovation mode based on block chain technology, so as to better promote the healthy and stable development of fresh agricultural products logistics.

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Reflections on the Cultivation of Mechanical Drawing Ability of Mechanical Students in Higher Vocational Colleges

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Abstract: Higher vocational education is an important part of my country's education system and a key way to cultivate professional, technical, quality and compound talents for the country and society. Therefore, higher vocational education needs to actively implement teaching innovation to ensure education and teaching. the method, content and mode of the project are in line with the needs and standards of the current society for talents. For this reason, this paper takes the cultivation of mechanical drawing ability of students majoring in mechanical engineering in higher vocational colleges as the research object, firstly analyzes the meaning and connotation of higher vocational students' mechanical drawing ability, and then expounds the strategies to effectively cultivate students' mechanical drawing ability, in order to cooperate with higher vocational students Teaching staff of mechanical majors share and communicate.

Keywords: Higher Vocational Education; Mechanical Major; Mechanical Drawing Ability; Training Strategy

1. INTRODUCTION

The teaching of mechanical majors in higher vocational colleges should not only focus on the teaching of operation skills, but also on the cultivation of mechanical design and manufacturing capabilities, which is not only related to the professional level of students, but also involves the future development of students in the field of machinery. Based on this, mechanical majors in higher vocational colleges need to formulate a sound mechanical drawing ability training system, actively implement the "behavioral learning teaching method", and vigorously advocate the teaching mode of combining theory with practice, so as to create an adaptable, efficient and the system's mechanical drawing ability develops the environment.

2. THE SIGNIFICANCE AND CONNOTATION OF MECHANICAL DRAWING ABILITY OF MECHANICAL MAJORS IN HIGHER VOCATIONAL COLLEGES

At present, the production activities of the manufacturing industry need to be attached to the engineering drawings. If there are any problems and mistakes in the engineering drawings at the beginning of the design, it will directly lead to the loss of accuracy in the subsequent manufacturing and processing. Ability is of great significance and value. First of all, in the process of mechanical production, it is necessary to clarify the intention of mechanical design according to the drawings to ensure that the mechanical equipment produced can meet the production needs [1]. Secondly, with the support of the drawings, the machine manufacturer cannot only fully understand the design requirements, but also effectively organize the manufacturing and guide the production, which to a certain extent guarantees the scientificity, rationality and efficiency of the machine manufacturing. Finally, the engineering drawings can show the specific structure and performance of the mechanical equipment in detail, thus laying a solid foundation for the later maintenance, maintenance and operation of the mechanical equipment. It can be seen that mechanical drawing is very necessary and important for mechanical production, operation, maintenance and other work. of course, this also means the necessity and importance of cultivating students' mechanical drawing ability.

The connotation of mechanical drawing ability of mechanical major students in higher vocational colleges is mainly reflected in the following aspects: First, students need to have good ability and literacy in understanding drawings, drawing, analysis, design, assembly, etc. Can make achievements in mechanical manufacturing. Second, mechanical drawing ability is the basic demand for talents in the modern machinery manufacturing industry, so only students with mechanical drawing ability can better adapt to the development of society and themselves.

3. EFFECTIVE STRATEGIES FOR CULTIVATING MECHANICAL DRAWING ABILITY OF MECHANICAL STUDENTS IN HIGHER VOCATIONAL COLLEGES

The cultivation and development of a kind of ability not only requires a long process, but also requires systematic and scientific training methods. Therefore, in the teaching of mechanical majors in higher vocational colleges, it is necessary to cultivate mechanical drawing ability, in terms of teaching concepts, teaching modes, teaching systems, teaching methods. In order to build an efficient and suitable environment for the development of mechanical drawing ability for students, we should implement reasonable and scientific teaching research and innovation work. the following will focus on analyzing the effective strategies for the cultivation of mechanical drawing ability from three directions, hoping to be helpful to the teaching of mechanical majors in higher vocational colleges:

3.1 Actively improve the training system of students' mechanical drawing ability

Higher vocational mechanical courses, mechanical drawing courses, design and practice constitute the current

system for cultivating students' mechanical drawing ability, creating more favorable conditions for students to develop their abilities. At this stage, mechanical drawing courses in higher vocational colleges are mostly composed of two subjects, "Mechanical Drawing" and "AutoCAD". Therefore, the teaching of mechanical majors in higher vocational colleges needs to be based on the above two subjects, and research a more suitable mechanical drawing ability training system for students, so as to help students achieve effective improvement of drawing ability under the support of professional knowledge. First of all, in the teaching of "Mechanical Drawing", teachers need to focus on teaching the basic knowledge of systematic drawing and manual drawing skills to ensure that students can have a good ability to read sample drawings and draw simple mechanical parts by hand. Can complete the drawing of mechanical assembly drawings independently, and finally lay the foundation for cultivating students' mechanical drawing ability. Secondly, in the course teaching of "AutoCAD", it mainly teaches the relevant knowledge of computer graphics, as well as the skills of using computer precision drawing to ensure that students can accurately draw mechanical manufacturing drawings under the aid of computer-aided design software. In this way, students cannot only adapt to the development trend of informationization and automation society, but also continuously improve their mechanical drawing ability with the help of computer drawing skills. With the help of the subjects "Mechanical Drawing" and "AutoCAD", a scientific system for cultivating students' mechanical drawing ability has been built, which in turn provides strong support for strengthening students' mechanical drawing ability.

3.2 Implement "behavior-oriented teaching method"

Whether the teaching methods of mechanical majors in higher vocational colleges have good adaptability, efficiency and scientificity will directly affect the quality and efficiency of teaching, and affect the effectiveness of cultivating students' mechanical drawing ability. Therefore, the teaching of mechanical majors in higher vocational colleges must pay attention to teaching. the innovation and improvement of the method can create a good environment for students to develop their abilities. Therefore, based on the advantages and value of the "behavior-oriented teaching method", teachers need to fully implement and apply in the teaching of mechanical drawing courses, so as to establish a teaching model with the cultivation of students' ability as the core and the orientation of professional activities. First of all, when teachers use the "behavior-oriented teaching method", they should reasonably change their teaching ideas, that is, from a simple "professor" to "guidance", so as to change the traditional learning form of "rote memorization" for students. Secondly, the "behavior-guided teaching method" should also follow the principle of student-centered, requiring teachers to clarify the main learning status of students. All elements and contents related to teaching must be determined according to the actual situation of students. Strengthen students' autonomy and enthusiasm, and secondly, it is beneficial to enhance students' abilities of inquiry, practice and thinking.

3.3 Advocating a teaching model that combines theory with practice

The goal of higher vocational education is to cultivate technical, applied and compound talents, so the teaching form of "emphasizing theory and ignoring practice" is a "stumbling block" that affects the effectiveness of higher vocational education. Cultivation, we should abandon the drawbacks of focusing on theoretical teaching. Based on this, in the teaching of mechanical drawing professional courses, teachers need to adopt a reasonable teaching form to combine the theoretical knowledge and practical operation of mechanical drawing, so as to form a scientific model based on theoretical knowledge and strengthened by practical application. For example, after completing the staged teaching objectives of mechanical drawing majors, teachers should design relevant practical topics for students, and encourage students to design, organize and carry out practical activities in the form of group cooperation or independent inquiry, so that students can Under the support of theoretical knowledge, with the help of practical activities, we will continue to strengthen our mechanical drawing ability.

4. CONCLUSION

A relatively complete mechanical drawing ability training system and efficient mechanical drawing teaching methods, as well as a scientific teaching model, can lay a solid foundation for cultivating students' mechanical drawing ability. Therefore, the cultivation of mechanical drawing ability of mechanical majors in higher vocational colleges needs to pay attention to the construction of the training system and the innovation of teaching methods and models, so as to ensure that students have good mechanical drawing ability.

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A Tentative Analysis of the Current Situation and Development of Mechanical and Electrical Technology Professionals in Urban Rail Transit in Higher Vocational Colleges

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Abstract: With the development of urban rail transit, the demand for mechanical and electrical technology professionals is increasing, which prompts higher vocational colleges to face new challenges in talent training. According to the current situation of talent training, the training quality of mechanical and electrical technical talents is not high enough to meet the construction and development of urban rail transit. Therefore, it is necessary to strengthen the innovation of mechanical and electrical technical personnel training programs, and formulate targeted talents based on the actual situation. training program. This article will discuss the current situation and development of urban rail transit electromechanical technology professionals in higher vocational colleges.

Keywords: Higher Vocational Colleges; Urban Rail Transit; Electromechanical Technology Major

1. INTRODUCTION

At this stage, my country is paying more and more attention to urban rail construction, but due to the constraints of human resources, the quality of line construction cannot meet the actual needs, thus hindering the development of urban rail transit. Due to the lack of talent supply and the unreasonable team structure of urban rail construction, various problems have become increasingly prominent, and it is difficult to provide safety guarantees for line operation. Therefore, cultivating high-quality professional talents has become an important responsibility of higher vocational colleges. All colleges and universities should do a good job in talent training strategies, and carry out training according to the current demand for professional talents, so that urban rail transit construction can get the help of human resources. support.

2. THE CURRENT SITUATION OF THE TRAINING OF MECHANICAL AND ELECTRICAL TECHNOLOGY PROFESSIONALS IN URBAN RAIL TRANSIT

At this stage, urban rail transit is developing rapidly, and the demand for professional talents is increasing. In order to ensure the quality of urban rail transit construction, more high-quality professionals should be cultivated, so as to change the current development situation and realize the realization of urban rail transit. the improvement of rail transit construction level. According to the current situation of professional personnel training, many personnel engaged in the mechanical and electrical technology of urban rail transit are from other majors, such as mechanical and electrical equipment, mechatronics, etc. These technicians have not undergone systematic training, and there are still professional There are many shortcomings and lack of rich practical experience. If the professional ability of technical personnel cannot be ensured, it will affect the subsequent operation of urban rail transit construction, and then hinder the development of urban rail transit.

2.1 The team structure is unreasonable

At present, urban rail transit is affected by the construction team, and the construction of the team structure is unreasonable. Many employees lack rich practical experience and lack of professional ability, which seriously reduces the professional level of the overall team and cannot meet the development needs of the new era. As a result, the operational quality of urban rail transit is affected.

2.2 The quality of personnel needs to be improved

According to the development of urban rail transit, the quality and ability of many technicians are not high enough, especially those with rich management experience and development ability, which has an adverse impact on the construction of urban rail transit. In the construction of urban rail transit, technical personnel occupy an important position. Only by applying compound talents to it can the management efficiency be effectively improved, and then it will have a positive impact on the development of urban rail transit [1].

2.3 Lack of innovative talents

With the development of urban rail transit, the application of innovative concepts is very important, but due to the lack of innovative talents, many design concepts are still too outdated to promote the further development of urban rail transit, and affect the development of related industries, resulting in job demand cannot be satisfied. At the same time, the lack of innovative talents is not conducive to improving the technical level, and the construction of urban rail transit is prone to various problems, which will ultimately affect subsequent operations.

3. THE DEVELOPMENT STRATEGY OF CULTIVATING MECHANICAL AND ELECTRICAL PROFESSIONALS IN URBAN RAIL TRANSIT IN HIGHER VOCATIONAL COLLEGES

At present, the demand for professional talents in the field of urban rail transit is increasing. In order to meet this

demand, the training of mechanical and electrical professionals should be strengthened, so as to provide compound talents for the construction of urban rail transit. Higher vocational colleges shoulder the important task of cultivating mechanical and electrical professionals, and should strengthen the research on talent training strategies to ensure that talent training meets the requirements of the new era, and then has a positive impact on promoting the development of urban rail transit.

3.1 Clarify the goal of talent training

For higher vocational colleges, it is necessary to clarify the training objectives of mechanical and electrical professionals, and then formulate a scientific talent training plan according to the needs of the urban rail transit field to ensure that students can master the operating points of rail transit mechanical and electrical equipment, so as to continuously Improve their professional ability to meet the employment standards of the rail transit industry. In addition, higher vocational colleges should also cultivate comprehensive talents, strengthen the improvement of students' quality and ability, and make them have a strong sense of safety responsibility, so as to do a good job in the maintenance of equipment and technology, which is helpful for maintenance. the safety of urban rail transit operation [2].

3.2 Implement the talent training model of school-enterprise cooperation

At this stage, my country's urban rail transit industry lacks talents with rich practical experience, so higher vocational colleges should pay attention to the cultivation of talents' practical ability to ensure that students can get a lot of practical opportunities, and then test what they have learned in the process of practice. theoretical knowledge. In this regard, higher vocational colleges can implement the talent training model of school-enterprise cooperation, strengthen the connection with enterprises, expand internship opportunities for students, enable students to master the work content of the post, and further familiarize themselves with professional-related work., and then improve their professional ability, so as to lay a solid foundation for future work. Through school-enterprise cooperation, students' enthusiasm for learning has been greatly improved, which is conducive to enhancing the effect of learning, and has accelerated the pace of professional reform, truly implementing the talent training work of the modern apprenticeship system.

3.3 Reconstructing the professional curriculum system

Vocational colleges and universities should formulate a scientific professional curriculum system, clarify the content of the curriculum teaching, and design the teaching content according to the actual needs of the urban rail transit field, so as to ensure the professionalism of the curriculum system construction. At the same time, colleges and universities should carry out curriculum teaching development according to the work content of vocational positions, and implement the teaching method of "learning and doing in one", so that students can master more professional content, which is of great help to improve students' quality and ability. In addition, students can gain a wealth of experience in the "learning and doing integration" model, which helps to familiarize themselves with the work items and content of the post, exercise their professional ability, and then meet the students' learning needs and lay a solid foundation for future work [3].

3.4 Building a training base

Vocational colleges and universities should increase the intensity of talent training, and provide students with opportunities for practice by building training bases, so that students can master the operation points of training equipment, and then meet the needs of electromechanical technology majors. In this regard, we should introduce advanced equipment and technology in time, replace outdated electromechanical equipment, increase capital investment, and ensure complete teaching facilities, so as to improve the level of electromechanical teaching.

4. CONCLUSION

At this stage, the lack of high-quality talents in the field of urban rail transit has seriously affected the development of this field. In order to improve this situation, higher vocational colleges should strengthen the training of electromechanical professionals by innovating teaching methods, improving teaching facilities, etc. Students can fully grasp the main points of the major, and then meet the current development needs of urban rail transit.

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The Development and Utilization of Physical Education Resources in Higher Vocational Colleges

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Abstract: With the continuous reform of education, the physical education teaching in my country's higher vocational colleges is also constantly innovating, and the teaching concepts and models of physical education teachers have also been greatly improved, which has continuously promoted the development of physical education teaching in my country's higher vocational colleges. With the development of the times, the physical education resources of my country's higher vocational colleges can no longer meet the learning needs of higher vocational students. the physical education resources of higher vocational colleges generally have problems such as small venues and backward sports facilities, which seriously hinder the high vocational colleges. the study of physical education courses of vocational college students is not conducive to the development of physical and mental health of vocational students. Therefore, in the physical education teaching of higher vocational colleges, the development and utilization of teaching resources has become a more concerned issue for the industry. the article introduces in detail the significance of the development and utilization of physical education resources in higher vocational colleges, expounds the main contents of the development and utilization of physical education resources in higher vocational colleges, and discusses the development and utilization of physical education resources in higher vocational colleges, so as to improve the the quality and efficiency of the development and utilization of physical education resources in higher vocational colleges will promote the healthy and stable development of physical education teaching in higher vocational colleges in my country.

Keywords: Higher Vocational Colleges; Physical Education Resources; Development; Utilization

1. INTRODUCTION

At present, the physical quality of students in higher vocational colleges has become an increasingly concerned issue in the industry and society. At the same time, the lack of teaching resources in higher vocational colleges also makes the physical education courses of higher vocational students in our country unable to exercise effectively. the content of physical education courses is relatively Laxity, lack of professionalism and systematic Ness, has seriously hindered the further development of physical education curriculum teaching in higher vocational colleges in my country. the reform of physical education in higher vocational colleges is also changing teaching methods and methods, and developing more teaching resources to meet the physical education activities of higher vocational colleges. the development of these physical education resources will often extend to outside the school and the society. In order to provide students with sufficient learning space and content, stimulate the interest of higher vocational students in physical education, enrich the content of higher vocational students' physical education, and enhance students' enthusiasm and initiative in physical education. Therefore, the effective development and utilization of physical education resources has become an important part of teaching reform.

2. THE SIGNIFICANCE OF THE DEVELOPMENT AND UTILIZATION OF PHYSICAL EDUCATION RESOURCES IN HIGHER VOCATIONAL COLLEGES

In today's fast-developing era, students in higher vocational colleges not only need to learn and reserve knowledge, but also need to cultivate physical quality, so as to meet the growth of students in all aspects and hone their firm willpower so that they can be competent for future jobs. post. In the development and utilization of physical education resources, the innovation and improvement of teaching content are constantly included, as well as the development of various sports venues and facilities. This is mainly to ensure that the school's physical education activities can keep pace with the development of the times, so as to cultivate Produce high-quality professional talents. In addition, the development and benefit of physical education resources also attaches great importance to cultural resources, so that students can fully understand the cultural background and cultural connotation of sports projects.

In order to improve the efficiency and quality of physical education teaching in higher vocational colleges, it is necessary to keep innovating the mode of physical education teaching closely with the development of the times, and constantly develop physical education teaching resources in the process of development, so that students can receive the teaching of physical education courses more comprehensively and systematically., enrich the knowledge structure of physical education, and use various information technology and teaching methods to improve the utilization efficiency of teaching resources. In the development and utilization of actual teaching resources, physical education teachers should focus on students' individualized sports hobbies and needs, and integrate campus culture into physical education teaching to create a good physical education teaching atmosphere and environment, so as to form the unique characteristics

of higher vocational colleges. the characteristic physical education curriculum system, so as to achieve the purpose of exercising students' physical quality and cultivating students' comprehensive ability.

3. THE MAIN CONTENTS OF THE DEVELOPMENT AND UTILIZATION OF PHYSICAL EDUCATION RESOURCES IN HIGHER VOCATIONAL COLLEGES

3.1 Human resources

In the development of physical education teaching resources in higher vocational colleges, teaching resources include both on-campus resources and off-campus resources, while human resources, as an important resource for teaching activities, are relatively lacking in many vocational colleges. Although the basic resources in college teaching are the main body of teaching activities and play a guiding role in teaching content, the investment of other human resources can effectively improve the quality and efficiency of teaching, and continue to deepen the content of teaching, thereby improving the quality of physical education teaching. Professional and systematic, these human resources include some professional sports students, athletes, enthusiasts and so on.

3.2 Material resources

It is precisely because the teaching venues and facilities of higher vocational colleges are limited, when developing teaching resources, attention should be paid to the development and utilization of internal and external venues of the school. It is an important guarantee and solid foundation for the smooth progress of physical education in vocational colleges, and it is also an important learning resource for students in higher vocational colleges to study courses [1]. the role of these material resources is mainly reflected in three aspects. First, scientific and reasonable material resources can ensure the learning environment of higher vocational students and provide sufficient security for students to study physical education courses; second, rich material resources It can provide sufficient learning materials for vocational students and help students to explore various sports activities according to their own wishes and interests; thirdly, physical education teachers and human resources in higher vocational colleges can make full use of various material resources to achieve Students' teaching, so as to realize the teaching of various physical education activities, to meet the physical learning interests of different students, and to improve the teaching quality and efficiency of physical education courses in higher vocational colleges.

3.3 Cultural resources

In addition to the above two resources, cultural resources are also more important in physical education resources. In actual teaching, physical education teachers should not only let students master basic sports skills, but also make them understand the cultural background and charm behind sports, so that students have a correct understanding of sports events, understand the purpose and development process of sports events, recognize the value and cultural connotation of sports events, and better learn and practice sports events [2].

4. DEVELOPMENT AND UTILIZATION OF PHYSICAL EDUCATION RESOURCES IN HIGHER VOCATIONAL COLLEGES

4.1 Strengthen teachers' awareness of curriculum resources and development ability

In order to better enhance the development of physical education resources, it is necessary for physical education teachers to strengthen their awareness of the development of curriculum resources, to be able to find available teaching resources in daily teaching and life, and to seek physical education resources, venues and equipment through network information technology, so as to To enrich the scientific nature and effectiveness of school physical education courses, teachers should also set up corresponding physical education courses according to actual teaching resources, so as to realize the effective use of physical education resources.

4.2 Improve teachers' ability to use curriculum resources and the concept of curriculum resources

In the previous physical education teaching in higher vocational colleges, many teachers were still unable to effectively change their teaching concepts, and could only stick to the rules and use existing teaching resources for teaching activities. Therefore, in order to change this situation, teachers need to develop teaching resources according to the in order to set a reasonable course content, teaching activities should focus on outside school and after class, and no longer limited to physical education in class. This change in concepts and teaching methods can greatly expand students' sports programs and help students keep pace with the development of the times. For example, when carrying out modern sports such as rock climbing, the off-campus expansion training grounds can be used to meet the learning needs of students, and the campus culture and sports programs can be combined to form sports programs with campus characteristics.

4.3 Increase sports items and expand the area of sports venues

Because of their age, students in higher vocational colleges have low interest in existing sports. In order to stimulate students' interest in sports learning, teachers need to continuously develop new sports, enrich the number of sports, and add current popular sports to the sports. In the course, it can effectively improve the enthusiasm and initiative of students to learn, and achieve a good physical education effect [3]. In addition, the limitation of teaching venues in higher vocational colleges is also an urgent problem to be solved, which requires teachers to continuously develop new teaching venues, such as solving sports venue problems through out-of-school training, or contacting enterprises or large venues to fully improve students. sports space to promote the physical and mental development of students.

5. CONCLUSION

To sum up, the development of teaching resources in my country's higher vocational colleges is inseparable from the guidance of physical education teachers. on the basis of the school's high attention, the teachers' awareness and ability to develop resources should be enhanced. At the same time, teachers should also strengthen the ability to utilize physical education resources., constantly innovate and optimize course content, improve the utilization

efficiency of physical education resources, and cultivate more high-quality talents.

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On the Cultivation Path of Craftsman Spirit in Ideological and Political Education in Colleges and Universities

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Abstract: With the continuous improvement of social economy and science and technology, China's education has undergone a variety of changes, and there are clear institutional requirements. the education of higher vocational colleges should integrate the craftsman spirit for development. Students in higher vocational colleges are in the stage of physical and mental development. Therefore, in order to ensure that students can establish a correct outlook on life and world outlook, it must be carried out from the ideological and political classroom education. Through the research of most colleges and universities in China, it is found that the ideological and political education achievements of most colleges and universities are not obvious, Based on this situation, in order to improve the effective implementation of Ideological and political courses and improve the quality of students, we must reasonably integrate the cultivation of craftsman spirit in the process of education. This article mainly analyzes and studies the path of cultivating craftsman spirit in Ideological and political education in Colleges and universities.

Keywords: University Development; Ideological and Political; Craftsman Spirit; Path Analysis

1. CONNOTATION AND SIGNIFICANCE OF CRAFTSMAN SPIRIT

1.1 Overview of craftsman spirit

The "craftsman" in the craftsman spirit mainly refers to the skilled personnel engaged in the production of some utensils. Such personnel should not only have professional skills, but also have a down-to-earth and serious spirit. Craftsman spirit refers to the integration of Taoism and technology when carrying out a work. Craftsman spirit is not only a value orientation of workers, but also the behavior of workers. the proposal of craftsman spirit is to promote the transformation of China's industrial development from a large manufacturing country to a powerful manufacturing country, but to realize this development transformation of China, It requires the staff to have the spirit of craftsman in the process of work. the main task of the development of colleges and universities is to cultivate compound talents with high skills and high quality for social enterprises. Therefore, in order to ensure that the staff in enterprises have craftsmanship spirit, students' craftsmanship spirit should be cultivated in college education, so that college students can effectively realize their own value in the process of learning.

1.2 Connotation of craftsman spirit

Cultivating the craftsman spirit of students in the education of colleges and universities is to hope that students have the spirit of persistence, diligence and excellence of "craftsmen" in the process of learning. Through the research and analysis of the craftsman spirit, it is found that the craftsman spirit has the contents of advocating labor, dedication and trustworthiness and daring to innovate, Daring to innovate means that in the process of development, enterprises can abandon the deficiencies in their own development according to the changes of society and times, and effectively innovate according to their own development. Dedication and trustworthiness means that workers can devote themselves to the work when they are engaged in a work, and advocating labor means a thought of respect and recognition for workers.

2. THE ROLE OF HIGHER EDUCATION IN INTEGRATING CRAFTSMANSHIP SPIRIT INTO CHINA

In the current development of China, the improvement of science and technology not only brings convenience to people's life, but also changes people's working methods and students' psychology. Due to the development of Internet technology, the scope of information reception of students in higher vocational colleges has been expanded, Internet technology not only brings convenience to students' learning, but also makes some students focus on internet entertainment. In this case, in order to improve students' skill learning, we must cultivate students' craftsmanship spirit. Secondly, the change of social and industrial development makes people's work pressure more and more. If college students want to enter the enterprise effectively after graduation, they must improve their skills. the infiltration of craftsman spirit into students' learning not only plays an important role in improving students' Ideological and moral quality, It can also improve students' practical ability [1].

3. EFFECTIVE STRATEGIES FOR CULTIVATING CRAFTSMAN SPIRIT IN IDEOLOGICAL AND POLITICAL EDUCATION IN COLLEGES AND UNIVERSITIES

3.1 Promote the optimization of Ideological and political teaching mode in Colleges and Universities under the guidance of craftsman spirit

If we want to reasonably integrate the craftsman spirit into the ideological and Political Curriculum in Colleges and universities, we need to take the craftsman spirit as the guidance when making the teaching plan of the curriculum. Most of the education in the ideological and political course is based on cases. the content of craftsman spirit

can be integrated into the case, so that students can have a clear understanding of craftsman spirit. For example, in the case of the most beautiful teacher, the explanation process can let the students know the ideological and political knowledge, and then let the students say other characters similar to the case. After the students say the characters, they should also express the deeds of the characters. After the students express, the teacher can let other students say the spiritual qualities of the characters, in order to cultivate students' craftsman spirit through students' study of the theory and significance of craftsman spirit in real cases [2].

The formulation of teaching objectives is the basis for the effective implementation of a course. Therefore, the cultivation of students' craftsman spirit in Ideological and political education should also take the craftsman spirit as the clue to formulate teaching objectives. Both the formulation of teaching objectives and the formulation of teaching system should be based on reality and meet the needs of China's social development, Only in this way can we carry out the ideological and political course and cultivate professional talents with craftsman spirit.

3.2 Build an ideological, political and cultural environment in Colleges and Universities Based on the craftsman spirit

In the education of colleges and universities, the teaching environment atmosphere also plays an important role in the cultivation of students' craftsman spirit. Therefore, when cultivating students' craftsman spirit in Ideological and political courses, we should fully apply the teaching atmosphere of campus culture. Higher education has certain particularity. Different from other learning stages of students, there are a variety of activities for students in this stage. Therefore, based on this situation, effective lectures and activities can be carried out in Colleges and universities. In order to improve students' participation, a reward system can be formulated [3].

The cultivation of craftsman spirit for students is not achieved overnight, but must be continuously cultivated for a long time. Therefore, in the process of Ideological and political classroom education, teachers should effectively combine tangible education and intangible education, so as to realize the reasonable guidance of students' Outlook on life and world outlook.

3.3 Promote the construction of Ideological and political team in Colleges and universities with craftsman spirit as the standard

In the education of colleges and universities, in order to cultivate the craftsman spirit of students in Ideological and political education, we should first improve the craftsman spirit of teachers. Teachers are the guides of students and play a key role in students' learning. Most ideological and political teachers do not have the consciousness of craftsman spirit, Based on this situation, in order to effectively improve teachers' craftsmanship spirit, teachers can be trained. When teachers' craftsmanship spirit is improved, they will position their own role and change the concept of teaching. When teachers have the craftsman spirit, when educating students about relevant knowledge, they cannot only make the teaching persuasive, but also imperceptibly affect students' behavior in daily ideological and political education. In addition to improving the craftsmanship spirit of teachers, colleges and universities should also regularly invite educational experts in professional fields to give lectures on campus, so as to improve the ideological and political education and training system of colleges and universities through lectures [4].

4. CONCLUSION

To sum up, the cultivation of craftsman spirit plays an important role in the psychological development and ability improvement of students. In order to effectively cultivate students' craftsman spirit in Ideological and political education in Colleges and universities, we should carry out from many aspects. Students can stimulate their potential by improving their craftsman spirit in the study of ideological and political courses, Therefore, the cultivation of student craftsman spirit is conducive to cultivating comprehensive application talents for our country.

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Application of Multimedia Network Technology in Higher Vocational Physical Education

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Abstract: In the teaching process, the use of multimedia network technology is a necessary trend of system reform in the current education industry. Physical education teaching is a part of curriculum teaching, and it is very necessary to use multimedia network technology to improve the teaching efficiency of the classroom, so as to improve the ability of students' physical quality. In this article, the author mainly starts with the necessity and importance of using multimedia in Physical Education in higher vocational colleges, and expounds the application of multimedia network technology in physical education.
Keywords: Multimedia; Network Technology; Higher Vocational Physical Education; Teaching; Applied Research;

1. INTRODUCTION

With the further development of the current society, network information technology has been popularized in the society. In the physical education curriculum of higher vocational colleges, the use of multimedia network technology conforms to the necessary development of the times, better stimulates the students' enthusiasm for learning and improves the overall teaching quality of the classroom. the main purpose of analyzing the fundamental goal of physical education in higher vocational education is to better improve the physical quality of students, let students have a strong physique, and cultivate students' healthy psychological quality, so as to make students develop in an all-round way. the introduction of multimedia network technology into the process of physical education teaching in Higher Vocational Colleges makes up for the defects of traditional teaching methods, and creates better environmental conditions for the goal of Physical Education Teaching [1].

2. THE IMPORTANCE OF USING MULTIMEDIA NETWORK TECHNOLOGY IN HIGHER VOCATIONAL PHYSICAL EDUCATION

Only in the process of teaching can students' interest be stimulated effectively. For the analysis of traditional physical education classroom teaching, there is only a form of extracurricular activities, mainly teachers transmit physical education content to students. This form of teaching content is too single and needs further innovation. In the process of physical education learning, the demand of students in higher vocational colleges has long been unable to stay in primary school or even junior middle school, but some colleges still have traditional teaching, which leads to the effective improvement of students' learning interest and the expected ideal of physical education teaching. However, the application of multimedia network technology in physical education teaching, To a certain extent, it improves the teaching of traditional physical education courses and improves students' interest in learning. Multimedia network technology can show the content of physical education classroom teaching in the form of sound and pictures, and can effectively improve students' attention [2].

3. IN THE PROCESS OF PHYSICAL EDUCATION TEACHING, THE APPLICATION OF MULTIMEDIA NETWORK TECHNOLOGY

3.1 Create the classroom environment as a combination of dynamic and static

The introduction of multimedia network technology into the teaching process of physical education courses can make physical education teaching pass on to students through videos and pictures, and better stimulate students' interest and enthusiasm in learning. For physical education courses, there are many contents of learning sports actions and mastering skills and knowledge. If you master these skills, it takes a lot of time, and it is also difficult for students, which also brings some pressure to teachers' teaching. If multimedia can be effectively applied in the teaching process of physical education, the vast majority of movement skills with difficulty coefficient can become easier for students to master. At the same time, combined with the language function of multimedia, each action skill can be described at different levels, and students can consciously integrate into physical education learning [3].

3.2 Deepen students' memory and understanding and improve their motor skills

For the learning course of physical education, the whole step structure of most physical actions is relatively complex. If you want to complete it very completely in a short time, it is a very difficult thing for students. In addition, if in the daily physical education curriculum, each action needs the repeated teaching of the physical education teacher, then the energy and time of the physical education teacher are very much spent, and for the physical education teacher, the standard actions cannot be completed at one time, but need many demonstrations to reach the standard. In view of this phenomenon, we can use multimedia network technology into the process of physical education teaching, which can effectively avoid most of the problems existing in physical education teaching. Multimedia network can carry out standardized demonstration for every sports action. In some places that students do not understand, teachers can also use pause and other methods to deepen students' memory. For example, in the learning process of triple jump, if the teacher demonstrates the whole process by himself, he can only give the students run-up and step. In the process of taking off, there is no way to stop and give the students the essentials of action in detail. At this time, the animation

effect of Multimedia network technology can be used to carry out the action simulation of triple jump, Careful decomposition of movements, this way of physical education teaching, can more effectively standardize the various movements used in physical education, and also help to deepen students' memory and understanding [4].

3.3 Break through the key and difficult points of teaching and improve students' learning efficiency

In the process of physical education teaching, there are many types of sports. It is very difficult for physical education teachers to let their students fully master various skills in sports. In the process of physical education teaching, such as hurdle learning, is a very difficult task with a high degree of difficulty, so, in the process of teaching, teachers should strengthen the teaching links and let students learn the overall skills and actions of the hurdle pole. In the process of hurdle, if the posture of swinging legs is incorrect, the speed of students' overall hurdle will become slow, and even the hurdle frame will be damaged. In serious cases, students will be hurt to some extent, Therefore, in the process of hurdle teaching, how to swing the legs is a difficult lesson. For these problems, teachers can use multimedia teaching methods to start the posture telling process. They can search some videos of hurdle competition in daily lesson preparation, and then replay them in class through replay and slowing down, It can also pause some difficult movements, so that the teacher can better analyze them, and the students can better concentrate on learning movement skills, which effectively improves the efficiency of learning.

4. CONCLUSION

To sum up, with the continuous development and promotion of social information technology, network technology has completely covered all levels of people's life, especially physical education in higher vocational colleges, which has played a very important role in popularization. Therefore, educators should realize the overall important nature of multimedia network technology teaching, so as to give full play to the advantages of network teaching and improve teaching quality and education.

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Students' Individual Differences and Layered Teaching in Higher Vocational Physical Education

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Abstract: Due to the existence of objective differences, there are great differences in students' learning basis and learning ability. the "unified" teaching mode has high teaching efficiency, but it cannot meet the exercise needs of every student, which seriously restricts the improvement of physical quality. Especially for physical education in higher vocational colleges, the physical quality gap between students is more obvious. Only by adopting layered teaching methods and building a "personalized" teaching classroom, can we provide students with a better physical education teaching experience and enable all students to improve and grow to the greatest extent in teaching activities.

Keywords: Higher Vocational Colleges; Sports; Layered Teaching

1. INTRODUCTION

With the continuous advancement of educational reform, educators are gradually aware of the existence of objective differences. Different students have different learning needs. on this basis, we must formulate different teaching plans to maximize teaching efficiency, which leads to the hierarchical teaching theory. In this article, we will take layered teaching as the core starting point, and systematically elaborate the effective measures of layered teaching in Higher Vocational Physical Education on the premise of fully combining the actual situation of physical education in higher vocational colleges, so as to give full play to the educational advantages of layered teaching to the greatest extent.

2. STUDENT STRATIFICATION

Students are not only the main body of teaching activities, but also the service object of teaching activities. the significance of layered teaching mode itself is based on the differences between students. Therefore, in order to comprehensively promote the layered teaching mode, we must first treat students in layers according to their physical foundation and physical ability. the layered treatment of students is not a discriminatory treatment for students, but a teaching measure based on the principle of "seeking truth from facts" to meet the different exercise needs of students, It aims to create more intimate teaching services for students. At the same time, layered teaching will not increase the difference between students, but will reduce the difference between students to a certain extent. the improvement of physical quality is more and more difficult. When students at each level can achieve the maximum growth, students with weaker physical quality tend to have greater improvement and can significantly narrow the gap between them [1].

3. STRATIFICATION OF TEACHING OBJECTIVES

In teaching activities, teaching objectives are not only the fundamental guidance of teaching direction, but also an effective incentive means. Through the establishment of learning objectives, teachers can often effectively stimulate students' learning enthusiasm and make students work hard to climb. However, in the process of setting up traditional learning goals, teachers often fail to pay attention to the differences between students and design unified learning goals, which may be easily completed for students with good physical foundation, which will not produce incentive effect, but help students' arrogance and complacency; It may also be that for students with poor physical foundation, even if they try their best, they cannot achieve their goals. For students who can easily achieve their learning goals around them, they are easy to have negative emotions and even abandon themselves. In the layered teaching mode, teachers can formulate more reasonable learning goals according to students' physical quality. As long as students make enough efforts, they can achieve the corresponding goals, so as to maximize the incentive role of learning goals [2].

4. TEACHING CONTENT STRATIFICATION

Teaching content is the basis of teaching activities and will directly determine what students "learn". Therefore, in the layered teaching mode, it is also necessary to deal with the teaching content in layers. Under the traditional education mode, the unified teaching content cannot meet the learning needs of different students. If the teaching content designed by teachers is too difficult, it will help to optimize and improve the students with good physical quality, while the students with poor physical quality will be difficult to sustain and cannot achieve good exercise effect, and vice versa. In order to balance the exercise needs of different students, we must deal with the teaching content in layers, and set different physical exercise contents according to the individual differences of different students.

5. FULLY RESPECT STUDENTS' DOMINANT POSITION AND ENHANCE STUDENTS' INTEREST IN PHYSICAL EXERCISE

Under the guidance of the concept of quality education, educators have a deeper understanding of the essence of education and realize that students are the main body of teaching activities. All teaching activities are carried out around students. the core purpose of education is to improve students' abilities. Naturally, students should be the main body of teaching. on this premise, students'

subjective feelings towards teaching activities will also affect teaching efficiency and quality to a great extent. Therefore, in order to stimulate students' enthusiasm, the primary task is to break the shackles of the traditional education model, further activate the classroom atmosphere and build a relaxed and comfortable physical exercise environment for students. In specific teaching practice, teachers should relax the control of classroom rhythm, give students more independent space, and add more "variables" and interest to teaching activities, so as to continuously bring freshness to students and stimulate students' enthusiasm [3].

6. CARRY OUT SPORTS ACTIVITIES IN GROUPS TO MEET THE NEEDS OF STUDENTS

Every student will have a special interest in at least one sports activity, and people have the characteristics of hunting for wonders. However, in China's physical education teaching classroom, the exercise methods are the same. From primary school to university, they can't escape the barriers of basketball, football, table tennis and other sports. Students are too familiar with it, so they lack enough interest and naturally have low enthusiasm to participate. Facing this problem, we can start from two aspects. on the one hand, we can add physical exercise equipment and set up more novel sports activities, such as swimming, skating and so on. Students are more interested in it and add it to teaching activities, which is more conducive to mobilize students' enthusiasm; on the other hand, we should also reform the teaching mode, reduce the unified teaching time, set aside part of the classroom time to carry out interest group activities, and let students choose appropriate groups for physical exercise according to their own interests, such as basketball group, football group, etc., which cannot only improve the consistency between physical exercise activities and students' interests and preferences, Let students carry out interesting physical exercise activities, and the organizational form of interest group can also strengthen the social relationship between students. Even in spare time, they can carry out physical exercise activities independently in the form of group to improve students' enthusiasm [4].

7. CONCLUSION

In general, as a new educational model, layered teaching is a bold innovation and breakthrough of the traditional educational model, more respect for the existence of objective differences, and more in line with the essential needs of students' physical exercise. It can often achieve a leap in teaching quality and teaching efficiency, so that students can get greater benefits in teaching activities. However, in practical teaching, some teachers have a one-sided understanding of layered teaching and cannot skillfully apply layered teaching theory to teaching activities, which cannot only form the help of teaching, but also produce reaction and have a serious negative impact on teaching activities. Teachers must strengthen their understanding of layered teaching, Can it be better applied to the teaching process.

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Study on the Feasibility of Modern Apprenticeship Talent Training Mode in Higher Vocational Art Design Education

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Abstract: With the rapid improvement of the current social economy, the sustainable development of society needs the support of a large number of talents. Talents are the main driving force of the current social progress, and higher vocational education is an important place to cultivate talents. In the teaching process of modern science of art design education in higher vocational colleges, the educational mode adopted by many teachers is relatively backward, which often focuses on theoretical teaching and ignores the importance of the combination of students' theoretical and practical ability, which leads to many students' inability to reasonably apply theoretical knowledge after learning, and the lack of professionals. This paper analyzes the talent training mode of modern apprenticeship system in Higher Vocational design education.

Keywords: Higher Vocational Education; Art Design Education; Modern Apprenticeship; Feasibility

1. INTRODUCTION

High quality talents with all-round development are not only an important driving force of China's social and economic development, but also the basis of national development. the main task of higher vocational colleges is to cultivate high-quality talents needed for social development. Among them, art and design professionals are a very important group in current college education. After graduation, art and design students will generally engage in advertising, packaging, interior design and other industries. These industries are generally representative of the times and have played an important role in the development of the Chinese times. However, in the current society, the occurrence of uncivilized phenomenon is also inevitable. Many people lack professional ethics after entering the society, which leads to the frequent occurrence of Jerry built events and has a negative impact on the development of the industry. Therefore, the training mode of apprenticeship is very important. In the process of training, we also need to pay attention to cultivating students' professional ethics.

2. CONNOTATION OF MODERN APPRENTICESHIP TALENT TRAINING MODE

The first mock exam mode is a new teaching method. This mode is based on the traditional apprenticeship training. the traditional apprenticeship is guided by the master to teach the skills in the production process. This way can help the apprentice better understand the actual work details and processes. You can also learn faster. With the continuous development of the current large industry, the traditional apprenticeship talent training mode is no longer applicable in the current education, but replaced by the modern apprenticeship. This apprenticeship can enable schools and enterprises to cooperate on the basis of the original traditional apprenticeship. on the premise of school enterprise cooperation, students cannot only learn theoretical knowledge, but also carry out effective practice, Combine theory with practice. In the process of training talents in higher vocational colleges, the apprenticeship system is of great value. In the current process of training talents with high salary, students can also enjoy the apprenticeship system [1].

3. THE DEVELOPMENT OF MODERN APPRENTICESHIP IN CHINA

In the field of education in China, foreign talent training modes are usually learned and used for reference. Among them, the dual system talent training mode in Germany is widely used in Higher Vocational Education in China. Although this kind of education mode has also achieved certain results, with the development of the times, this kind of Education mode is no longer applicable to the teaching of current higher vocational colleges. the general secretary once put forward corresponding suggestions on the current vocational education, believed that the process of modern vocational education should be accelerated as much as possible in the current education of higher vocational colleges, and formulated specific measures. Taking the joint enrollment plan of Higher Vocational Colleges and enterprises as the focus of the current pilot enrollment plan, we will focus on the joint training of apprentices in higher vocational colleges. the proposal of this plan not only provides a good foundation for the development of modern apprenticeship system, but also promotes the training and development of current talents [2].

4. CURRENT SITUATION OF ART DESIGN MAJOR IN HIGHER VOCATIONAL COLLEGES

Art and design are all over every corner of our life, and with the development of the current era, the market needs more high-quality art and design content, which leads to a greater demand for high-quality art and design technical talents. In order to meet the current market demand for high-quality art and design talents, many higher vocational colleges have also created majors in art and design, but there are still some problems in the actual education process.

4.1 Single talent training mechanism

In the talent training and education of art design major in Colleges and universities, the education plan is basically

determined after the school teachers conduct market research. However, in the actual curriculum design, teachers only focus on the curriculum arrangement and knowledge transfer, ignore the improvement of students' practical ability, and do not take the enterprise employment standard as the basis of teaching, Leading to the current talent training mechanism is too single.

4.2 Lack of system in the educational process

Although the current education has made some reform and progress, many higher vocational colleges still adopt the traditional teaching mode, which cannot effectively show the current educational characteristics. This leads to the fact that teachers still adopt the indoctrination teaching mode in the teaching process of higher vocational colleges, ignoring the cultivation of students' practicality and knowledge application ability, Many students are unable to draw inferences from one instance and apply what they have learned after teaching. Many schools have been aware of this situation. Although they have also carried out some research on this situation, the effect is not very ideal.

5. HOW TO APPLY THE TEACHING MODE OF MODERN APPRENTICESHIP IN ART DESIGN IN HIGHER VOCATIONAL COLLEGES

5.1 Change teaching means and carry out teaching reform

Teaching reform is the content that must be paid attention to in the development of the current education field. In the current teaching process, teachers need to change the traditional teaching methods, abandon the traditional teaching methods, constantly explore new teaching methods and practice them in the teaching process, and make the teaching process more diversified. During teaching, teachers need to pay attention to the interaction between teachers and students, cultivate students' professional skills and comprehensive ability in the process of interaction, and cultivate students' thinking ability. At the same time, teachers can also change students' teaching places, go out of the fixed teaching classroom, let students feel the design content in the design company and exhibition site, and improve students' ability to apply and master the knowledge [3].

5.2 Optimize teachers

Strong teachers are directly related to the improvement of students' learning ability. In higher vocational education, if you want to improve the current teaching quality, you need to optimize the teachers and strengthen the school enterprise cooperation on this basis according to the definition of apprenticeship. In school education, we should regularly invite some professionals from the design industry to give lectures and training in the school, so that teachers can also improve their own teaching ability and level in their work, regularly provide learning platforms and opportunities for teachers majoring in art and design, and strengthen the training of teachers' practical skills. In the process of teaching, teachers cannot only effectively improve their teaching ability, but also establish good professional ethics and professional quality for students and cultivate more high-quality art design professionals through the improvement of teachers' teaching ability.

6. CONCLUSION

To sum up, the modern apprenticeship system is an educational model in the current higher vocational colleges. This educational model can effectively break through the bottleneck of the current career development, and cultivate students' theoretical knowledge and practical ability based on the integration of schools and enterprises, so as to cultivate high-quality all-round development talents for the society.

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Strategic Human Resource Management and Its Theoretical Basis

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Abstract: With the continuous development and progress of market economy in modern society, more and more enterprises have higher requirements for their own human resource management. As a product of the new era, strategic human resource management organically combines the enterprise's own strategic development ideas and ideas with human resource management, and carries out human resource management from the enterprise's own strategic development objectives and ideas, so as to make it more suitable for the development needs of the current new era, It can also better help enterprises achieve strategic development goals. Therefore, doing a good job in strategic human resource management and deeply understanding its theoretical grass-roots level cannot only effectively change the development efficiency of enterprises, but also implement the modernization thought of "people-oriented" and promote the development of a harmonious and stable country.

Keywords: Strategic Development Goals; Human Resource Management; Theoretical Basis of Human Resources

1. INTRODUCTION

With the development of modern society and the high demand of market environment, for the realization of strategic human resource management and full consideration of the enterprise's own development direction, it is necessary to carry out complete development and utilization of human resources, so as to better develop the potential of enterprise employees through scientific and reasonable application of human resource management, Thus, the strategic objectives of the enterprise can be implemented. From the perspective of enterprise development, human resource management should not only be truly integrated into the daily development process of enterprises, but also be changed by more standardized, modular and rational development thinking, so as to strengthen the implementation and application of strategic human resource management theory. We should start from the dual directions of theory and practice, integrate the development objectives of enterprises with the application objectives of human resource management, and build a modern strategic human resource management theory and application, so as to better promote the development and progress of enterprises.

2. SPECIFIC CONTENTS OF STRATEGIC HUMAN RESOURCE MANAGEMENT

Strategic human resource management is a comprehensive development management change of enterprises from the perspective of human resource management after integrating their own strategic development objectives with human resource management [1]. Its greatest effect is to truly implement the fundamental concept of "people-oriented" and make the best use of the function of human resource management, so as to promote the achievement of the strategic development goal of the enterprise. In strategic human resource management, in addition to strengthening the training of old employees, we also pay attention to the recruitment of new employees, and improve the operation efficiency and economic benefits of the enterprise by applying various ways [2]. For enterprises, strategic human resource management needs to be rationally analyzed and integrated according to their own development needs, development direction and development characteristics, and transformed by establishing a scientific and reasonable strategic template of human resource management, so as to ensure the normal operation of enterprise human resource management while ensuring the implementation of enterprise strategic development objectives, This is the right way to integrate theory and practice and promote the development of enterprises.

2.1 Practical application of strategic human resource management

In the process of carrying out strategic human resource management, senior decision-makers of enterprises should correctly understand the close relationship between enterprise development strategy and human resource management, advance the positioning and priority of human resource management, and not only ensure that the value of human resource management can be reflected, We should also ensure that the function of human resource management can meet the strategic development needs of enterprises [3]. In the daily development process of the enterprise, the decision-making level should also pay attention to the practical application of human resources management, combine the development planning, objectives and direction of the enterprise with the strategic human resources management, integrate them by using multi-level relevance, and use the strategic theory of enterprise development to help the strategic development of human resources change, Use the strategic development of human resources to verify the strategic development theory of enterprises, so as to achieve a virtuous cycle of supervision system and ensure that there will be no deviation in the development of enterprises.

In the modern fast-growing economic and social environment, the market situation is changing rapidly. If listed enterprises, including listed enterprises, do not make strategic development deployment for their own human resource management, it will lead to the inability of

human resource management to keep up with the development pace of enterprises, resulting in the lack of human resources and affecting the normal development of enterprises [4]. Therefore, enterprises should pay attention to the change and application of strategic human resource management mode, truly implement the practical significance of strategic human resource management, continuously improve their own core competitiveness as the goal, and make strategic human resource management an important basis for integrating enterprise human resources and improving enterprise core development concept, Rationally allocate the human resources deployment of enterprises and optimize the core competition concept in the strategic development of enterprises, so as to promote the rapid development of enterprises.

As the core and key project of all enterprises, human resources cannot only help enterprises provide a large number of human resources, but also seek more high-quality comprehensive talents for enterprises through training, recruitment and external employment, so as to meet the daily development needs of enterprises. Talent, as the uniqueness of the core competitiveness of all enterprises, is also an important part of ensuring production capacity, quality and efficiency. Only managers really apply the "people-oriented" management concept to their daily work and look at the development of strategic human resource management from a macro perspective, in order to truly ensure that the strategic human resource management theory is consistent with the development goal of the enterprise [5]. Only when the strategic human resource management department truly understands the strengths, personality, thoughts and abilities of all employees, can it better adapt the function allocation of all employees, maximize the application of employees' personal value and professional skills, optimize the industrial chain value of the enterprise, and promote the production efficiency and quality of the enterprise, Better deal with the fierce competition in the modern market. In addition, strategic human resource management should also formulate corresponding growth plans and work objectives for employees in combination with the enterprise's own strategic development objectives and directions, and further improve the enterprise's production efficiency and market competitiveness by continuously improving the employees' comprehensive quality and skills, so as to meet the requirements of the enterprise's strategic development objectives.

3. CONCLUSION

To sum up, the research on strategic human resource management and its theoretical basis is mainly reflected in the combination of theory and practice. We should make corresponding analysis on strategic human resource management from different levels and aspects, and combine human resource management with the development direction and development concept of the enterprise, so as to finally ensure the rapid development of the enterprise. Based on the theory of human resource management and the difference of human resource management, we can change the basis of human resource management; However, at the practical level, human resource management needs to be applied in line with the maximization of the interests of enterprises and the concept of sustainable development of enterprises. In addition to providing sufficient human reserves for enterprises, it should also upgrade their professional skills, promote the competitiveness of enterprises in the core market, and meet their own strategic development direction and ideas, Ensure that enterprises can develop rapidly and obtain more market share.

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Application of Simulation Software in Metallurgical Technology Teaching in Higher Vocational Colleges

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Abstract: With the continuous development of social economy and science and technology, China's metallurgical technology education has been greatly improved. In the study of metallurgical technology, due to the high risk and complexity of metallurgical production, there are a lot of learning contents in the process of learning. In the past, due to the limited equipment used in the study of metallurgical technology in higher vocational colleges, most of the knowledge was obtained through the theoretical knowledge in textbooks. the practice of metallurgical production is strong. Students cannot improve their metallurgical technology only through the study of theoretical knowledge in the life of higher vocational colleges, Based on this situation, in order to improve students' metallurgical technology, simulation technology must be applied to improve the effectiveness of metallurgical teaching in higher vocational colleges. This article mainly analyzes and studies the application of simulation software in Higher Vocational metallurgical technology teaching.

Keywords: Simulation Software; Higher Vocational Colleges; Metallurgical Technology; Application Research

1. DEFICIENCIES IN TRADITIONAL METALLURGICAL TEACHING METHODS

1.1 Few metallurgical practice teaching courses are offered

In the process of metallurgical production, in order to ensure the reasonable progress of production, more funds need to be invested, and the conditions for metallurgical production in the education of higher vocational colleges are relatively harsh. Based on this situation, it is difficult to carry out the practical courses in higher vocational colleges. In order to improve the students' ability to use metallurgical technology, the school only carries out some simple experiments in experimental teaching, Due to the limited equipment, the process of experiment is also a group of more than a dozen students. This kind of education method cannot effectively realize the combination of theory and practice.

1.2 High risk of metallurgical practice

Metallurgical production is usually carried out in the environment of high temperature and high pressure, and some substances harmful to human body will be produced in the process of production. Therefore, metallurgical production is a high-risk occupation. Based on this situation, in the metallurgical technology education of higher vocational colleges, in order to avoid safety accidents caused by operation problems in students' practical activities, for some high-risk homework, students are not allowed to learn through practice. When learning this kind of knowledge, they only learn through teachers' demonstration. This kind of education cannot improve students' practical operation ability.

1.3 The teaching effect of off campus metallurgical training base needs to be improved

Because there are many teaching contents of metallurgical technology, and there are corresponding practical activities in the process of learning, there are also places for students to practice in the metallurgical technology education of Higher Vocational Colleges in China. In order to reduce their own economic investment, some schools usually require students to study in relevant enterprises, in the production of metallurgical enterprises, in order to improve the efficiency and quality of production, automatic mechanical equipment is generally used. the use of mechanical equipment makes the production process more integrated. Students carry out practical activities in this environment. Due to many production links and certain restrictions on the time of students' practical activities, they can't understand all links, in the process of practice, we can't make detailed learning. Secondly, because most of the knowledge in the study of metallurgical technology is related to a certain extent, in order to ensure the reasonable progress of production in enterprise production, students cannot really practice. the development of metallurgical technology practice activities existing in the surface form cannot bring effective effect to the improvement of students' metallurgical technology [1].

2. APPLICATION OF SIMULATION SOFTWARE IN METALLURGICAL TEACHING

Simulation software is a new technology based on computer technology. the characteristic of simulation software is that it can realize the real simulation of metallurgical production, and realize the practical activities of students' learning through simulation. the metallurgical technology major in higher vocational colleges is an engineering major. If students want to get a certain development in social metallurgical production posts, they should not only have professional theoretical knowledge of metallurgy, but also have sufficient practical ability. Only with theoretical knowledge and practical ability, can they be high-quality talents who meet the needs of the society. In the development of China in recent years, with the popularization of computer technology, simulation technology has also been greatly

used in metallurgical technology education. Because simulation technology has the characteristics of practicability and effectiveness, the application of this technology in metallurgical technology education can only simulate the actual production place of metallurgical enterprises, in this way, we can contact the relevant knowledge and requirements of social work posts in school. In addition, the application of simulation technology in the education of metallurgical technology can also improve the learning enthusiasm of students in higher vocational colleges. Through the combination of theory and practice, the learning efficiency of metallurgical technology can be effectively improved [2].

When improving the metallurgical technology of students in Higher Vocational Colleges through simulation software, because the simulation software can simulate the actual metallurgical production, the simulation technology can be applied to the practical operation of metallurgical technology in higher vocational colleges. Through the application of simulation software, teachers can realize the practical operation of students only through computers, Therefore, it can also save money for the establishment and use of materials in practice places. When using simulation software to simulate metallurgical operation, students can carry out metallurgical experiments in any link through their own hands. When using simulation software in computer to carry out experiments, they can also choose experiments in any link according to their own learning situation, and the process of experiments is carried out through simulation technology, Therefore, it will not produce some substances and gases that are harmful to students' health. It can be seen that the education of metallurgical technology through simulation technology cannot only save the economic investment of higher vocational colleges, but also avoid the harm to students caused by experimental operation errors. Through the research, it is found that the simulation technology in metallurgical technology can realize the simulation of zinc hydrometallurgy, aluminum metallurgy simulation and iron and steel production.

When using simulation technology to study metallurgical technology, you can watch a large number of pictures and videos of actual production. These videos cannot only clarify some parameters and structures in actual production, but also vividly show the actual process of metallurgical production, When students study metallurgical technology through simulation software, they can browse any equipment and details. They can watch the actual operation only by inputting relevant instructions on the computer operation interface. Secondly, the simulation software also has a historical browsing record, so students can browse the content they have consulted in the past at any time.

When using simulation software for metallurgical technology education, in order to effectively improve students' learning efficiency, teachers should also play the role of their own guide. When viewing the model, teachers can ask students questions and let students complete the training content according to the viewing content. With the continuous development of science and technology, metallurgical technology will also be continuously improved. Therefore, in order to train high-quality talents to meet the needs of society in the development of higher vocational colleges, the teaching methods and levels should also be improved according to the development of social science and technology in the process of Education [3].

3. CONCLUSION

Simulation software is a new technology based on the improvement and development of social science and technology. Applying simulation technology to the teaching of metallurgical technology in higher vocational colleges can simulate the place of metallurgical production. Through production simulation, students can learn metallurgical technology through hands-on practice, so it can effectively improve the practicality of metallurgical technology education in higher vocational colleges. Secondly, the application of simulation software can also make the boring metallurgical technology education diversified, and then effectively improve students' learning interest.

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On the Reform of Talent Training Mode of Art and Design

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Abstract: With the development and progress of society, our country pays more and more attention to the cultivation of modern talents. China's education system is constantly improving, and some disciplines such as art and design have been reformed and optimized to form local teaching methods based on absorbing foreign advanced experience and combining with their own actual teaching environment, and have built a discipline system of art and design education with Chinese characteristics. From the perspective of exploring the reform of the training mode of art and design talents, this paper aims to propose the direction of the reform and development of art and design education in the future.

Keywords: Art Design Education; Talent Training Mode; Reform

1. INTRODUCTION

Since entering modern society, the teaching of some subjects with weak foundation has made breakthrough progress. Art design has formed a unique theoretical system based on the integration of market, science, ecology and other disciplines. Art design plays an important role in the development of modern society. With the development of society, the technological tools used by modern society are also constantly updated, and the society continues to match the talents with the advanced technological tools. Therefore, the modern society has put forward more requirements for artistic design talents, and its teaching mode has changed.

2. MAIN PROBLEMS EXISTING IN CURRENT ART AND DESIGN EDUCATION

2.1 The major setting is optional

Art design is a popular subject in modern society, which involves and covers a wide range of fields and has formed a complete discipline category in the process of development. Many higher vocational colleges do not start from their own conditions and strength when setting up art design education. As a result, some higher vocational colleges wrongly evaluate their own strength and fail to provide students with the required teaching resources. the development of art education subject needs to be based on certain economic benefits. If the subject is blindly opened, on the one hand, it will cause the homogeneity of the subject and make the subject lose the opportunity of development. From the perspective of the art and design majors in many art colleges and universities, the teaching methods and modes used by schools in cultivating talents are similar. This method of running a school without examining teaching from the perspective of discipline and itself can neither form characteristic teaching nor provide students with required subject skills, which leads to the difficulty of employment for students in the later period and the lack of discipline teaching in the school.

2.2 The goal of talent training is not clear enough

The strategic plan of the school to cultivate talents should be in line with the needs of the society. From the social demand, according to the market environment and industry requirements to train professional talents needed by the society. At present, subject teaching in China is out of step with the society. the teaching results of art design in domestic colleges and universities are not ideal, some teaching methods only remain on the surface, without in-depth investigation and research according to the specific situation, which leads to ambiguity and blindness in the teaching of art design in schools.

2.3 Unreasonable curriculum system structure

All along, the traditional teaching in Our country adopts the teaching method of filling up and spoon-feeding. This kind of one-sidedness teaching method cuts off the connection between subjects and leads to the imbalanced development of students' theoretical and practical abilities. Students cannot absorb and use knowledge points. In the modern art design discipline teaching, the school in the aspect of professional curriculum design without considering the social and the needs of the market environment, emphasis on discipline theory teaching, open too much theory course, seriously neglected the importance of practical teaching, causes students knowledge cannot be digest, seriously affected the national professional and comprehensive talent cultivation.

2.4 Teaching methods are single and backward

Up to now, many colleges and universities still use traditional teaching methods when carrying out art design teaching. Traditional teaching ignores students' dominant position in teaching and overemphasizes teachers' dominant position and importance. In the form of teaching to do problems and examinations, resulting in the lack of practical application ability of students. the students cultivated by traditional teaching lack innovation consciousness and ability.

2.5 Practice teaching link is weak

Artistic design is a profession with strong applicability, and practical ability is the basic requirement of cultivating talents in artistic design. At present, many colleges and universities in China do not consider the importance of the cultivation of students' practical ability for their future employment and integration into society when conducting art design teaching. the proportion of students' practice classes is small, and the courses are generally arranged in holidays. In the absence of school supervision and guidance, the effect of practice teaching is difficult to ensure.

3. EXPLORING THE REFORM OF ART AND DESIGN EDUCATION AND TEACHING MODE

3.1 Take the market as the guidance and construct characteristic majors

As for the teaching of art design specialty, it needs to clarify the needs of society and market. To market demand as the guidance, do a good job of scientific discipline planning and design, constantly combined with the needs of social development to adjust the teaching. Colleges and universities need to combine their own situation, and gradually explore and form a teaching model with its own characteristics.

3.2 Localization of Advanced Talent training programs in Germany

Germany leads the world in art and design education. Chinese colleges and universities can learn from Germany's advanced teaching mode and teaching concept when carrying out art design teaching. At the same time, it can also carry out cooperation with German universities and implement teaching value mechanism such as studying abroad and exchanging talents. Teachers can also hire relevant experts or send teachers to study abroad. In terms of teaching development, combining national conditions and culture, the art design teaching system with Chinese characteristics has been formed.

3.3 International reform of teaching mode

The traditional art design teaching mode is task-oriented and centered on teachers. In this process, teaching cannot deeply cultivate students' innovative thinking. As a result, the whole teaching is monotonous and the talents trained by colleges and universities are difficult to meet the requirements of modern society.

4. FOCUS AND DIRECTION OF ART AND DESIGN EDUCATION REFORM

4.1 Strengthen market awareness, focus on cultivating students' innovation ability

The major of art design education should focus on cultivating students' creative consciousness and ability. This requires that art design education should keep pace with the Times, constantly adjust and optimize the teaching design, timely find the point of meeting with the development of modern society, reconstruct the teaching curriculum system, rebuild teaching methods, and complete the transformation from traditional teaching to modern teaching.

4.2 Integrate into the international trend and strive to improve students' ability to use modern design language

Today's world is moving toward globalization, and China has become a whole with the world. China's discipline teaching, especially art design teaching, must be in line with the world. Learning, drawing lessons from and absorbing advanced experience from other countries requires students to master the language of modern art and design. the use of internationally recognized common language can improve students' comprehensive ability, help them master advanced technology and experience, and also help them understand the trends and trends of modern design, and help Chinese art design to go global.

4.3 Expand the educational horizon, comprehensively improve the ability of students to learn from and absorb the essence of foreign culture

Many technologies in modern society are formed in the process of continuous development. Including national culture. In the face of the interference and influence of foreign culture, modern teaching should be based on local culture at the same time, absorb and learn from foreign culture and knowledge, absorb the beneficial part of it. Develop your own culture with the help of other cultures. To build a bridge of communication between culture and art, we must establish this belief in teaching, the great harmony of the nation is also the great harmony of the world, so as to realize the Chinese culture to the world.

5. CONCLUSION

In general, the development of art and design education discipline must be based on the level of the university itself, but also to be in line with the world, referring to the world's advanced technology and experience, constantly improve themselves, and form a teaching mode with Chinese characteristics.

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Research on the Innovative Path of Integrating the Spirit of Northeast Resistance Union Into Ideological and Political Education in Colleges and Universities

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Abstract: the spirit of the Northeast Resistance League is an important embodiment of the national spirit, but also the most precious spiritual wealth of the Chinese people. It represents the patriotic spirit of defending our country to the death; It also represents the fearless spirit of the heroic war of resistance; It also represents the indomitable spirit of sacrifice, the spirit of hard work and the international spirit of solidarity and cooperation. Therefore, in the ideological and political courses of colleges and universities, it is extremely critical to educate students about the spirit of northeast Resistance union, and it is also an effective way for students to receive red education and have empathy experience. This paper analyzes and discusses the innovative path of integrating the spirit of northeast Resistance Union into ideological and political education in colleges and universities for reference.

Keywords: Northeast Resistance Spirit; Colleges and Universities; Ideological and Political Education; Innovation Path

1. INTRODUCTION

Under the leadership of the (C_P) of China, the spirit of the Northeast Anti-japanese United Army is a summary of the patriotic thoughts and spiritual outlook displayed by the northeast Anti-japanese United Army in the war against the Japanese aggressors. the spirit of the Northeast Resistance League has profound ideological value, is the representative historical embodiment of the Anti-Japanese War, and also has great educational significance in the construction of socialist new China. Ideological education in colleges and universities is the important content in the education work, is also cultivating the college students' patriotic and national awareness of effective measures, in the context of education innovation, need the spirit of innovation path to the northeast anti-japan union calls into college application in students' ideological education work, in order to make college students in northeast coalition for example, in the spirit of the northeast anti-japan union calls for faith, to remember the history, and make unremitting efforts to realize the great rejuvenation of the Chinese nation.

2. THE PROFOUND CONNOTATION OF THE SPIRIT OF THE NORTHEAST RESISTANCE ASSOCIATION

2.1 To defend the patriotism of the motherland to the death

The establishment of the Northeast Allied Forces, relying on the great idea of the vast northeast people's deep love for the motherland, under the belief of patriotism, cannot fear the sword and gun in the war, the patriotic enthusiasm to defend the motherland to the death, is an important embodiment of every Chinese people's belief that "the rise and fall of the world, everyone is responsible for" the sense of mission. Northeast allied forces in the critical moment to march forward, is to defend the patriotic spirit of the motherland.

2.2 The fearless spirit of heroic Resistance against Japanese Aggression

In the northeast of the coalition, they fight with the war of resistance in the war, never retreat, with tough volition, and the determination to win, strong psychological quality and the rigorous team discipline, etc., in the long-term arduous struggle, sprung up many brave warriors, such as "martyrs" twelve, "young" of the war of resistance against Japan, etc., they deeply the fearless spirit of heroic resistance, to kill, It is also an effective demonstration of Chinese national hero's verve.

2.3 Indomitable spirit of sacrifice

In the personnel composition of the Northeast Resistance army, statistics show that there are nearly 600 women soldiers in the resistance army, but after years of resistance, the remaining women soldiers in the resistance army are only more than 60 people. In the later statistics of the casualties of the Northeast Resistance Army, 41 generals at or above the military level and 112 generals at the division and brigade level were killed in the war. During the Anti-Japanese War, the conditions were extremely hard, but the northeast Allied forces were fearless of difficulties and unyielding, showing great courage and admirable spirit of not fearing sacrifice.

2.4 Hardworking spirit without fear of difficulties

In the years of the War of Resistance against Japanese aggression, the natural conditions were extremely bad, life and war supplies were extremely scarce, and the geographical location was relatively remote, but the northeast Allied army still persevered in the difficult environment with excellent psychological quality, and made outstanding contributions to the Chinese people to welcome the great victory of the War of Resistance against Japanese aggression. Therefore, the spirit of the Northeast Resistance League also represents the spirit of hard work without fear of difficulties, which is the ideal and faith that every Chinese should have [1].

2.5 International spirit of solidarity and cooperation

During the 14-year war of Resistance against Japanese

aggression, China, the Soviet Union and the DPRK united and cooperated with the military and civilians, which reflected the international spirit of profound significance and far-reaching influence, and still has an important warning role to the grand goal of the community with a shared future for mankind. the spirit of the northeast Resistance and the revolutionary deeds of the northeast Allied forces will always be buried deep in the hearts of the people of China, the Soviet Union and Korea, but also in the history of the corridor to write down a massive pen. This international spirit must be an indispensable belief in the development of mankind.

3. INNOVATIVE PATH OF INTEGRATING THE SPIRIT OF NORTHEAST RESISTANCE UNION INTO IDEOLOGICAL AND POLITICAL EDUCATION IN COLLEGES AND UNIVERSITIES

3.1 Firm ideological belief, strengthen spiritual education in important festivals

Thought is the precursor to action. If we want to integrate the spirit of northeast Resistance league into the ideological and political education work in colleges and universities, we need to first infiltrate the rich connotation of the spirit of northeast resistance League into students' thoughts, so that students can have clear ideological belief and spiritual pursuit. At the same time, also need with the aid of important festivals activities, students' faith in the education activities, such as "groups Marco Polo bridge incident, the 918 incident, the nanjing massacre victims of the national symbol of Japan, JiuSan on the anniversary of the victory of the war, the July 1 founding section, bayi army day, 11 National Day", such as national important festivals, to strengthen the education of students, Students can cherish the past, cherish the present and look forward to the future in a strong festive atmosphere. the spirit of the Northeast Resistance League is an important component of China's national red culture. the teaching should be guided by correct ideas and integrate the spirit into the heart rather than unrealistic description [2].

3.2 Improve the profundity and extensibility of ideological and political class

Under the educational background of moral education, ideological and political education is the key path of education. Therefore, we should pay attention to the depth of teaching in ideological and political education class, stimulate students' thinking consciousness, and guide students to re-study relevant content, so as to reflect the extension of ideological and political content. the northeast anti-japan union calls spirit in education classroom teaching as well, teachers need to be effective measures, it fully permeate in the student's thoughts and actions, such as combing the historical events, the combination of events occur coalition, collecting relevant poems, heroism, etc., and northeast coalition building background, process, etc., in order to deepen the spirit of the northeast resistance union in the bottom of the heart of students, in order to firm up the faith of students, and put it into practice.

In addition, to stimulate students' learning enthusiasm to the northeast anti-japan union calls spirit, teachers also need to innovation of teaching mode and method, such as micro lesson, creating situation, such as reducing real events, encourage students to participate in production, lets the student thought by rendering in data collection, in order to strengthen students' ideological cognition, cultivate the students' patriotic consciousness in the teaching. At the same time, through the information technology teaching, the ideological and political education content can be expanded, but also can let the students have a more comprehensive understanding of the spirit of northeast resistance, is an effective extension of its learning, broaden the horizons of students.

3.3 Strengthen the construction of campus culture

The influence of campus culture on students is extremely profound, so teachers need to unite with schools, strengthen the construction of campus culture, organize and carry out relevant educational activities, such as the northeast Resistance spirit lecture, the northeast Allied army important deeds situation reappearance, then walk the northeast Resistance road and other thinking activities, in practice, students can experience the great spirit of fearlessness, sacrifice, courage and death of the Northeast Allied Army in the difficult environment, and integrate the red thought into the hearts of students, which also improves the education level of the school in ideological and political courses [3].

4. CONCLUSION

Since ancient times, China is pay attention to spiritual culture, the Japanese war of aggression against China to the Chinese people the indelible damage caused by this monstrous crime is every Chinese people will never forget the fact that, at the same time, the Chinese people will never forget the front in the war the (C_P) of China and the leadership of the Anti-Japanese War soldiers, and motivation and goal, Efforts to achieve the great rejuvenation of the Chinese nation and unremitting efforts, so in the university education work, to strengthen the red revolution education for students, we need to use innovative ways and measures to strengthen the ideological belief of students. the integration of the spirit of the Northeast Resistance League in ideological and political education is an important part of the education of the red Revolution for students. the profound connotation reflected by the spirit will surely have a far-reaching influence on the later generations, and let students take the spirit of the Northeast Resistance League as the spiritual goal of the construction of the motherland, and strive for the construction of new socialist China.

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Oh! Quand je dors - the collaborative jewel of Victor Hugo and Franz Liszt

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Abstract: *the* brilliance of Victor Hugo cannot go unnoticed, works based on his books have become masterpieces of their own - movies, musicals, ballets, operas, even video games. Nevertheless, Hugo's poems are equally captivating and captured the heart of Hungarian composer and pianist, Ferenc Liszt. One of Liszt's many talents was the ability to find the genius in his contemporaries and incorporate it into his own compositions. He heard the virtosity of Paganini and masterfully adopted it to his piano technique, the beautiful melodies of Schubert were turned into bountiful transcriptions, and the poems of Victor Hugo became Liszt's exquisite songs. the following article explores the amalgam of Liszt and Hugo, the creation of the most beloved *Oh! Quand je dors*.
KEYWORDS: Hugo; List; Song; Poem; Music

1. INTRODUCTION

Oh! quand je dors is one of the most well-known poem by Victor Hugo. Although this text was also set by several other composers, including Georges Bizet (1838-1875), Edouard Lalo (1823-1892), and Bernard van Dieren (1887-1936), the Liszt's setting - one of the most famous and Liszt's most beloved French song - is perhaps most often performed in concert halls nowadays. Liszt composed seven songs for the text by Hugo. the songs were published first in 1844. Later Liszt revised the songs and published the second version in 1859. Thus we have two versions of each song written on the text by Hugo. Therefore the subject, Oh! quand je dors in two versions by Ferenc Liszt, seems important and worth exploring.

2. FERENC LISZT AND HIS VOCAL WORKS

Ferenc Liszt (b: Raiding, (Doborján), 22 Oct 1811; d: Bayreuth, 31 July 1886) was a Hungarian composer, pianist and teacher. He was one of the leaders of the Romantic period in music. In his compositions he developed new methods, both imaginative and technical, which left their mark upon his forward-looking contemporaries and anticipated some 20th-century ideas and procedures; he also evolved the method of 'transformation of themes' as part of his revolution in form, made radical experiments in harmony and invented the symphonic poem for orchestra. As the greatest piano virtuoso of his time, he used his sensational technique and captivating concert personality not only for personal effect but to spread, through his transcriptions, knowledge of other composers' music. As a conductor and teacher, especially at Weimar, he made himself the most influential figure of the New German School dedicated to progress in music. His unremitting championship of Wagner and Berlioz helped these composers achieve a wider European fame. Equally important was his unrivalled commitment to preserving and promoting the best of the past, including Bach, Handel, Schubert, Weber and above all Beethoven; his performances of such works as Beethoven's Ninth Symphony and Hammerklavier Sonata created new audiences for music hitherto regarded as incomprehensible. the seeming contradictions in his personal life - a strong religious impulse mingled with a love of worldly sensation - were resolved by him with difficulty. Yet the vast amount of new biographical information makes the unthinking view of him as 'half gypsy, half priest' impossible to sustain. He contained in his character more of the ideals and aspirations of the 19th century than any other major musician. (Sadie 2001:755)

Liszt came to maturity as a song composer during his Weimar years. He wrote his first songs ten years earlier, while he was resident in Italy (the *Tre sonetti di Petrarca* were first sketched there), and by the time he got to Weimar he had composed a dozen or more. He now revised and added to them, and eventually produced an impressive total of more than 80 songs and collections. During his forty - seven years he set at least eighty - six different texts to music for voice and piano and made forty - one separate revisions, amounting to at least 127 songs (not including the three solo songs from the *Wartburg - Lieder or A magyarok - Ungarns Gott* which concludes with a chorus). (Sadie 2001:801)

German and French were the two languages in which Liszt was most fluent and consequently the language he most often selected to set his songs. He set thirteen different French texts from seven poets, ranging from major literary figures - Victor Hugo, Alexandre Dumas, and Alfred de Musset - to minor poets - Pierre Jean de Etienne Monnier. the most important of Liszt's French songs are his settings of text by Hugo. Four of the seven Hugo poems Liszt set are frequently performed and among his most recorded songs: *Oh! quand je dors; Comment, disaient - ils; Enfant, si j'étais roi;* and *S'il est un charmant gazon.* All are passionate love poems of romantic excess. Liszt composed them in the early 1840s, published first versions in 1844, and revised them extensively before publishing the second versions in Berlin in 1859. Today performers almost uniformly select the revisions for concerts and recordings. (Arnold 2002:407)

3. VICTOR HUGO AND HIS POEMS

Victor Hugo was born on February 26, 1802 in Besancon, France, died on May 22, 1885 in Paris. He was a poet, novelist, and dramatist and the most important French Romantic writer of the 19th century. Hugo is best known for his novels "Notre - Dame de Paris" (a. k. a Hunchback of Notre-Dame) (1831) and "Les Miserables" (1862).

Victor Hugo had a nomadic and anxious childhood. He was erratically schooled, a fact which accounts in part for

the eclectic and unsystematic aspect of his poetic thought. At age 14 he wrote, "I want to be Chateaubriand or nothing. " He had begun to write in every poetic genre: odes, satires, elegies, riddles, epics, madrigals, and to receive recognition while still in his adolescence, never having to fact the long years of obscurity and struggle that are the lot of most poets. In 1822 Hugo married his childhood sweetheart, Adèle Foucher, one and a half years after the death of his mother, who opposed the match. They later had four children, and their apartment, on the rue Cherche - midi in Paris, became the meeting place for the avant - garde of the romantic movement. In 1822 Hugo also published his first signed book, *Odes et poésies diverses. In* the preface to this book, which contains many poems celebrating his love for Adèle, the poet wrote, "Poetry is the most intimate of all things. " (Ireson 1997:5)

Hugo's work may be roughly divided into three periods. First in time is the intimate lyrical vein typical of the odes. Second is an involved or committed poetry speaking directly to political and social conditions. the epic novel *Les Misérables*, for example, fits into this group (But this vein is also present in the very first volume, where a number of poems praise the throne and the altar; Hugo, who was to end as a staunch republican, began as a royalist). In the last phase of his career Hugo rose to the heights of mysticism and poetic vision, as in *La Fin de Satan*. Before the July Revolution (1830), Victor Hugo had leaned toward humanitarianism and liberalism in his writing. Between 1829 and 1840, he published several volumes of poetry: *Les orientales* (1829), *Les feuilles d'automne* (Autumn Leaves, 1831), *Les chants du crepuscule* (Twilight Songs, 1835), and *Les rayons et les ombres* (1840). (Houston 1974:21)

4. COMPARISON OF TWO VERSIONS OF *OH! QUAND JE DORS* BY FERENC LISZT

Oh! quand je dors	Oh! When I sleep
Oh! quand je dors, viens auprès de ma couche,	Oh! When I sleep, come next to my bed,
Comme à Pétrarque apparaissait Laura,	As Laura appeared to Petrarch,
Et qu'en passant ton haleine me touche me	And in passing let your breath touch
Soudain ma bouche s'entr'ouvrira!	Suddenly my lips will open up!
Sur mon front morne où peut-être s'achève,	On my mournful brow perhaps ending,
Un songe noir qui trop longtemps dura,	A dark dream which lasted too long,
Que ton regard comme un astre se lève	Let your glance like a star be lifted
Soudain mon rêve rayonnera!	Suddenly my dream will shine!
Puis sur ma lèvre où voltige une flamme,	Then on my lips where flutters a flame,
Éclair d'amour que Dieu même épura,	Light of love that God himself purified,
Pose un baiser, et d'ange deviens femme,	Your kiss, change from angel woman,
Soudain mon âme s'éveillera!	Suddenly my spirit will awaken!
Oh viens! Comme à Pétrarque apparaissait Laura!	Oh come! As Laura appeared to Petrarch!
Les rayons et les ombres by Victor Hugo 1840	English translation by Evlyon Tomlinson 1982

This romantic poem is twenty - seventh in Victor Hugo's volume of poetry *Les rayons et les ombres*, which was published in 1840. the poetry in this collection includes encomia to Juliette Drouet, poems on the atmosphere of nature, and the author's bittersweet memories of childhood, especially in Feuillantines. the collection contains some of his most famous poems, including *Oceano nox* and *Tristesse d'Olympio*. These poems often addressed political, social, and religious issues, although this is not evident in *Oh! quand je dors*. the relationship of Petrarch and Laura in this poem is likely meant to reflect those of the poet and Juliette Drouet as well as Liszt and Marie d'Agoult. (Houston 1974:76)

Although this text was also set by several other composers, including Georges Bizet (1838-1875), Edouard Lalo (1823-1892), and Bernard van Dieren (1887-1936), Liszt's setting is most often performed in today's concert halls, because *Oh! quand je dors* is the most famous and remains Liszt's most beloved French song. In a letter to Marie d' Agoult on 25 January 1842 Liszt wrote, "In these last two weeks I have written two new songs, one for me and the other for you, dear Marie. " According to Adrian Williams the one for Liszt was *Titan* and the "other" for Marie was *Oh! quand je dors.* Noske highly praised this song: "*Oh! quand je dors* is certainly the masterpiece of Liszt's French songs and may even de described as one of the most beautiful *melodies* written before Duparc. Hugo's language, so rich in imagery, has only rarely found such a worthy musical equivalent. Liszt composed the first version of this song in 1842 during one of his concert tours. Fifteen years later, he reworked the original for a published collection of his songs. As a matter of practice, Liszt usually shortened his songs when he reset the original versions. *Oh! quand je dors* follows this pattern; it is abridged from 104 bars to 93 bars. Other songs that he shortened include *Comment, disaient - ils* (from 90 to 87 measures), *Enfant, si j'étais roi* (from 84 to 66), and *S'il est un charmant gazon* (from 70 to 58). Likewise, in the song *Oh! quand je dors,* the coda in the first version has thirty - five measures while the later version of the coda has only sixteen. (Park 2007:9)

The second version of *Oh! quand je dors,* dating from 1849, is among the most exquisite and polished of all Liszt's songs. He retains the three - stanza format Hugo creates and organizes it in an ABA form. the text is ecstatic, with each stanza ending with an exclamation mark. In the first stanza the narrator urges his lover to come to his bedside "as Laura appeared to Petrarch, " and each successive stanza intensifies this desire. With great sensitivity Liszt captures the nuances of Hugo's text.

5. CONCLUSION

Liszt, as a songwriter, considerably increased the role of an accompanist by providing the accompaniment with virtuosity and nearly orchestral effects. This essay showed how important it was to Liszt to find a proper balance between the voice and accompaniment. In revising his songs, Liszt greatly lightens the piano texture in *Oh! quand je dors,* and also shortened *Oh! quand je dors* from 104 bars to 93 bars in the second version. He refined and polished it, making it better resemble to French *melodies.* As a result, the second version became his best known French song, and this version is more often performed and recorded than the original.

Liszt's songs, so long undervalued, will one day receive the scholarly and popular attention they warrant. the excellence imbedded within Liszt's songs will find their rightful place among the major songs of Schubert, Schumann, and Wolf in the twenty - first century.

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Research on News Transediting of Hengyang Municipal Government's English Website

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Abstract: News tranediting is different from other types of translation activities. It is not so much a translation activity, but more accurately the act of editing and disseminating information. Theories in the field of communication have a guiding significance for the study of news compilation. the English website of the Hengyang Municipal Government publicizes local customs, investment environment, political and economic conditions, etc. It is a medium and window to establish a good image of the city, so the news compilation of local government websites is of great significance. This article studies the news transediting of the English website of the Hengyang Municipal Government from the perspective of communication, in order to provide some theoretical and practical reference for the news translation of the government website.

Keywords: Communication; English website of Hengyang Municipal Government; news transediting

1. INTRODUCTION

With China's growing influence on the international stage, international exchange activities have become more frequent. Spreading the image of Chinese cities to the outside world is of great significance to the shaping of China's international image, and it can also increase the city's own influence. the most direct way for foreigners to obtain relevant information about a certain city is to browse the government's English website of the city. Therefore, the government English website is conducive to the communication between the government and foreigners, and can promote urban economic development and cultural dissemination. Since 2010, the E-Government Office of the Hengyang Municipal Government has entrusted Hengyang Normal University to build an English portal website for the Hengyang Municipal Government. In recent years, the website construction has achieved good results. Ranked 3rd in 2013. In recent years, the construction of the website has remained at the forefront. the author has been the head of the news translation team of the English website of the Hengyang Municipal Government since 2010, and has been actively participating in the construction of the news translation section.

2. THE COMMUNICATION NATURE OF NEWS TRANSEDITING

Scholars at home and abroad have long studied the communication nature of news translation. Vuorine borrowed from Shoemaker's multi-level gatekeeper model to prove that news translation is gatekeeper, and pointed out that pure translation is almost non-existent. Any news translation task requires rewriting and editing of the text. Akio Fujii uses the gatekeeper theory in the communication theory to explain news translation, pointing out that news translators have four functions, namely, information quantity control, information conversion, information supplementation and information reorganization. Professor Lv Jun is a pioneer researcher of translation and communication theory in China. He conducts interdisciplinary research on the ontology, carrier, object, environment and effect of translation and communication. He believes that the essence of translation is communication, which is a kind of cross-cultural and special interlingual communication activity.

3. NEWS TRANSEDITING OF HENGYANG MUNICIPAL GOVERNMENT'S ENGLISH WEBSITE FROM THE PERSPECTIVE OF COMMUNICATION STUDIES

Communication studies emerged in the United States in the 1840s. Weber proposed the five "W" communication modes of communication studies: Who → says What → in What channel → to Whom → with What effects. Laswell proposed five corresponding communication studies for these five elements: control analysis, content analysis, media analysis, audience analysis, and effect analysis. To ensure the communication effect of the news translation of the English website of the Hengyang Municipal Government, the builders of the English website of the Hengyang Municipal Government must take seriously and analyze the main body, content, channels, and objects of the government website, so as to effectively promote the city's image.

3.1 Control Analysis

News translators on government websites have dual identities, they are both the switcher of the two languages and the disseminator of the image of the government website. Therefore, in addition to fully considering the differences between the two languages and cultures, the corresponding communication system must also be observed. Therefore, before doing news translation, translators must fully understand the media control issues under a specific social system and communication system, including "political control of the state and government, economic control of interest groups and economic forces, ideological culture, and culture of social supervision. Control" (Guo Qingguang: 1999:130).

The English website of the Hengyang Municipal Government publicizes the development of Hengyang's politics, economy, investment, and culture, so as to spread Hengyang's good city image. Therefore, in the process of news translation on the English website of the Hengyang Municipal Government, news translators need to fully consider the social system, communication system, economic, cultural and social control of the country and Hengyang. the English website of the Hengyang

Municipal Government builds an independent back-end editing platform based on the TRS WCM 7.0 platform of the Hengyang Party and Government portal website. Each news compiling member is equipped with an independent account and password, and is assigned different permissions according to the tasks they are responsible for. In the government procurement contract, the Hengyang E-Government Management Office and Hengyang Normal University have made a total of 19 regulations on the construction goals and construction content. the national system and these regulations have certain constraints and restrictions on the builders of the news translation sector.

3.2 Content Analysis

White believes that in the process of news editing, there are many gates, each gate has a gatekeeper, and the final news content that the audience sees is produced after every gate. In fact, the same is true for the news compilation process. In this process, the news compiler plays the role of gatekeeper, and the news source text is edited layer by layer to obtain the final news target text. In the process of news translation, the compiler fully considers various control factors, decides which news should be translated, and which strategy or method should be adopted for translation.

In the news translation of the English website of the Hengyang Municipal Government, the compiler needs to choose which Chinese news to translate into English from the numerous news on the Chinese website of the Hengyang Municipal Government. on the Chinese website of the Hengyang Municipal Government, there are columns such as Hengyang News, County (District) News, etc. There are more than ten articles updated every day. According to the content of the contract and the value of news articles, the final translation is about four to five. After selecting the corresponding chapter, you need to further decide which information in the selected chapter needs to be translated into English. In the specific translation process, which translation method should the translator use? the author found through investigation that most of the original English news of the news translation team's translators were taken from the Chinese website of the Hengyang Municipal Government. the translators did not translate all Chinese news into English, but made some choices. At the same time, during the translation process, the translators did not translate the entire text without any deletions, but with deletions. These all reflect the analysis and "gatekeeping" of news translation content by news translators as "gatekeepers" in the process of news translation.

3.3 Media Analysis

The media is an important carrier for information exchange and transmission, and plays an important role in the communication process. A correct understanding of the characteristics and functions of different media is conducive to the correct choice of media and promotes the development of news translation. As a new medium of information dissemination in the new era, the Hengyang Municipal Government website has the following advantages compared with other media: global dissemination range, long retention time, large and comprehensive information data, all-round openness, convenient and simple operation, and strong interactive communication, low cost, high efficiency, and strong senses. Based on these unique advantages of the Internet, in the process of news translation in Hengyang Municipal Government's English website, news translators can make full use of the media characteristics of the website, use texts, pictures, videos and other modern means to publicize the city and establish a more three-dimensional and beautiful image of a city.

3.4 Audience Analysis

The audience is the destination or recipient of information dissemination. If there is no audience in the process of news translation, the dissemination process is incomplete and has no meaning. News translators must understand the target audience, determine the audience's social class, economic, cultural, political background, education level, age level, professional differences, value orientation, etc. the audience of the English website of the Hengyang Municipal Government is mainly foreigners in Hengyang, foreigners planning to go to Hengyang, foreigners interested in Hengyang's customs, culture, and tourist attractions, as well as some news English lovers and learners. Therefore, in the process of news translation, the situation of these audiences must be fully considered, their needs must be determined, and the selection of translation materials and translation strategies must meet the needs of the audience. In this way, we can better serve the audience, promote Hengyang and spread Hengyang culture.

3.5 Effect Analysis

In the field of communication studies, communication effect refers to the psychological, attitude, and behavioral changes caused by the communication behavior with persuasive motivation on the recipient. It also refers to the impact of communication activities, especially the activities of mass media such as newspapers, radio, and television. the totality of all influences and results is produced by the recipient and society, regardless of whether these influences are intentional or unintentional, direct or indirect, obvious or potential. In the research on the effect of mass communication, the macro-effects of mass communication activities on the operation, change and development of the society are the main reference objects. (Guo Qingguang, 1999:188)

News translation in the Hengyang City Government website is undoubtedly an information dissemination activity, and the dissemination effect reflects the quality of news translation. the better the dissemination effect, the higher the quality of news translation and the wider the dissemination of the image of the city, which is more conducive to urban development and cultural dissemination. Therefore, in the process of news translation, news translators must always put the communication effect in an important position, give full play to the translator's subjective initiative, and ensure a good communication effect, otherwise the communication activities of news translation will be meaningless.

4. CONCLUSION

The English portal website of the Hengyang Municipal Government is an important window for the local

government to publicize the image of the city. Therefore, the news translation of the Hengyang Municipal Government website must fully carry out control analysis, content analysis, media analysis, audience analysis and effect analysis, so as to ensure the good dissemination effect of the website and promote the image of Hengyang Municipal Government and Hengyang.

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Ethnicity vs Modern Awareness: Analysis of Traditional Human Values of Hand game *Twelve Hours of Chang'an*

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Abstract: the combination of e-sports and traditional national sports provides directional guidance for the expansion of traditional national sports. Based on a meticulous analysis of the original, this paper explores the human characteristics of the characters in the game and digs deeper into Ma Bo yong 's creative philosophy. the results of the study show that: the backstory of the handbook is grand, the author's profound literary skills and superior use of historical documents; the storyline in the game has tragic overtones of classical content; the author of the handbook expresses two distinct human values in the game and explores the conflict and reconciliation between the values; a narrative method with a human face is used, and the creation of the human depiction is brilliant and the description of the characters is rich in tension.

Keywords: E-sports; the Twelve Hours of Chang'an; Human Values

1. INTRODUCTION

With the progress and development of technology, mobile devices are gradually coming into people's daily lives, making life more convenient. After the emergence of e-sports in the form of mobile games, it is an extension and filling of the e-sports industry. In November 2003, the State General Administration of Sports officially announced at the launch of China's digital sports interactive platform that eSports was listed as the 99th official sport in China [1]. This initiative opened the era of rapid development of China's e-sports industry. the hand game "Chang'an Twelve Hours", which is designed in the style of national traditional style, has also become one of the most popular hand games of the moment. This hand game is a traditional national style competitive hand game with RPG and triple elimination as the main elements, endorsed by Mr. Ma Boyong, the author of the original novel of the same name, which becomes a product of combining national traditional sports with modern technology.

2. HANDGAME TWELVE HOURS OF CHANG'AN MAGNIFICENT ATMOSPHERE OF THE NATIONAL LANDSCAPE

First of all, Chang'an good, magnificent atmosphere of the first city. the handheld game "Chang'an Twelve Hours" magnificent atmospheric scenes make countless people to the Tang Dynasty capital fascinating. Has a number of 8 million square meters of seamless no air wall large map, anthropomorphic flow of changing time and weather, downtown valley, cloudy rain and snow, alternating day and night, etc. Chang'an is more prosperous atmosphere, at night by the Drum Tower Street, the sunset and full of city lights reflect the glory, people cannot help but stop to watch. If you are lucky, you can meet your life partner at a corner at night and enjoy Chang'an City at night together. It takes some fate and preparation to meet your destiny.

Secondly, the subtleties are more visible. In addition to the complete landscape, the details and corners of the hand game "Chang'an Twelve Hours" are also very worthy of a taste, at the drop of a hat is a wallpaper. As a hand game, "Chang'an Twelve Hours" screen performance is excellent, the traditional style can be directly experienced in the game. the flowing day and night, changing weather, and vast maps are interwoven into the real and fascinating rivers and lakes of "Chang'an Twelve Hours". the game can feel a bigger and freer world of Jianghu - experience the purest martial arts world, feel the most bloodthirsty Jianghu storms; experience the thrill of becoming a warrior and join the game to defend Chang'an.

3. HUMANITY UNDER THE HOLLOW HISTORY

In the game, the author delicately crafts the traditional human values centered on imperial power politics and examines them. Through the historical nihilistic expression of human nature, it tries to make us understand more directly the distinctive character of the game's own discernment of human nature. Generally speaking, the narrative of the game overwhelmingly uses shared values, true view, and common meaning system to show the characteristics of the game, and it is a narrative mode identified under traditional ideological customs. But this hand game is a second look at history with modern consciousness and modern knowledge. It innovates the ancient style game features and historical discursive narrative method; reveals the power identity and value identity hiding behind the human discourse, and is a kind of modern examination and reflection on traditional morality, value and historical outlook.

In general, the game is very natural and smooth for the depiction of characters in the backstory, and players are more likely to accept these characters. the game's protagonists are carefully chosen, not to depict the big

characters, but to describe in detail the spirit of some small people living in the city and in front of some big rights and wrongs. Because those big characters have been well documented in history, it is not easy to give more unexpected thinking and character patterns, which makes it more possible to arrange the game storyline as you wish. In the game has seen a very big change, the game is trying to enrich the human good and evil of the minor characters, so that the main character from the purely heroic human image, adding more human choices.

In real history, there was a war between the Tang Dynasty and the Turkic Dynasty in this year. Taking advantage of the Turkic civil unrest, Emperor Xuanzong of Tang ordered the Shuofang sectional envoy Wang Zhongsi to go on an expedition, which the Turks defeated miserably. In this real historical context, it was logical that the Turks would send a group of men to Chang'an to plot an attack, so that they could relieve the military pressure on the border [2]. By adding another fictional historical figure, Zhang Xiaojing, a backstory of the game that is diametrically opposed to the official historical documents is constructed, which also provides a reasonable explanation for the rumors of the divine fire, as well as the developmental movements of various historical figures in the aforementioned historical documents. These seemingly unrelated historical documents are refined in the game to show a new way of existence to add more historical possibilities and make the game more story-oriented.

4. ANTI-FACED HEROES AND SHAPED BY THE EXPLORATION OF HUMAN NATURE

The minor characters in the game are represented mainly by Zhang Xiaojing and Yao Runeng. Outside of these minor characters, there are also some major characters that also restore the dynastic politics of the time, as well as some people we know from the past and present. the game is very large in terms of the number of characters, but because the game timeline is too urgent, many characters are depicted in a hurry to pass. the game was intended to build up a big picture, by rendering the human nature of the various characters to play a role in rendering the entire game plot, reflecting the complexity of the game. However, the final effect presented is not as good as expected. Each character comes out as if it is a face bearing either black or white, hurriedly carried over. Zhang and Yao two different ways, the game uses two different image characteristics of the two people for comparison, from their different appearance can still find the same ardent heart. This approach can meticulously depict the selfless devotion of the main characters. the game is specifically reflected in the explosion of the lamp building, even though the main character has serious injuries, he still ran to escort this aspect. In the aftermath, the two men together take on the safety of the entire Chang'an. This also highlights the game's control of the character's personality and the analysis of human nature.

As a very important character in history, He Zhizhang has an inherent impression in people's mind, so he is set as a stable and mature loyal minister in the game storyline at the beginning [3]. It also roughly conforms to the restoration of the character traits of real characters, showing the possibility of writing on the basis of preserving the authenticity of the character of historical celebrities. Li Ju, who became famous as a teenager, was young and frivolous, and was more prone to be impulsive, so at the very beginning of the action He Zhizhang tried to obstruct Li Ju's appointment of Zhang Xiaojing, and even made up the reason that Li Ju's style was not good to prevent it. This will give a comprehensive picture of an old city struggling to survive above the court, but when the ending develops he is the final mastermind, to everyone's great shock, the game's Li Ju image is also set to maintain the characteristics of the form smart, the other as are more casual similar to the Taoist school.

The game adopts the "aura of the protagonist" and tragic life intertwined human image construction. the game characters who reappear in the overhead history go through all the hardships and ups and downs to solve the crisis and defend justice. Finally, the main character's halo ascends to a new peak of humanity, reflecting the main feature of the game director's emotional catharsis. Due to the war between human nature and social environment, the characters in the game have a distinctive tragic life color, which also reflects the game author's thinking about "human nature"[4].

5. CONVERSION AND INTEGRATION IN THE HISTORICAL CONTEXT

For the game, perspective is very important. Performance is seen from different perspectives different character concepts; the so-called narrative focus, is to first introduce a kind of thing then extended to the person, and finally the spiritual qualities of the character to explore. This perspective advantage is very detailed and comprehensive. the game uses the God's perspective to observe the whole Chang'an city, introducing the events that happened in different places in the same period, and is good at focusing on human nature. Many of the episodes in the game give the player an emotional experience of empathy. This is certainly a great success. [5] the technique of dividing an overall plot into several more important focal points for separate set tasks is more able to bring out the theme distinctly and make the game more moving.

The characters of this handicraft, both in terms of character and personal boundaries for good and evil, are very blurred. Have their own distinctive human characteristics, rather than the usual sense of non-black or white. This completes the full image of a character in many ways and is more infectious. Let the player feel the complexity of human nature, and the entanglement of many things in the world. However, such a setting can also make players feel despondent and unable to discern some moral standards in real life. Thus, they will be suspicious and doubtful of their worldview and perception. So, Zhang Xiaojing - the human setting of this character is not only very full to be able to show the complexity and richness of human nature in multiple directions, but also allows players to once again feel the long-unseen individual heroism.

In terms of storyline, it is more similar to the American drama. In fact, it also does incorporate the concept of

American heroic individualism, creating a virtual period of Tianbao's three years of history. Drawing on the 24-hour time and narrative method of the American drama, the game's content and plot are tumultuous, dizzying and camera-ready. the game, as if the player is sitting on top of the battlefield, the next second will be wolves and smoke, there are people raising their swords and galloping to the horse, with a bright shining swords to cut. Zhang Xiaojing comes with a powerful aura of protagonist, similar to the superheroes in American movies, protecting the world through their own power and punishing good and evil in their own way. the image of the protagonist is also very three-dimensional. It has not only a more ruthless side, but also a more warm side. Zhang Xiaojing not only shares the life of those punishers who have faced the harm of the social order, have been controlled by the powerful overwhelmed. So, the game itself is also a full-bodied portrayal of the main character's humanity, and the image of heroism is baked very successfully.

6. CONCLUSION

Te handheld game *Twelve Hours of Chang'an* uses his rich imagination, creativity and knowledge of history to create two very fantastical and special spiritual worlds. In the original article, the virtual overhead history and Chang'an city as a chessboard-like global view, the game plot setting reproduced the real historical plot and human nature of the hundred states. For individual heroism, the game is very much appreciated and portrayed very full. Highlighted a heroic spirit of fighting in the face of adversity. From a small character, to find that spirit of fearlessness and struggle to fight. In terms of the game's plot setting, good eventually triumphs over evil - the crisis in Chang'an City is finally resolved. But the hero does not have anything he wants to covet, so the great and vast spirit of the game's protagonist is shown on the cell phone screen to inspire many players all. In terms of content and plot structure, the game not only incorporates the characteristics of the American drama into the traditional Chinese ancient style of production techniques, but also promotes individual heroism. This game is undoubtedly a very excellent work, and has a certain status in the history of Chinese e-Sports development [6].

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Diverse Needs VS Supply Structure: the development Prospect and Countermeasure of Physical Health Industry of Middle and Old Age in Shanxi Province

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Abstract: In recent years, the people have suffered from the novel coronavirus epidemic, and the awareness of health and how to improve immunity, and the attention of appropriate physical exercise has been greatly improved. In particular, the middle-aged and elderly consumer groups in Shanxi Province are getting bigger and bigger, and the development environment of health industry is becoming more and more mature. In Shanxi Province, middle-aged and elderly sports and health is an emerging form of sports and health industry in recent years, with a broad consumer group and gradually diversifying the industry. This paper discusses the development of middle-aged sports and health industry, analyzes the development advantages and prospects of the middle-aged and elderly sports and health industry in Shanxi Province, and makes corresponding countermeasures and analysis of the problems existing in the health industry.

Keywords: Middle-aged and elderly sports; Development prospect

1. INTRODUCTION

In recent years, China's middle-aged and elderly sports market is gradually expanding, some experts predict the future of a time point in the middle-aged and elderly sports market will usher in a blowout, the whole sports market vitality. In developed countries, the elderly sports industry is known as the "silver industry", is the most competitive and development space in the aging society of the third industry, has become a very important economic pillar industry. Data show that Shanxi Province, the elderly sports and health industry market is huge. As the downward pressure on the economy eases, the spending power of the middle-aged and elderly is also increasing. Therefore, China's overall aging speed is speeding up at the same time is breeding a large middle-aged and elderly sports health industry consumer groups [1].

2. CHARACTERISTICS OF SPORTS AND HEALTH INDUSTRY OF MIDDLE AND OLD PEOPLE IN SHANXI PROVINCE

2.1 Sports and health consumption forms are diversified

Since the new era, the health concept of middle-aged and elderly groups has been constantly improved and innovated, and the number of health exercise methods learned from online information has increased. the supporting sports and health industry develops rapidly under the impetus of consumer demand. In the case of changing consumer demand, the form of sports health industry is developing towards diversification. In recent years, outdoor hiking, fitness running, Taijiquan, baduanjin and other middle-aged and elderly consumer groups love.

2.2 The overall service capacity of the sports and health industry has been enhanced

The government has also stepped up efforts to strengthen public sports services to create favorable conditions for national fitness. For example, during the national preparations for the Winter Olympics, the Shanxi government actively responded to the call of ice and snow sports and vigorously promoted the publicity of ice and snow sports. the ice and snow carnival was held in taiyuan, the provincial capital, to give more people the opportunity to learn about ice and snow sports offline [2]. In May 2021, taiyuan Riverside bicycle Path with a total length of 75 kilometers, integrating sports, leisure, commuting and other functions, was officially put into use. the construction of one million kilometers fitness track in Xiyang County, Jinzhong City, provides support for the masses to carry out sports and improve their physical quality.

2.3 The link of the sports and health industry chain was accelerated

The data show that since the 14th five-year Plan period, the economy of Shanxi Province has shown a high quality development trend [3]. As the tertiary industry, the sports and health industry of the middle-aged and elderly is mainly in the tertiary industry in the overall chain connection of the sports and health industry. It involves the primary industry and the secondary industry upward or downward, and involves multiple industries and fields of the primary industry and the secondary industry, such as the construction of stadiums and gymnasiums, the construction of sports facilities and fitness.

3. ADVANTAGES AND PROSPECTS OF SPORTS AND HEALTH INDUSTRY FOR THE AGED IN SHANXI PROVINCE

3.1 The "Healthy China" strategy has significant dividends and geographical advantages

Healthy China strategy has brought development opportunities for Shanxi Province. Shanxi is located in north China and adjacent to the Beijing-Tianjin-Hebei

Economic Zone, enjoying unique geog- raphical advantages. Shanxi Province has unlimited development opportunities. To undertake the second youth Games, the economic prosperity of the games for the diversification of sports economy industry to build development prospects. the "Second Youth Association" has promoted the idea that "sports are the driving force of health" and also mobilized the government's plan to build sports facilities [4].

3.2 "Urban Community 15-minute fitness Circle" has been innovatively developed

The People's government of Shanxi Province emphasizes that in carrying out the reform of science and technology system and mechanism, it adheres to the principle of "root" reform, "governance" reform and "system" establishment, and comprehensively promotes the reconstruction of science and technology system, operation mechanism and department function. the people's government of Shanxi Province is active in strengthening the construction of sports. the reform of science and technology system is to improve the diversified investment way of science and technology innovation and accelerate the construction of new research and development institutions, and establish the mechanism of social innovation resource leveraging, which is more conducive to the innovation and development of the sports and health industry of the middle-aged and elderly [5]. Shanxi Jinzhong, Yangquan, Yuncheng, Jincheng four cities, has realized the "urban community 15-minute fitness circle" full coverage, to provide new fitness methods for the masses.

3.3 The sports and health industry contributes to the high-quality growth of the regional economy

The favorable environment of economic development has given impetus to the development of the sports and health industry, and the sports and health industry in turn drives the economic development. the two complement each other [6]. In the near future, sports will promote the develop- ment of sports health industry, the new sports development must appear in the group to provide new vitality for sports health industry, health and sports industry must will bring sports economic dividends, so meet the needs of the mass sports is especially important to show. Competition held earlier in the community, and the university of old age have very good publicity mobilized in old people in sports enthusiasm, become the development of sports health industry resources integration is an important carrier, under the joint efforts from all over the society and the sports health resources will achieve a new round of development of fusion.

4. PROBLEMS EXISTING IN PHYSICAL HEALTH INDUSTRY OF MIDDLE AND OLD PEOPLE IN SHANXI PROVINCE

4.1 Imbalance between diversified demand and single supply mode

For a long time of sports health industry in Shanxi Province are just rely on the nation's support to the construction of infrastructure, middle-aged and old gym is provided in community sports service is given priority to, single sports activities, sports facilities, old cause for lack of sports venues, greatly limits the old way of sports [7]. There is a great imbalance between the diversified demand and the single international way. the sports and health industry in the new era is difficult to meet the strong demand for sports in the middle and old people, which affects the development of the sports and health industry.

4.2 The sports and health consumption level of the middle-aged and elderly is low under the influence of consumption concept

For a period of time, under the influence of traditional ideas, middle-aged and elderly sports and health consumption is relatively conservative. High cost performance has become one of the main factors to be considered in sports consumption. Sports spending is a cautious choice given that spending exceeds expectations. on the other hand, the vast majority of middle-aged and elderly sports consumers in Shanxi Province are still in a strong sense of health, and their lack of sports knowledge and skills will also affect the normal conduct of sports.

4.3 Professional sports consumption venues are too few, expenses are high, and there is a lack of effective supervision

There are many professional indoor stadiums, but the activities are relatively single [8]. Middle-aged and elderly people will choose other venues for physical fitness. They choose more moderate forms of exercise, such as jogging and healthy walking, because of their physical condition. In recent years, there are many gyms in Shanxi Province, but there is no classification of gyms in Shanxi Province, lack of unified management, cannot give consumers a clear guidance.

5. COUNTERMEASURES AND SUGGESTIONS FOR THE DEVELOPMENT OF PHYSICAL HEALTH INDUSTRY IN SHANXI PROVINCE

5.1 Optimize the supply-side structure of the sports and health market

The sports and health industry should follow up the demand of the middle-aged and elderly groups for sports products. An efficient market supervision system should be established. In the development of sports and health industry, we should take a diversified route and adhere to opening. the market of sports and health industry mostly depends on the support of the government. Enterprises should be encouraged to carry out independent innovation and strengthen the regulating role of the market. the development of the sports and health industry of the middle-aged and elderly cannot only rely on the state, enterprises should be based on reality, diversified development. With the help of the state, enterprises should build a healthy sports and health market that supports each other.

5.2 Strengthen policy publicity to break the traditional concept of constricting sports consumption

Looking for propaganda channels with high acceptance among middle-aged and elderly people, so as to achieve good publicity effects. In the face of the middle and old age group, the concept of healthy life should be the main way of publicity. Through reasonable health planning and guidance, to promote the formation of consumption awareness of the middle-aged and elderly, enhance their

interest in sports, because the elderly are suffering from the generation, their consumption concept is relatively more conservative and cautious. We should pay attention to the publicity of health products for the middle-aged and elderly, strengthen the publicity of products for the middle-aged and elderly, attract attention and stimulate reaction, gradually change the attitude and concept of the middle-aged and elderly consumers in the purchase of sports health products, improve the understanding of sports for the elderly, so as to promote the long-term development of the health industry for the middle-aged and elderly.

5.3 Make long-term plans for sports and health consumption venues and encourage diversified consumption forms

To ensure the quality supply of the most basic sports venues, take the popular and civilian route, more healthy rubber roads should be set up in parks or communities to help the middle-aged and elderly to choose more healthy sports modes and venues when exercising [9]. For physical condition can also be able to do the high strength of the crowd, to encourage them to outdoor sports a lot, in the case of security organized for hiking, hiking route planning and organization needs a professional groups, this also is a kind of consumption patterns, for sports by professional team to ensure security, will be in the nature, sports venues While breathing more fresh air, it also lightens the burden on the supply of sports venues. There is also a focus on the diversity of sports facilities.

6. CONCLUSION

As the economy of Shanxi Province continues to speed up and the population presents an aging trend, the development of the sports and health industry of the middle-aged and elderly is steadily improving, but the power and advantages of the sports industry itself have not been fully stimulated. At present, Shanxi Province's middle-aged and elderly sports and health industry is both opportunities and challenges. Although there are still difficulties in the development of physical health industry in Shanxi Province, its development prospects and opportunities are good. Only based on the demand of the middle-aged and the elderly for sports health products, we can enhance the cognition of sports health industry and promote the sustainable development of sports health industry.

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Research on Tourism Propaganda Translation from the Perspective of Ecological Thanatology

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Abstract: Under the new situation, tourism advertising language is not only an important window for the external publicity of tourist attractions, but also the main platform for the display of history and culture. Accurate translation of tourism propaganda can realize the display of material resources and cultural characteristics of scenic spots and attract more overseas tourists to the greatest extent. the theoretical application of state translatology belongs to a new perspective in the field of translation. It can be combined with "three-dimensional transformation" to express the main contents of the translation object, strengthen the research on the translation of tourism public signs, show a sense of the times, enhance the comprehensive national strength, and let more foreign tourists experience the ancient oriental culture.

Keywords: Ecological translatology; Tourism propaganda; Translate

1. INTRODUCTION

With the improvement of China's economy and comprehensive national strength, China has become one of the four major tourism destinations in the world and has gained a high experience. Public signs play a very important role in the scenic spot. the translation quality of tourism public signs can affect the tour experience of foreign tourists to a great extent. There are many famous international tourism cities in China, which are not only rich in tourism resources, but also need to further improve the construction of hardware infrastructure [1]. Tourism publicity can promote the inherent tourism products and intangible tourism products, extend the tourism market and maintain the healthy development of the tourism industry. Tourism advertising language belongs to a special text type, which cannot only show the function of information, but also reflect the function of calling. on the basis of ecological translatology, we can organically combine translatology and ecology, effectively find the correlation between various factors and highlight the translator's status and initiative through the three-dimensional transformation of language dimension, culture dimension and communication dimension. In view of this, how to use eco translatology to guide the translation of tourism advertising?

2. THE GUIDING SIGNIFICANCE OF ECO TRANSLATOLOGY TO THE TRANSLATION OF TOURISM PROPAGANDA

Influenced by the perspective of global ecological thought, China's attention to ecology began to deepen gradually. the ecological dimension and other fields such as translatology also began to blend gradually, opening up the overall idea of ecological translation in the process of the transformation from human center to holistic view. Among the ideas of ancient Chinese philosophy, the idea of "unity of heaven and man" is more inclined, which needs to maintain a high unity between the translation and ecological balance. Under the concept of ecological translatology, it is also necessary to combine different language modes, strengthen the transformation and find the root of development [2]. In the process of national development, human language needs to find its internal relevance, increase interactive construction, and find the balance and stability that needs to be achieved. From a theoretical perspective, translation ecology needs to find a suitable development path from the dimensions of language, culture and communication. In the course of the development of the tourism industry, tourism propaganda clearly and generally expresses the unique charm of the scenery in a concise way. Reflect the comprehensive cultural characteristics and maximize the public's yearning for scenic spots. In addition, on the basis of increasing influence, it is also necessary to maintain the strength of tourism publicity, improve memory, increase the understanding of cultural connotation, expand attraction, and implement extension in a deeper direction [3]. In general, the number of words in tourism advertising language is limited, which cannot only reflect the beauty of language, but also improve the strength of publicity. the tone needs to be coordinated and the rhythm needs to be clear. From the way of expression, it can be reduplication, reduplication, adverb rhetoric, numbers, synonyms, etc. no matter which way to choose, we need to maintain a clear logical thinking and publicity way.

From the traditional perspective, it is necessary to integrate the thinking logic, start from the formal expression of language, pay attention to the language transformation such as phrase, syntax and vocabulary transformation, improve the skills of translation, ignore the characteristics of language itself, and reduce the lack of translation practice. In the milestone of tourism publicity, we also need to spread China's natural material culture and implement language and spiritual culture from the perspective of ecology. Ecology is more inclined to the combination of language, culture and ecological environment. In the transformation and form of language, we need to meet the development characteristics of scenic spots, find a reasonable way of understanding, and improve the accuracy of tourism publicity translation based on different dimensions.

From the perspective of tourism advertising language, it can basically show three different characteristics. First, it shows the simplicity and excellence of the language. For example: Chengdu, a city you don't want to leave when you come! Chengdu, a city let you be reluctant to leave! From here, we can intuitively see that when using this

tourism slogan, the language is relatively simple and catchy. It not only presents regional resources or products to everyone's vision, but also plays the role of eye-catching language and effectively forms a local tourism business card [4]. Secondly, the translation of tourism advertising language needs to reflect strong local characteristics. For example, Gaoyuan pearl, blue treasure Lake -- China Qinghai Lake, is to present the regional characteristics to everyone's vision in combination with reality. At this time, the translated content is pearl on plateau, magic blue lake_ Qing Hai Lake, China. It can be seen from here that when translating, it is to move directly to the theme from an ecological perspective and reasonably reflect the regional characteristics, so that more audiences can be concise and clear. Finally, it embodies a strong language appeal. In other words, it can give you more visual impact in the real description, meet the current development interest, and lay a good foundation for future development [5].

3. THE TRANSLATION PATH OF TOURISM PROPAGANDA FROM THE PERSPECTIVE OF ECOLOGICAL TRANSLATOLOGY

3.1 Adaptive transformation of language dimension

There are many factors that need to be considered in the translation ecological environment. There are many linkage among these factors, which are a collection of many factors that restrict the translator's best adaptation and optimal choice. Public signs are a special stylistic form with prompt function, involving a wide range of contents, most of which need to be applied to scenic spots. In general, the public signs of scenic spots embody strong functions such as indication, hint, restriction and strength, which can provide tourists with strong convenience in a strange environment. Therefore, in translation, we not only need to break the language barriers, but also need to attract more tourists, maintain the brand image of the scenic spot, interpret the historical and cultural connotation, achieve the dissemination of culture and improve the cultural soft power. From the perspective of language dimension, it mainly refers to the translator's transformation of language forms in the process of translation. In the course of practice, translators need to consider the overall ecological environment in combination with the actual situation. Both Chinese and English belong to different language systems. No matter from the language level or from the translator's point of view, they need to make corresponding adjustments in vocabulary and grammar to minimize the insufficient consideration of language dimensions [6].

When constructing the ecological language environment of translation, the biggest foundation is word selection. Especially in the translation of some tourism public signs, it is necessary to make a reasonable overall planning based on word selection to reduce the problem of inaccurate word selection. In other words, the translator needs to be an adaptation of the ecological environment, and then he can make a reasonable choice of the content to be translated in the "identity" of the translation ecological environment. the thinking of Chinese and English is different. In translation, we need to maintain integrity, expand the adjustment of vocabulary and increase the transformation of language forms. For example, in a scenic spot, "medical assistance point" becomes "medical assistance point" after translation. It can be seen here that assistance emphasizes "assistance" and "aid" has "rescue and rescue". "Site" rather than "point of view and focus", if you want to achieve accuracy, you need to change the original way of thinking, improve the accuracy of translation, and transform the language form of the ecological environment into a medical aid station [7]. From the perspective of Chinese and Western culture, there are not only aesthetic differences, but also psychological characteristics. We need to strengthen the construction of rhetorical effect with the sentence pattern of structure and parallelism. When Westerners speak, they are bold and direct, and their thinking logic is concise and clear. When translating, we need to pay attention to the characteristics of westerners and increase the transformation of language habits in the way of English tourists. When translating western Zhejiang languages such as "creating first-class service and welcoming guests from all over the world", we should take into account the language habits of British tourists. We should not only focus on word translation, but also translate them with different thinking in English on the basis of the central idea. To maintain a cautious attitude, we mainly need to consider vocabulary and syntax, adapt to the current ecological environment to the greatest extent, and develop towards the ecological balance of the translation.

3.2 Adaptive transformation of cultural dimension

Cultural differences are one of the obstacles in the process of translation. From the perspective of language, it is not only a kind of cultural information symbol system, but also needs to be combined with reality to achieve the main role and value of information transmission. When translating public signs, translators also need to find dynamic logical relations according to cultural content and characteristics, publicize Chinese culture and pass Chinese culture to more people. Choosing appropriate translation methods according to different occasions, on the one hand, we need to retain the translator's language and cultural elements, on the other hand, we need to consider the cultural background of the translated language. In different public signs, the English version is generally used. At this time, translators need to respect the thinking mode of the audience [8]. Pay attention to the nature and content differences between the source culture and the target culture, maintain reasonable standardization, maintain the practicability of culture, and realize the transformation of language dimension. For example, in tourism public signs, we can often see public signs such as "the elderly", "the elderly first" and "the elderly over 70 are free of charge". These public signs not only reflect China's traditional virtue of respecting the old and loving the young, but also need to respect the cultural understanding of Westerners to a great extent. If at this time, translate these contents into "old"

"People" will bring great discomfort to Westerners. Calling "old" in person is not only an impolite behavior, but also brings unpleasant problems. At this time,

translators need to think about these problems and translate them into "senior cities" in combination with practice. In this way, we cannot only understand the cultural background knowledge, but also find the differences between the original language and the translated language on the basis of the ecological environment, establish the thinking of cross-cultural communication to the greatest extent, eliminate the cultural barriers in different regions, and meet the current development path [9].

3.3 Adaptive transformation of communication dimension

The adaptive choice and transformation of communicative intention in the process of translation, that is, the translator should not only think about the transformation of language information, but also complete the transmission of cultural connotation and find the focus of communicative content. Think about the cultural background of the audience and improve the acceptance ability of the public. Translation is not only the transformation of two languages, but also the communication between two cultures. At this time, it is necessary for relevant personnel to adhere to the main idea of the scientific outlook on development, find appropriate translation methods, and finally achieve the main purpose of communication. In these advertisements, whether it is life, production, life and ecology, it is necessary to show the information transmission function of public signs in the specific communication intention. Translators also need to think about the communication dimension reasonably, combine the language dimension with the cultural dimension, find the appropriate way of thinking, implement the construction of cultural background and establish their own language expression habits under the transformation of different language thinking. Eco translatology advocates the integration of translatology and natural ecology. In the process of tourism advertising language translation, we need to not only consider the dimensions of language and culture, but also improve adaptability on the basis of communication dimension, establish appropriate transformation methods, meet new development needs and guidance methods, maximize our cross-cultural communication ability and strengthen the construction of cultural heritage, Implement the construction of their own responsibility literacy, in the communication dimension, let tourists truly understand the meaning of tourism advertising language, pay attention to whether the communication intention in the original text is reflected in the translation, and present the four main functions of instruction, reminder, restriction and compulsion to everyone's vision [1] 0. For example, in the course of practice, the audience can often see such words as "green grass, show mercy at the foot" and "make the grass greener and the mood more beautiful". If you want to use public signs to establish a communicative dimension, you can translate it into "keep off the grass" in combination with unity. For example, "no smoking" signs can be seen in many scenic spots. If it is translated directly according to the meaning, the content will be particularly stiff, it is difficult to achieve benign communication and cannot meet the needs of ecological translation. At this time, it can be translated into "no smoking". This way of translation cannot only ease the atmosphere, but also meet the needs of politeness construction. In the translation of tickets for the elderly, if it is literally translated into "free for old people over 70 years old", it will give people a sense of impoliteness, and even backfire. At this time, the translator needs to change "old people" to "senior citizens", which can achieve twice the result with half the effort.

4. CONCLUSION

With the progress of society, tourism has opened the door for the world to understand China. Tourism public signs belong to the main "window" of foreign cultural publicity. At this time, translators need to flexibly use translation methods according to the "translation adaptation and selection theory" of ecological translatology, combined with the transformation of different dimensions of language, culture and communication, so as to present Chinese cultural characteristics more intuitively to everyone's vision. Adapt to readers' cultural habits, help readers understand the translation and express the original meaning and intention. Translators also need to constantly improve their cross-cultural communication ability, improve their translation level through continuous learning, and maximize their cultural and professional quality.

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The Innovation Strategy of Chinese-Foreign Cooperation in Running Schools in China's Double First-Class Universities

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Abstract: Chinese-foreign cooperation in running schools, as one of the important ways to implement the opening up of higher education in China, has a direct impact on and contributes to the discipline layout of "double first-class" construction, the construction of international faculty, the cultivation of international talents, the collaborative innovation of scientific research, internal governance and the construction of quality assurance system. the proposal for the overall plan of "double first-class" construction is an important driving force for China to stride forward from a big country to a strong country of higher education, and it also brings new opportunities for the development of Chinese-foreign cooperation in running schools. the double first-class universities should closely follow the construction tasks and requirements and actively promote the construction of high-level Chinese-foreign cooperation in running schools.

Keywords: Double first-class universities; Internationalization; Chinese-Foreign Cooperation; Strategy

1. INTRODUCTION

Chinese-foreign cooperation in running schools is a form of transnational education that serves global development, trains global citizens and leaders, and solves the problems and challenges facing all mankind. Since the 21st century, transnational education has developed vigorously, and China plays an important role in it. Among the QS Top 100 Chinese and foreign universities, a total of 34 have cooperated with China in running schools or projects. These universities have set up four independent legal institutions, 15 non-independent legal institutions and 63 cooperative programs with China. [1]

The construction of "double first-class" is a national strategy to promote the comprehensive strength and international competitiveness of China's higher education. At present, there are 42 world-class universities and 95 world-class disciplines. the overall goal of their development and construction is compliant with the concept of Chinese-foreign cooperation, which pays attention to enhancing the international vision of scientific research and innovating the university-running concept. At the same time, the internationalization level of universities is an important evaluation index to measure the international exchanges and scientific research development of universities in the construction of "double first-class".

2. THE CURRENT SITUATION OF CHINESE-FOREIGN COOPERATION IN RUNNING SCHOOLS OF DOUBLE FIRST-CLASS UNIVERSITIES

By the end of 2019, there were nearly 2, 300 Chinese-foreign cooperative educational institutions and programs at various levels approved and recorded by the Ministry of Education in more than 600 colleges and universities across China, including nearly 1, 200 institutions and programs at or above undergraduate level. the cooperation partners involved nearly 40 countries and regions and more than 800 foreign colleges and universities. More than 200 majors in 11 disciplines, including science, engineering, agriculture, medicine, law and education are involved in the cooperation. Each year, Chinese-foreign cooperatively-run universities and programs enroll more than 150, 000 students, 2 million graduates and more than 600, 000 enrolled students, of whom more than 90 percent receive higher education. At present, Chinese-foreign cooperation in running schools has entered a new stage of high-level and exemplary development.

Among the 137 "double first-class" universities, more than 86% have Chinese-foreign cooperative education institutions or projects. the "double first-class" universities have 45 Chinese-foreign cooperative educational institutions and 189 Chinese-foreign cooperative educational projects, accounting for about 25% of the total number of Chinese-foreign cooperative educational institutions and projects at the undergraduate level, making them the main force in Chinese-foreign cooperative education. the top five provinces by number of projects were Jiangsu, Beijing, Henan, Shanghai and Heilongjiang. [2]

The cooperative partners of the undergraduate Chinese-foreign cooperative education projects of the "double first-class" universities are western countries with developed higher education, including the United States, Britain, Australia, France, and Germany. the number of cooperative programs with the universities of the above five countries accounts for about 80% of the total undergraduate cooperative programs of the "double first-class" universities. Other countries and regions with a large number of cooperative university-running projects are mainly located in countries and regions with higher education levels in Europe, America and Asia, such as Ireland, Canada and South Korea. Among the Chinese-foreign cooperative educational institutions and programs under the "Double First-class" construction, about 20% of the foreign cooperative institutions are among the top 200 universities in the QS World University Rankings. [3]

3. THE PROBLEMS FACED BY CHINESE-FOREIGN COOPERATION IN RUNNING SCHOOLS:

3.1 Normalization needs to be strengthened.

Although China has issued regulations on Chinese-foreign Cooperation in Running schools to regulate Chinese-foreign cooperation in running schools, clear guidance and operability was lacked in the implementation of universities. Some universities blindly apply for projects but fail to implement them in terms of enrollment, tuition and curriculum design. Some intermediary agencies also took the opportunity to participate in the arrangement of Chinese-foreign cooperation in running schools to seek personal gains, which seriously damaged the brand of Chinese-foreign cooperation in running schools. Most of the unplanned Chinese-foreign cooperative education projects adopt the form of outsourcing, resulting in confusion in the management system, which leads to the phenomenon of illegal enrollment and excessive issuance of diplomas in some universities. Some projects in the plan also have management loopholes due to the lax management of major setting, enrollment and export colleges. In addition, some foreign educational institutions cooperate with a number of Chinese universities to run Chinese-foreign universities, resulting in "chain stores", which has a negative impact on the standardization of Chinese-foreign cooperation in running schools and the promotion of its sustainable development. This is contrary to the original intention of Chinese-foreign cooperation in running schools.

3.2 The quality of imported foreign educational resources needs to be improved.

Top foreign higher education institutions are still cautious about entering China's education market in the form of Chinese-foreign cooperation in running schools. These international first-class universities usually have rather strict examination and approval system, and it is difficult for ordinary Chinese universities to carry out cooperation with such first-class foreign universities. Some foreign universities with first-class teaching and scientific research level fail to bring their superior majors into cooperation when they cooperate with Chinese universities, which also leads to the decline of cooperation quality. Under the influence of the global economic situation, the cooperative educational projects of small language countries in Europe and Asia with higher "cost performance" are on the rise. Driven by economic interests, some foreign higher education institutions with low level and limited influence seek cooperative education opportunities in China, while domestic institutions sometimes know little about their partners. Such cooperation will inevitably have a negative impact on the overall level of Chinese-foreign cooperation in running schools

3.3 The level of running schools is single and the majors are relatively concentrated.

In terms of university-running mode, Chinese-foreign cooperative university-running projects at the undergraduate level account for 80% of the total university-running projects. In terms of education programs, the programs mainly focus on engineering, business, media, education, design and other majors. Among the top 10 majors with the largest number of Chinese-foreign cooperative universities in "double-class" construction universities, the top three majors are mechanical design, manufacturing and automation, finance and civil engineering. Besides, the number of universities for electrical engineering and automation, computer science and technology is also among the best, which reflects the characteristics of the current economic and social development in China. There is a high repetition rate of Chinese-foreign cooperative programs in colleges and universities, and there is imbalance between supply and demand in individual programs.

3.4 Uneven geographical distribution

The resources of Chinese-foreign cooperation in running schools are still concentrated in the economically developed eastern coastal areas such as Shanghai and Guangdong, and in the cities with more intensive higher education resources such as Beijing, Xi 'an and Wuhan. of the Chinese-foreign cooperatively-run universities approved by the Ministry of Education, more than 60% are located in the above areas. However, in some areas where economic education development is relatively backward, there are few Chinese-foreign cooperative university-running projects, and some provinces even have none. the premise of implementing Chinese-foreign cooperation in running schools is that both parties have substantial cooperation basis. For example, different forms of cooperation projects have been carried out for many years or there are frequent exchanges between the cooperative sides. Due to the lack of funds, backward infrastructure, poor geographical and natural conditions and many other difficulties in developing international exchanges and cooperation in the economically backward areas, they are not equipped with the conditions for Chinese-foreign cooperation in running schools.

4. THE FUTURE DEVELOPMENT DIRECTION

4.1 Strengthen cooperation with the world's top famous universities and play a leading role.

"Double-first-class" construction of universities should make overall plans for running schools, make clear the orientation of running schools, and give full play to the role of radiation. Based on discipline construction, it is the fundamental path to build high-level Chinese-foreign cooperation in running schools, and promote the discipline construction and level improvement of colleges and universities. At the same time, we should actively absorb and learn from the advanced university-running ideas and management models of foreign universities or educational institutions, promote reform and development through opening up, and constantly innovate and improve the system and mechanism of Chinese-foreign cooperative universities. "Double-first-class" universities should seize the historical opportunity, conform to the trend of internationalization of education, focus on the resources of famous universities, benchmark the first-class level, strive for the top 100 high-quality educational resources in the world, make further breakthroughs at the level of existing partners and expand the international influence. the open teaching mode, diversified training system,

international training scheme and other university-running experiences from cooperative education will lead to the improvement of international university-running level and increase the vitality of university-running.

4.2 Optimize the professional structure design

The construction of "double first-class" universities should make use of the advantages of multi-majors and multi-disciplines to combine the curriculum content of foreign universities with Chinese characteristics, so as to enrich the curriculum content of universities and make the curriculum content innovative and developed with an international vision. Increasing the majors of humanities and social sciences will increase the number of majors in Chinese-foreign cooperative education in universities, make the structure more reasonable, and diversify the exchanges between Chinese and foreign courses. Based on the learning development goals and the actual needs of students, on the basis of the university's original major, the universities should focus on majors and social development, improve the recognition of the major, and create a good brand and characteristics; from the aspects of discipline orientation, talent training objectives and employment destination, the number and setting of majors should be considered in an overall way to avoid making the students Jack of All Trades. [4]

4.3 Improve the standards of cooperative education and improve the quality assurance system

"Double-class" construction of Chinese-foreign cooperative education in universities should strengthen the standardized management of cooperative education, establish and improve the long-term mechanism of cooperative education, and promote the healthy and sustainable development of cooperative education. Universities need to pay attention to the two guarantees of curriculum and teaching. In terms of curriculum, it is necessary to deal with the relationship between "internationalization" and "localization" by introducing high-quality foreign courses and textbooks, and fulfill the requirements of the Times to establish a university rooted in China. In terms of teaching, teachers should be guided to devote themselves to teaching without distractions, and teachers should be supported to do well in scientific research so that they can feed teaching with high-quality scientific research. Universities should give full play to the platform and radiation of cooperation in running schools, strengthen overall coordination and stable cross guidance, set up the education internationalization model, and help enhance the level of university education internationalization; they should strengthen the top-level design and induce the Chinese-foreign cooperation in running schools into the overall plan of international and exchange; universities should plan and arrange Chinese-foreign cooperation management system and quality evaluation system in advance to improve their own educational level. [5]

Under the background of "double-first-class" construction, Chinese-foreign cooperative education should further optimize the professional structure design of Chinese-foreign cooperative education [6], build a talent echelon training mode, attract talents to gather, improve the level of Chinese-foreign cooperative education, and improve the quality of Chinese-foreign cooperative education in multiple dimensions and ways. the concept of Chinese-foreign cooperation in running schools coincides with the internationalization index of "double first-class", and contributes to the modernization of China's higher education by innovating the way of higher education development. Chinese-foreign cooperation in running schools should seize the opportunity, give full play to its radiation effect, introduce the natural advantages of world-class universities and first-class disciplines, and enhance the international competitiveness of China's higher education.

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Cultivating College Students' English Pronunciation Awareness and Improving Their Reading Ability

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Abstract: College education is an important part of China's education system, but also for the country and society to cultivate high-quality, strong skills of the key way, so our country has always maintained a high level of attention to the development of college education and support. Among them, in terms of the teaching research of college English majors, it is advocated to focus on cultivating students' English pronunciation awareness and improving students' reading ability. on the one hand, it is emphasized to strengthen students' quality of Learning English and on the other hand, to help students to effectively use English for social practice. Based on college students' English phonetic awareness and reading ability to ascend as the research object, first outlined what phonetic consciousness and reading, then expounds the problems of undergraduate students' phonetic consciousness, finally summarizes a series of phonetic consciousness training and the reading ability promotion strategy, hoping to provide effective help for college English major teaching reform.

Keywords: College Education; College Students; English Phonological Awareness; Reading Ability

1. INTRODUCTION

Compared with junior and senior high school English, college English is characterized by more reading, richer professional vocabulary and broader knowledge, which means that college students are faced with more severe pressure in English learning. However, as an important element in English learning, English phonological awareness and reading should be highly valued by teachers and students to ensure that students can lay a solid foundation for learning English and applying English knowledge in practice. Therefore, in college English teaching, teachers, as the organizers, designers and practitioners of teaching work, should combine the characteristics of college English and the learning needs of college students, and constantly innovate the teaching methods of English pronunciation and reading, so as to create an efficient, rich and scientific learning environment for college students.

2. PHONOLOGICAL AWARENESS AND READING

Phonetic consciousness is an important composition in linguistic elements, namely, individual sound structure and consciousness and the application of oral English, both spoken Chinese and English spoken language has a close relation with the phonetic consciousness, according to the related research data show that hear the words sound is normally made up of smaller than word units, such as the syllable, the initials, finals, phonemes, etc. In the long-term Practice of English teaching, it can be found that students with strong phonological awareness tend to have better language learning ability, standard English pronunciation and outstanding English reading ability [1]. on the other hand, students with weak phonological awareness not only have difficulty in English learning, but also have unsatisfactory English practice ability. Therefore, it is of great significance and value to focus on cultivating students' English pronunciation awareness in college English teaching.

Phoneme is the smallest and most basic unit makes a speech, and mainly includes: In the process of phonetic consciousness cultivation could be divided into several reasonable complete voice phonemes, difference between effective stress and intonation, the different phonemes success of continuous speech, and so on, so the phonetic consciousness there are closely connecting with the practice English application. Taking the relationship between English pronunciation awareness and English reading as an example, English reading is one of the important forms in English teaching, which cannot only expand students' English cultural vision and English thinking, but also help students strengthen their English expression, organization, understanding and other abilities. Pronunciation is the basic condition of language expression, so it is naturally beneficial to strengthen students' reading level and ability to cultivate students' English pronunciation awareness, and finally make students get a qualitative leap in learning, application and development of English major.

3. PHONOLOGICAL AWARENESS OF UNDERGRADUATE STUDENTS

In the form of Chinese character learning knowledge of English is a lot of basic norm of elementary and high school students, while the method can achieve a certain amount of learning (can help students to remember English words), but for the training of the students' phonetic consciousness caused a huge obstacles (can correct a single phonetic pronunciation, but not correct pronunciation words), Ultimately, it seriously affects students' English practice ability [2]. of course, the weak English pronunciation awareness of junior and senior high school students is also closely related to the way of English education in junior and senior high school, that is, there is no systematic training for pronunciation awareness. the following is a detailed analysis of the problems existing in college students' English phonological awareness from two aspects: First, many

students have incorrect pronunciation positions in the process of pronouncing English unit sounds. Take the unit sound "/ I: /" as an example, similar pronunciation "yi" can be found in Chinese pronunciation. Through the comparison between English and Chinese pronunciation, it can be found that the mouth shape of English pronunciation is flatter than that of Chinese pronunciation, and the position of English pronunciation is more forward. It can be seen that English and Chinese have different sound effects in the pronunciation of "/ I: /" and "yi", but due to the lack of phonetic awareness of students, they often ignore them, which leads to accurate pronunciation in the process of independent pronunciation. Once applied in a specific language environment, the problem of leaning toward Chinese will occur. Second, students are not standard enough in pronouncing back vowels. Unit in English the sound "/ a/", for example, you can find the similar pronunciation in Chinese is" o ", by comparing the similarities and differences between the two, it is not difficult to find Chinese pronunciation more, when they compare to English development, because the student in the English learning of the past developed a habit forms of Chinese development, leading to the situation of English vowel pronunciation is not standard, This leads to significant problems in students' English expression. Like "How are you? Oral English, which is the earliest and the first contact of Chinese students in oral English, is also a common greeting sentence in foreign countries, in terms of the current English pronunciation of college students, reflects a significant problem of non-standard, and the reason lies in the incorrect "/ A/" sound in the sentence. Combined with the above content is not hard to find, college students in the aspect of English phonetic consciousness is obvious, which requires teachers in English teaching work, on the teaching direction, teaching mode and teaching content are changed to help college students to master good command of English phonetic consciousness, then late for college students of English learning and lay a solid foundation of English application.

4. STRATEGIES FOR IMPROVING PHONOLOGICAL AWARENESS AND ENHANCING READING ABILITY

Based on English phonetics closely connected - between consciousness and English reading ability of college English teaching can promote the phonetic consciousness training students' reading ability promotion strategies to promote and encourage students to blend in phonetic consciousness of English reading, and ensure that students can through English reading constantly strengthen the awareness of their own voice. First, teachers need to adjust the direction of English teaching, the students of English phonetic consciousness is set as the teaching center of gravity and the core, combined with the characteristics of English phonetics teaching and phonetic consciousness of college students themselves, the design of the reasonable scientific English teaching methods, process and content, and thus build a phonetic consciousness training environment for students. Secondly, teachers need to constantly innovate the way and form of English teaching, and try their best to help students not only understand and master basic English knowledge in daily learning, but also systematically cultivate their phonological awareness. For example, teachers can teach English using phonics, a method of English that was developed in England in the late 16th century and reinforced and popularized in the United States in the 1790s. the effective application of phonics can help students distinguish the relationship between letters and English phonetics successfully, and help students master the spelling rules of English words in the process of spelling, and then gradually form a good English phonetics awareness. In addition, teachers have to phonetic consciousness cultivation of English reading fusion, in rich encourage students to read in deepening the understanding of the phonetic consciousness and grasp, and skilled application of phonetic knowledge in English reading, so that not only can improve students' English reading level, can further strengthen the consciousness of the students' voice.

5. CONCLUSION

College students' English phonetic consciousness cultivation and improve reading ability, and English practical application ability strengthen discipline and English literacy cultivation, so teachers should be combined with the characteristics of English teaching and students' actual situation, the way and the pattern of English teaching is committed to innovation, aims to create for students to adapt to English learning environment, efficient and solid.

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The Spirit of Model Workers Leads the Ideological and Political Exploration of Environmental Design Courses

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Abstract: With the development of higher education, the ideological and political education in colleges and universities has become a hot topic in recent years. Students majoring in environmental design will work in social positions in the future, and their ideological and political education and the cultivation of model worker spirit are also the top priority. This paper explores the integration of ideological and political courses and environmental design courses, hoping to help the teaching of environmental design.

Keywords: Model Worker Spirit; Ideological and Political Education; Environmental Design Majo

1. INTRODUCTION

The main task of colleges and universities is to cultivate talents who meet the needs of the society, and provide more professional and high-quality talents for the society. This requires colleges and universities to attach importance to the teaching of theoretical knowledge and the penetration of ideological and political education in teaching. Under the requirements of the new era, the spirit of model workers proposed in recent years should also be integrated into the ideological and political education of Duai, and the ideological and political education and professional skills training should be implemented into the teaching goals.

2. THE IMPORTANCE OF INTRODUCING THE SPIRIT OF MODEL WORKERS INTO THE IDEOLOGICAL AND POLITICAL COURSES OF ENVIRONMENTAL DESIGN MAJORS

2.1 Cultivate the correct value orientation of students

The environmental design major has always had a tradition of school-enterprise cooperation. the environmental design major itself has a strong practicality. Students need to cultivate complete ideological and moral concepts in the school. the school should also strengthen guidance and help in ideological and political education. Students lay a solid foundation for ideological and political ethics, the current society respects the spirit of model workers, and students' excellent ideas such as love and dedication are part of the correct value orientation. In the teaching process of the environmental design major, the infiltration and cultivation of the spirit of model workers should be fully carried out in the classroom of ideological and political education, so as to help students establish a complete outlook on life and correct value orientation, and better in the future work process. Get into work.

2.2 Cultivate talents with both ability and political integrity

In the process of school-enterprise cooperation, the environmental design major is also carrying out teaching reforms, constantly improving its own teaching system, and paying more attention to students' operational expertise. In response to the current market demand, schools are also teaching Continue to strengthen ideological and political education. In the current era, it is also necessary to cultivate the spirit of model workers, strengthen the control of the time link of school-enterprise cooperation, cultivate students into talents with both ability and political integrity, and help students combine the penetration of moral education with cultivation. In the teaching of professional knowledge and skills, it is not only necessary to cultivate students' love and dedication, but also to strengthen the training of students' professional knowledge level [1].

2.3 Break the traditional single teaching method

The professional courses of environmental design are offered by colleges and universities according to social needs, which makes students who choose this major to study must have a complete level of professional knowledge. In this process, schools can also reform traditional classroom teaching methods, improve teaching methods based on the practicality of environmental design majors, and break the traditional teaching mode of relying only on textbooks for professional courses. It is also necessary to make improvements in the development of ideological and political courses, so that students can change from passive learning to active learning, strengthen the construction of ideological and political courses, strengthen the penetration of the spirit of model workers, strengthen students' quality education in teaching, and meet the needs of education reform, to promote the cultivation of ideology and morality in the process of school-enterprise cooperation, and help students achieve the teaching goal of "unity of knowledge and action".

3. THE STRATEGY OF INTRODUCING THE SPIRIT OF MODEL WORKERS INTO THE IDEOLOGICAL AND POLITICAL COURSES OF ENVIRONMENTAL DESIGN MAJORS

3.1 Reasonably design the ideological and political evaluation model

The evaluation of ideological and political teaching in professional courses is an important measure to introduce the concept of ideological and political education into professional courses. In the teaching of professional courses of environmental design, students can comprehensively inspect and evaluate their learning

attitude, work attitude, professional level, etc. through evaluation. In the evaluation, we should not only pay attention to students' past achievements, but also pay attention to students' understanding of theoretical knowledge. There should also be a set of exclusive evaluation system for the training degree of the students' model worker spirit, whether the application ability and whether the students have the correct three views and value orientation in the practice process. In terms of teaching design, it is necessary to fully clarify the teaching objectives, integrate ideological and political education and the cultivation of the spirit of model workers into the teaching objectives, and permeate every link of the teaching. In ideological and political courses, the teaching goal is the beginning of education, and the evaluation is the stage of acceptance of teaching results. When optimizing teaching evaluation, it is also necessary to clarify the teaching goal. Teachers should give full play to their role in evaluation and stimulate students' national pride and job pride.

3.2 Actively innovating the concept of ideological and political teaching

Environmental design courses have gradually been opened in major colleges and universities, but this professional course has different teaching contents in different colleges and universities, which requires teachers to actively innovate and change when integrating ideological and political teaching, and strive to integrate ideological and political courses. the level of importance has been raised to the same level as professional courses. on the one hand, the three views of college students have been basically formed, but they still need to be properly corrected and guided. on the other hand, teachers also need to update their own teaching concepts and strengthen the improvement of teaching methods in the process of ideological and political teaching. It is possible to make good use of the well-developed Internet information technology in modern society, use network platforms, micro-courses and MOOCs as tools, and use the teaching mode of flipped classroom.

In the improvement of teaching methods, we can also fully consider the way of promoting learning through competition, encourage students to participate in national design competitions, or organize some design competitions by schools themselves. Students build the spirit of model workers and teamwork awareness, and at the same time can stimulate students' innovative awareness. After the game, teachers' evaluation and summary can also promote students' self-improvement and supplementation, and help students find and fill in gaps [2].

3.3 Deepening the content of ideological and political education courses

First of all, many of the professional courses of environmental design are teaching contents that can be integrated with socialist core values. In professional practice teaching, teachers need to actively introduce the content of ideological and political education into the classroom and permeate every aspect of teaching. In the link, students are guided to have excellent qualities such as knowing the law, abiding by the law, being diligent and brave, and the spirit of craftsmanship and model work. Focus on the organic combination of professional teaching and moral education, and create more opportunities for students to apply and internalize theories through the development of social practice activities. In addition, teachers should set an example and use their own actions to set a good example for students in this process. Model, strengthen the ideological and political cognition of college students and the foundation of the spirit of model workers.

3.4 Strengthen teaching practice

The ideological and political education of students majoring in environmental design relies too much on the problem of ideological and political courses to be effectively solved. the ideological and political education is fully covered by professional teaching, the absorption effect of students is better, and the ideological and political education effect business has been strengthened. Through the reasonable combination of ideological and political courses and environmental design majors, the problems of the original ideological and political teaching theories such as rigidity and dullness have been improved, the learning motivation and interest of college students have been mobilized, and the effectiveness of ideological and political teaching has been optimized.

Through the practice of ideological and political courses, problems such as the separation of ideological and political teaching from the development of professional fields and social needs have been improved. While deepening students' understanding of professional ability and knowledge, master the requirements of professional ethics, norms and responsibilities, and improve the ability of college students to adapt to future positions. With the in-depth implementation of ideological and political courses, environmental design teachers have ushered in new challenges and opportunities, mobilized teachers' sense of responsibility and mission, and improved environmental design teachers' scientific research ability and practical teaching level.

4. CONCLUSION

Ideological and political education in the professional courses of environmental design is an important topic, which requires major universities to pay more attention. At the same time, in order to comply with the development of the new era and the needs of the environmental design profession itself, schools should also attach importance to students' ideological and political training. Cultivating the spirit of model workers and creating more talents with both political integrity and talent with excellent quality and professional and technical level for the society.

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The Role of the Inheritance and Development of Traditional Culture in Urban Construction

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Abstract: With the development of China's social economy, people's living standards continue to improve. While people's material life is met, they continue to pursue the needs of spiritual level. In the development of traditional culture, China has different cultural development policies at different stages of development, which delays the inheritance and development of traditional culture to a certain extent, resulting in the risk of losing many excellent traditional cultures. With the development of China's socialist modernization, people's aesthetics and lifestyle have been greatly changed, It also brings some challenges to the development of traditional culture. This paper introduces the development and current situation of traditional culture in detail, analyzes the important value of traditional culture in social development, and expounds the positive role of traditional culture inheritance and development in urban construction, so as to promote the effective inheritance and sustainable development of China's traditional culture, increase the cultural charm and charm of the City, and enhance the popularity of the city, Create a unique urban cultural brand.
Keywords: Traditional Culture; Succession; Development; Urban Construction

1. CURRENT SITUATION OF TRADITIONAL CULTURE

1.1 embarrassment of traditional culture in the relationship between ancient and modern

In China, traditional culture is relatively slow in the actual development, and people have a large deviation in the cognition of traditional culture, which also leads many people to treat traditional culture with different eyes and attitudes. Some people deeply understand the charm of traditional culture. Some people see the dross of traditional culture and hope to inherit and develop traditional culture through simple retro, and remove the content of traditional culture sharply. These are one-sided and unscientific, which is not conducive to the inheritance and development of traditional culture in modern society. What's more, blindly worship traditional culture and inherit and develop traditional culture without screening and screening. In addition, some people hold foreign culture in high esteem and believe that western culture has high advantages. This blind psychology also affects the inheritance and development of traditional culture to a certain extent [1].

1.2 The development of traditional culture is not enough to compete with foreign culture

Although China's traditional culture is broad and profound and has a long history, it is rigid in the actual inheritance and development and lacks a certain sense of innovation, which requires us to seek cultural content more suitable for social development in the inheritance and development of traditional culture. For example, in China's urban development, the deterioration of the environment has a great impact on people's physical and mental health, the concept of harmonious coexistence between man and nature in Chinese traditional culture has become an important guiding ideology in modern urban construction. In addition, in recent years, the global learning wave of Chinese traditional characters has also made Chinese traditional culture gradually known all over the world. However, compared with the dissemination and influence of western culture, the influence of Chinese traditional culture is still weak. When Chinese traditional culture goes abroad and has a stronger influence, it needs the integration and innovation of Chinese traditional culture and Western culture, so as to realize the synchronous development of traditional culture and modern society.

2. THE IMPORTANT VALUE OF TRADITIONAL CULTURE IN SOCIAL DEVELOPMENT

2.1 value of traditional cultural spirit in society

There are so many traditional cultures in China that it is unrealistic to carry out comprehensive research and inheritance. Therefore, in the actual inheritance and development of traditional culture, it is necessary to clarify the values of the development of the times, extract the contents of traditional culture in line with the value and spirit of social development, and integrate it with modern social development, so as to reflect the social value of traditional culture [2]. In the development of Chinese traditional culture, the influence of cultural spirit on people has the characteristics of subtle influence, which is also an important guiding ideology in China's thousands of years of historical development. This spirit can effectively stimulate people's social productivity and creativity and play a positive role in promoting the development of urban construction.

2.2 promote tourism development and increase residents' economic income

In the development of urban construction, the tourism industry, as an industry that effectively drives the per capita GDP and increases employment, has also made some achievements in its development. Therefore, in urban construction, we should continue to strengthen the inheritance and development of excellent traditional culture, strive to develop tourism projects with traditional cultural characteristics, and fully drive the development of urban economy. For example, cities with famous mountains and lakes can improve the speed of urban economic development and increase jobs by developing scenic spots and producing characteristic traditional cultural products, so as to effectively increase the economic income of urban residents and improve their

living standards and happiness.

2.3 enhance cultural brand effect and develop characteristic industries

In some cities with rich traditional culture, we can carry out some cultural festivals to enhance the publicity of the city's traditional culture, attract tourists and stimulate people's interest in tourism by holding cultural festivals or cultural activities. At the same time, the government should do a good job in the publicity and guidance of traditional culture and carry forward the unique traditional culture of the city, Take this as an important part of urban cultural brand construction, constantly strengthen exchanges and cooperation between cities and between cities and countries, and expand the popularity and influence of urban traditional culture in the international community.

3. THE POSITIVE ROLE OF TRADITIONAL CULTURE INHERITANCE AND DEVELOPMENT IN URBAN CONSTRUCTION

3.1 enhance the city's popularity and show the city's image

In city city city construction, local traditional culture has strong guidelines. Local excellent traditional culture is an important development direction of the city. Therefore, traditional culture plays a positive role in urban construction. the city needs to extract its essence from traditional culture and its dregs, while traditional culture needs better service and urban construction. This shows that the two are complementary. Therefore, in city construction, we should keep the local architectural buildings and cultural sites according to the essence of traditional culture, so that people can deeply appreciate the cultural atmosphere in the city, retain people's memory of history, and make the city have strong cultural connotation in the development, thus effectively enhancing the city's popularity. Maintain a good external and internal image of the city [3].

3.2 create a city brand and enhance the influence of the city

In the development of cities, traditional culture, as a high-quality resource, has its own characteristics and uniqueness, which is also the advantage compared with other cities lacking traditional cultural resources. Therefore, making full use of the resource advantages of traditional culture and building a unique cultural brand of the city can effectively enhance the influence of the city, so as to increase the exchange and communication with the outside world and continuously improve the brand effect of the city. For example, in Taian, Shandong Province, Mount Tai, known as "the head of the five mountains", is famous all over the world for its unique Mount Tai culture.

3.3 show the cultural style of the city and reflect the spirit of the city in the new era

Traditional culture has formed a lot of historical precipitation in the development of cities, and it is also an important embodiment of local traditional values. Therefore, the construction of values can enhance people's cohesion and arouse people's resonance with traditional culture. In urban construction, we should strengthen the integration of traditional culture and the development needs of modern society, constantly innovate cultural ideas, and inject new cultural spirit into urban development, so that the city can push through the old and bring forth the new in the development and stimulate the development vitality of the city.

4. CONCLUSION

To sum up, Chinese traditional culture has formed unique cultural spirit and values in the long river of history, which is also an important factor that must be considered in urban development and an important cultural guide for urban future development. By strengthening the screening of traditional culture and combining excellent cultural content with urban construction, we can form an urban cultural image with regional characteristics, Through the industrial development of traditional culture, create urban cultural brand and enhance the influence of the city, so that the city can go abroad and go to the world in the future development.

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The Application of Participatory Teaching in Architectural Design Teaching in Applied Undergraduate Colleges

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Abstract: With the continuous development of economy, more and more buildings with local characteristics appear in our field of vision. of course, with the improvement of living standards, everyone has higher requirements for architecture. In this environment, cultivating architectural design talents who meet the requirements of the public has gradually become the primary task of architecture majors in undergraduate colleges. the teaching work of architectural design teachers in applied undergraduate colleges should be combined with the future employment characteristics of the major, and guide students to actively participate in classroom learning, so that students can transform their identity from learners to "designers". This article will analyze the application of participatory teaching in the teaching of architectural design in applied undergraduate colleges and universities, and provide some feasible suggestions for the teaching reform of architectural design in colleges and universities.
Keywords: Participatory Teaching; Architectural Design; Applied Undergraduate Colleges

1. THE CONCEPT OF PARTICIPATORY TEACHING

The focus of participatory teaching lies in the word "participation". Because of its many advantages, participatory teaching has been widely used in undergraduate teaching. Participatory teaching is very different from traditional teaching, which is embodied in: participatory teaching enables teachers to pay more attention to students, and pays attention to students' performance in the classroom, so that students can truly Master the rhythm of classroom learning, so as to achieve the teaching effectiveness of architecture majors in colleges and universities. In the process of participatory teaching, the teacher's teaching is no longer mechanical cramming teaching in the traditional sense, but becomes a guide, guiding students to complete the learning content in the classroom independently, and at the same time, they must also conduct effective teaching with students. Communicate and interact to find out the problems existing in the students' classroom learning process in time. This teaching method not only cultivates and enhances students' ability of independent thinking, but also improves students' ability of teamwork [1].

2. CURRENT SITUATION OF ARCHITECTURAL DESIGN TEACHING IN APPLIED UNDERGRADUATE UNIVERSITIES

The architectural design major in applied undergraduate colleges is different from other disciplines. This discipline has a strong comprehensiveness. This major involves not only the fields of humanities and arts, but also the analysis of practical life. Therefore, teachers should focus on cultivating students' autonomous learning ability in the actual teaching process, and guide students to solve problems encountered in the learning process independently. From the perspective of the current architectural teaching process in colleges and universities, there are still various problems in different colleges and universities. One of the more obvious problems at present is that the number of teachers in the school's architectural design major is limited, and it is difficult to match the number of students with a large number of students. Due to the strong professionalism of this discipline, the teaching effect of traditional large-class teaching is not very good. Students' time in class cannot be used well, and it is difficult to stimulate students' learning initiative. In the limited classroom learning process, many students find it difficult to put forward their own insights and ideas on the content of classroom learning in a timely manner. Secondly, in the process of daily architectural design teaching, most teachers still focus on the explanation of basic knowledge, and do not pay attention to cultivating students' practical ability, which makes students feel unfamiliar and unfamiliar when they come into contact with architectural examples, and it is difficult to To integrate the knowledge learned in the classroom with the actual situation.

3. ARCHITECTURAL DESIGN OF PARTICIPATORY TEACHING AND APPLICATION-ORIENTED UNDERGRADUATE COLLEGES

3.1 Design thinking development

For students majoring in architectural design, their thinking ability is very important. Students need to have rich imagination and a sense of three-dimensional space, so that they can have a sensitive analytical ability to architecture. Teachers should focus on cultivating students' ability in the daily architectural teaching process. Thinking expansion ability, design teaching content in a targeted manner, cultivate students' spatial imagination ability and innovative thinking ability. For example, when teachers explain the teaching example of villa in class, they can first explain some typical villa cases to students, so that students can understand There is a general understanding of villa architecture. In addition, teachers can ask students to conduct on-the-spot inspection of some villa complexes before the formal class, so as to have a certain degree of understanding of the content to be learned. Students will find problems that are difficult to understand in the process of self-research. Teachers can

explain the problems of students in the process of classroom teaching, which not only improves students' learning efficiency, but also cultivates students' autonomous learning ability and completes theories. After teaching, teachers can encourage students to design and create villas, which can effectively cultivate students' innovative thinking ability.

3.2 Design expression training

Compared with other majors, the architectural design major has special professional terms, which requires students to have innovative ideas and then be able to fully express their ideas through professional architectural terms. However, in the actual teaching process, it is difficult for students to effectively combine the knowledge they have learned with their own ideas. In response to this situation, teachers need to carry out situational teaching in daily teaching, guide students to change their identities, turn themselves into actual owners and users of buildings, actively seek their own demands for buildings, and then apply what they have learned. Professional knowledge is expressed professionally and completely [2]. When students find that their ideas cannot be expressed well in professional terms, they can seek help from their classmates in time, and everyone will discuss in the form of a team, which cultivates the ability of teamwork on the basis of common progress. It enables students to truly experience the joy and unique charm of participatory teaching.

3.3 Cultivation of team spirit

Any architectural design scheme can never be completed by a single designer alone. It requires the cooperation of a team and the cooperation between teams. Therefore, teachers should focus on cultivating students' team spirit in the teaching process, such as exercising students' teamwork ability by arranging some group assignments, allowing students to complete a small design assignment or project together, and conducting mutual evaluation and evaluation among groups. Learning, discovering the problems existing in the design process and discussing and solving them in time. the use of group teaching can achieve the common progress of group members.

3.4 The development of students' subjective initiative

Every architect has his own design concept, and everyone's ideas are different. When teaching undergraduate architecture, teachers should strengthen the cultivation of students' subjective initiative, and emphasize to students that they must have their own opinions on different issues., cannot follow the trend [3]. Subjectivity is an essential condition and core quality for an architect on the road to future development. Teachers should guide students to form their own architectural insights in daily professional learning, actively seek the characteristics of each building, and actively learn new architectural knowledge. In daily teaching, teachers can use the method of students' mutual evaluation of homework to exercise and cultivate students' unique appreciation ability; students need to use their own initiative in the process of mutual evaluation to find the problems of classmates' homework, and take the initiative to propose solutions and measures. While helping your classmates, you can also further improve your own abilities.

5. CONCLUSION

Application-oriented undergraduate colleges are important places for cultivating the future pillars of the country. In order to send more talents of the era to the country, colleges and universities must pay attention to keeping pace with the times while carrying out teaching and reform, update their teaching priorities in time, and keep the latest and most advanced. Cutting-edge professional knowledge is delivered to students in a timely manner [4]. There are many shortcomings in the traditional teaching mode. In order to improve the learning efficiency of the classroom, teachers should actively improve the teaching method, so that students can truly participate in the classroom learning, so as to improve the teaching level and teaching quality.

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Inheritance and Reproduction of Traditional Cultural Landscape By Modern Urban Construction

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Abstract: Modern civilization has had an impact on Chinese traditional culture. In order to obtain economic benefits, modern urban architecture has lost the charm of traditional cultural landscape and become monotonous. It is becoming more and more important to inherit and reproduce the characteristics and connotation of traditional cultural landscape and inherit Chinese excellent culture through modern urban construction. This paper first analyzes the connotation of Chinese traditional cultural landscape, then summarizes the importance of inheritance and reproduction of Chinese traditional landscape in modern urban construction, and summarizes the specific strategies and suggestions of inheriting traditional cultural landscape in the process of modern urban construction.

Keywords: Traditional Cultural Landscape; Modern Urban Design; Tradition; Continue

1. INTRODUCTION

China is one of the four ancient civilizations of human civilization, with thousands of years of cultural history and profound Chinese traditional culture. It changes constantly in the process of development and forms a huge system. For thousands of years, Chinese traditional cultural landscape has witnessed the rise and fall of Chinese culture. It is the tangible and material witness of Chinese history and traditional culture. This is a very valuable cultural heritage. However, with the invasion of modern industrial civilization, it has had an impact on Chinese traditional culture. In order to achieve economic benefits, modern urban architecture has lost the charm of traditional cultural landscape, monotonous and lack of charm, full of steel and concrete. People pay too much attention to material pursuit and begin to ignore and forget the inheritance of Chinese traditional culture. the traditional cultural landscape has fallen into the dilemma of fragmentation and marginalization. Therefore, it is increasingly urgent to improve the awareness of inheriting and protecting China's excellent traditional culture. In modern urban construction, more and more attention is paid to the inheritance and reproduction of traditional cultural landscape. How to meet the needs of modern people's work and life and obtain the soul and characteristics of Chinese traditional cultural landscape is the key problem to be solved in modern urban construction.

2. ANALYSIS OF CHINESE TRADITIONAL CULTURAL LANDSCAPE

Landscape includes pictures of all areas related to human life, such as short streets, parks, squares, bridges and green spaces. Cultural landscape refers to the cultural landscape of landscape form, function, style and color formed by people through the transformation of the surrounding natural environment and external image based on regional times and culture. It reflects the local cultural characteristics, such as the local customs at that time, and has its unique characteristics and possibilities. Chinese traditional cultural landscape has accumulated for thousands of years. It carries the historical memory and culture of Chinese tradition. It has rich connotation and various forms. At the same time, it is also the result of the interaction between man and environment. It comes from nature and is higher than nature. As a model of Huizhou traditional cultural landscape, green brick, black tile and horse wall are the three characteristics of Huizhou architecture. Exquisite brick and tile sculptures give people a fresh and elegant artistic conception, worthy of people's quiet taste. In addition, Huizhou is connected by mountains and rivers, forming a unique Shuikou culture [1]. Cultural buildings were built along the mountain. According to different mountainous areas, pay attention to the corners of doors and windows to ensure sufficient sunshine during the day, so that residents can enjoy the mountain scenery at any time. Mount Jiuhua in Huizhou is one of the four famous Buddhist mountains in China, and Buddhist statues and sculptures are also highly respected. Huizhou cultural landscape prefers Buddhist lotus for its unique style and characteristics. In the traditional cultural landscape of Huizhou, the decoration related to lotus shape has become a fresh and exquisite decoration.

3. INHERITANCE AND REPRODUCTION OF CHINESE TRADITIONAL CULTURAL LANDSCAPE IN MODERN URBAN CONSTRUCTION

3.1 cultivate people's aesthetic feelings and inherit and develop Chinese traditional culture

Urban landscape is the place where people live and work, so it should not only have its functionality, but also meet people's aesthetic needs, so as to ensure people's living needs in modern life. While meeting these conditions, integrate Chinese traditional culture, integrate urban landscape into people's life, and constantly edify the masses, so that Chinese traditional culture can be developed and inherited in the long run.

3.2 provide comprehensive design materials for modern urban construction

The rich elements and connotation of Chinese traditional cultural landscape provide materials for modern urban

construction. the ideas and details contained in materials and architectural forms bring infinite inspiration to designers, provide ideas and soul for modern urban landscape design, and enable people to obtain more visual feelings at a faster speed outside of work and life. In addition to the industrial atmosphere and the festivities in life, people can also feel the freshest vitality of modern cities and understand the unique spiritual connotation of different cities. At the same time, modern Chinese civilization has also developed and evolved on the basis of Chinese traditional culture [2]. Chinese traditional cultural landscape also reflects the progress, inheritance and integration of modern urban civilization from different angles.

3.3 understand people's life and spiritual needs

With the improvement of people's living standards, people pay more and more attention to the quality of life and spiritual pursuit. However, with the advent of the information age, people's pace of life is faster and faster, and the scale of the city is also expanding. Many city residents leave the city several times a year to fully experience nature. In most cases, residents relax in nearby towns. Urban tourism is welcomed by modern people. Only by integrating Chinese traditional cultural landscape into modern urban structure can people feel the characteristic landscape of urban modernization and the spiritual needs of inheriting traditional culture. In this way, people can eliminate the mental tension of long-term work, relax their body and mind and cultivate their sentiment. At the same time, the inheritance and continuation of Chinese traditional landscape can provide emotional comfort for residents, find the established survival value, obtain more survival motivation, enhance their sense of belonging and national pride, and make people's hearts more calm, peaceful and full of confidence in life.

4. INHERITANCE STRATEGIES AND SUGGESTIONS OF TRADITIONAL CULTURAL LANDSCAPE IN MODERN URBAN CONSTRUCTION

4.1 improve the sense of public participation

Modern urban construction is closely related to the life and work of urban residents. Integrating Chinese traditional cultural landscape into urban construction will form a subtle relationship between Chinese traditional culture and urban residents. Urban construction takes Chinese traditional elements as the background, presents modern architecture, and regularly carries out cultural activities with relevant themes, so that people can consciously and actively participate in and feel the charm of traditional culture. In addition, urban residents are encouraged to put forward suggestions and opinions on the inheritance and reproduction of traditional cultural landscape in the process of modern urban construction, so as to improve public participation.

4.2 strengthen the secondary design and utilization of traditional urban cultural landscape

Protect the traditional urban cultural landscape, promote the harmonious coexistence of the existing urban landscape and the traditional cultural landscape, strengthen the secondary design and reuse of the traditional urban cultural landscape, understand the global form and style, and pay attention to the local history and culture [3]. on the basis of protection and restoration, we must add modern functions to the traditional cultural landscape. While having the visual function, we must make rational use of modern urban residents, avoid wasting space, transform the traditional cultural landscape into a place where citizens can work and live, and truly integrate and experience the unique atmosphere of the traditional cultural landscape.

5. CONCLUSION

With the rapid development of science and technology in China, in order to pursue personal interests and economic benefits, most urban developers lead to the lack of charm of Chinese traditional culture in modern urban architecture and become monotonous. Therefore, it is very important to integrate Chinese traditional culture into modern urban construction. Our contemporary people should not forget the breadth and depth of Chinese traditional culture, and should actively carry forward and inherit Chinese traditional culture to make it have a long history. In China's modern architecture, we should also pay attention to the integration of Chinese traditional culture to reproduce the landscape of Chinese traditional culture.

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A Brief Discussion on the Innovative Ideas of the Construction of the Party Branch in Colleges and Universities in the New Period

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Abstract: To adhere to the party's overall leadership of colleges and universities is the foundation and guarantee to promote the healthy and sustainable development of higher education in China. In the new period, colleges and universities vigorously promote the construction of the party branch of the teaching staff, which is related to the cohesion of the party organization in colleges and universities, and is of great significance to the implementation of the fundamental task of moral education. Certain challenges facing the current university faculty party branch construction, facing the new era, the need to always adhere to the governing party's basic principles, with the orientation of political construction, constantly explore new innovation path of the construction of the party branch staff in colleges and universities, a concerted effort to highlight the staff party branch in the important position of the cause of higher education development.

Keywords: New Era; Colleges and Universities; Teaching Staff Party Branch; Innovation

1. INTRODUCTION

The Party branch is an important part of the Party, is the party organization related work can be comprehensively promoted, the implementation of the foundation, is also the party in the social foundation of the strength of the fortress, grassroots party branch shoulders the party education, management, supervision and other important responsibilities, while maintaining, organizing, publicity, serving the masses and other important tasks. Grassroots party branch work has been the focus of the Party and the state, in the party branch work of the relevant regulations on the basic party branch work has made a clear standard, is the effective basis and principle of the construction of the party branch in the new period. Colleges and universities are the main field for cultivating high-quality talents in China, and shoulder the important task of training qualified builders and successors for the cause of socialism with characteristics and the great task of national rejuvenation [1]. Faculty party branch in colleges and universities is the education, management, service the school faculty members of the basic organization, is in the colleges and universities to carry out fighting bastion of the party's policies and guidelines, is contact with the bridge and the link between the party and the masses of staff, to achieve the task of khalid ents in universities and colleges key, is to organize the important guarantee of socialist university colleges and universities. In the new era, colleges and universities should face the challenges brought about by the wave of time development, promote the building of faculty party branch work, with relevant documents as standard and criterion, and improving the quality of party branch construction, strengthen the important position of the party branch in colleges and universities, and implement the party's overall leadership in colleges and universities, give full play to the influence of the party organization in colleges and universities, fighting capacity.

2. THE SIGNIFICANCE OF VIGOROUSLY PROMOTING THE CONSTRUCTION OF THE PARTY BRANCH IN COLLEGES AND UNIVERSITIES IN THE NEW PERIOD

2.1 Further strengthen the party's overall leadership over colleges and universities

The teaching staff Party branch in colleges and universities is an important grass-roots organization form of the Party in colleges and universities. Strengthening the construction of the teaching staff Party branch is the key to the implementation of the Party construction in colleges and universities [2]. Strengthening the party's overall leadership of colleges and universities is of great significance to the development and expansion of higher education. It is an important connotation to strengthen the overall leadership of the Party in colleges and universities and an important guarantee to improve the quality of higher education to take the construction of the party's grassroots organization in colleges and universities as the starting point and to place the construction of the party's branch in the important position of the party's construction in colleges and universities. Therefore, under the background of the new period, university party committees need to unswervingly implement the overall leadership of the Party in colleges and universities, establish the idea that the party branch undertakes the political work of the Party, improve the quality of the construction of the party branch in the party building work, and build up the important position of the university party branch in the development of the university cause.

2.2 It is conducive to adhering to the socialist direction of running schools

China is a country with a socialist system, and it is this nature that makes Chinese colleges and universities adhere to the direction of socialism with characteristics in running schools. the political direction of the Party leads the running line of colleges and universities [3]. Colleges and universities each department organization and the general staff need to take the initiative to learn characteristic socialist thought, establish the political

consciousness, the overall situation consciousness, the consciousness of keeping up with the core consciousness, their own strict compliance with the Party's political discipline and requirements, fundamentally enhance personal ideological consciousness and action consciousness. the 18th National Congress of the (C_P) of China stressed that China's colleges and universities need to strengthen the socialist direction of running schools, firmly rooted in China to do a good job in education, which is derived from the long-term understanding of the law of education. Based on this, under the background of the new era, university Party committees should stand in the perspective of socialist education, do a good job of party building in the process of running schools, adhere to the political construction of the Party as the guide, strengthen the construction of university teaching staff party branch, make the teaching staff Party branch become a fighting fortress with political responsibility.

2.3 Implement the fundamental task of Lide and cultivate people

What kind of talent? for whom? By what method? It is the key problem in running colleges and universities. It is beneficial for colleges and universities to carry out the fundamental task of cultivating talents through virtue by vigorously promoting and strengthening the construction of the party branch of university teachers and workers and training qualified successors and builders for the socialism with characteristics. In party work conference and the fundamental task of education of our country clear instructions, our country's higher education should always be to cultivate socialist builders and successors as a primary task, constantly cultivate can unwavering support of our party, the practice of the socialist system, for the characteristic of the socialist cause lifelong dedication of talents. Therefore, under the background of the new era, university party committees should focus on reflecting the political guiding role of the Party organization in the education work, improving the quality of the party branch construction, and consolidating the important foundation of the education work in colleges and universities.

3. DIFFICULTIES FACED BY THE CONSTRUCTION OF THE PARTY BRANCH OF UNIVERSITY TEACHERS AND WORKERS AT THE PRESENT STAGE

Since the eighteenth big, based on the governing party, under the general requirements of promote the development of the university party building work is good, good results in many aspects, political ecological environment has improved significantly, purified political culture, especially the construction of party branch staff get unprecedented development opportunities and significantly improved the party branch cohesive force and the battle fortress. However, in the construction process of the university teaching and working Party branch, influenced and restricted by many factors, the construction of the teaching and working Party branch is still inadequate, which to some extent hinders the construction and development of the university teaching and working Party branch.

3.1 The party building consciousness of the party branch of university teaching staff is weak

In recent years, the political construction of the party branch of the teaching staff in colleges and universities has been constantly enhanced, the relevant work has been strongly supported, and the political position has been constantly consolidated. But in this process, the construction of the party branch of university teachers and workers also appeared to attach importance to business, despise the party building work. For example, teaching labor Party branch setting is not closely related to business work, and the party branch status is desalted; the teaching staff party branch did not establish a good sense of party construction work, did not play the important role of party construction work to promote the development of party branch; the lack of systematic work of the party branch of the teaching staff, and the disconnection between the central work; the political factors are less involved in the party building process of the teaching staff party branch, and the political requirements of the teaching staff in the teaching work and scientific research tasks are not strictly supervised. the inner-party life of the teaching workers' party branch is not fully democratic and the party affairs are not completely open. Teaching staff party branch fund support guarantee is insufficient. It can be seen from the above problems in the construction of the party branches in colleges and universities that the height of the political station in the construction of the party branches in most colleges and universities is insufficient, and does not fully reflect the advantages of the party branches in speaking politics and party spirit.

3.2 Party branch secretary's party affairs consciousness is not strong

After the 18th National Congress of the (C_P) of China, the organizational structure of the party branch of university teaching staff has been optimized and strengthened, and the party branch secretary, as the "bellwether" of the Party branch, has become the focus of cultivation. However, at present, some party branch secretaries often attach importance to academic research and neglect party building in their daily work. For example, although the party branch secretary as the party branch "bellwether" role, but the enthusiasm is low, lack of enough political consciousness, sense of responsibility is not strong, the party spirit cultivation is insufficient, party affairs knowledge is not sufficient, cannot banner to the teaching staff members speak politics, it is difficult to deeply understand the ideological and political consciousness of the teaching staff members; Most of the party branch secretaries seriously lack of innovative thinking consciousness, the new period still adhere to the traditional concept, take the traditional party building work way, follow the past work experience, and the trend of the development of the Times derailed, unable to meet the needs of the new era teaching staff members. In a word, from the problems existing in the party branch secretaries of the above universities, it can be found that the party branch secretaries have not performed their duties and advantages well.

3.3 The ideological education of the party branch of teachers and workers is insufficient

At present, the ideological education construction of the party branch of the teaching staff in colleges and universities is constantly increasing, and the theoretical arm of the teaching staff members has achieved initial results. However, in the process of ideological education to the party members of the teaching staff in colleges and universities, there is still a problem of paying attention to preaching and neglecting the actual effect. For example, some colleges and universities do not pay attention to theoretical learning, business learning instead of political learning; Some college teaching staff party branches pay too much attention to formalization and emphasize theory in the selection of ideological education content. Ideological education mainly adopts traditional forms such as listening to reports, reading documents and watching videos, which is difficult to stimulate the enthusiasm of teaching staff members to participate in ideological education, leading to the unsatisfactory effect of ideological education. Some college faculty party branch in a "three will be a lesson" does not pay attention to in the process of ideas, the lack of true feelings or ideas, living will evolve into a democracy life work discussion and vent platform, in-depth ideas will is not strong, lead to ideological education can't seem to have the party members' deep heart. It is the existence of the above problems that cause a big gap between the ideological education effectiveness and the expected goals of the party branch of university teaching and staff, and also lead to the gradual weakening of the discourse right of ideological education of the party branch of university teaching and staff.

3.4 The daily activities of the party branch are single

As colleges and universities pay more and more attention to the construction of the teaching Labour Party branch, the political life of the teaching staff members is gradually strengthened, and the organizational life of the party branch is standardized. However, in the course of carrying out daily activities, many colleges and universities teaching staff party branches still appear to pay attention to the lack of contempt, contempt connotation. For example, the daily activities of some university teaching staff party branches are superficial, do not pay attention to content development, and the content of activities is single and rigid, which does not reflect the characteristics of the new era. At the same time, some teaching staff Party branches are only to complete the tasks assigned by the superior Party organization, and the content of activities is far from the ideological demands of the staff and the actual life. In daily activities in the form, lack of innovation consciousness and innovative design, and lack of relevant professional activities, in addition, some staff members thought consciousness and the requirements of the party's construction in the new period appear obvious lag, to participate in party branch activities enthusiasm is not high, lead to the staff party branch activities of party members' participation is always cannot ascend. It can be seen from the above problems that the daily activities of the party branch in the construction of the party branch in colleges and universities at the present stage lack connotation, which greatly hinders the play of the advantage of the party branch activities to gather people.

4. INNOVATIVE PATH OF PARTY BRANCH CONSTRUCTION IN COLLEGES AND UNIVERSITIES IN THE NEW ERA

The Party and the state attach great importance to the ideological and political work in colleges and universities. It is clearly pointed out in the relevant working meetings that colleges and universities need to vigorously promote the construction of the party's grassroots organizations, constantly innovate the system and mechanism of the party's grassroots organizations, improve and optimize the work form, and effectively enhance the ideological and political education ability of the party's grassroots organizations. the construction of the party branch plays an important role in the party construction of colleges and universities. In the new period, for university faculty party branch construction put forward higher requirements, colleges and universities need to the general construction requirements and organizational line as a guide, follow the party branch work regulations and relevant specification, always work as a primary task to the party's political construction, set up the ideas of innovation, the development of thinking and tackle the problems existing in the current university faculty party branch construction, Continuously improve the quality and effectiveness of the construction of college and university party branches, and promote the sustainable development and growth of the construction of college and university Party branches in the new era [4].

4.1 Highlight the political function of the party branch of teachers and workers, and effectively improve political leadership

Political leadership is a powerful manifestation of party leadership, determined by the nature, purpose, behavior and many other factors of the party, which highlights the executive power and influence of the party and highlights the concrete results of the political capacity and construction of the party in China [5]. Political leadership is the key basis for evaluating the party's ruling ability. In the new period, the construction of the party branch of university teaching staff needs to play its political function unwaveringly, unswervingly follow the overall requirements of political guidance, fulfill the important responsibility of speaking politics, and always put political construction in the primary position in the party building work. First, faculty party branch in colleges and universities need to firm political direction, in the process of party branch construction, strengthen the consciousness of political consciousness, overall situation consciousness, par and core consciousness, sets up the characteristic socialist road confidence, confidence, system theory, the culture, determined to maintain the authority and centralized leadership, follow the political orientation of higher education, the (C-P-C)'s sense of leadership runs through all teaching and scientific research tasks, and it always thinks, analyzes and deals with problems from a political perspective. It has continuously raised the sense of mission to train new people in the era of national rejuvenation, and strengthened the sense of responsibility to implement the goal of moral education. Secondly, the

party branch of university teaching staff should establish the consciousness of responsibility. Faculty party branch in colleges and universities need to explore the process of running the fine traditional culture, contains the active mining element of ideological and political education, to implement its own fight fortress function, promote the building of ethics strengthen work, establish good teaching teaching style, and form a positive atmosphere, the academic integrity to build efficient, gas is positive educational environment, So that the university teaching staff party branch in a real sense to promote the development of colleges and universities, cohesion of teaching staff members and education of teachers and students of the important place. Finally, the party branch of university teaching staff needs to strengthen party spirit exercise. University faculty party branch should always teach party members to maintain the political vigilance, take the initiative to purify the party and political ecology, create a positive, positive political culture atmosphere in the party, reflect the seriousness of the party's political life, enhance the party member of the party spirit, and help the staff members in daily teaching and scientific research work in strictly abide by the political rules, Make the majority of teaching staff members to become politically clear, competent group on the job.

4.2 Strengthen the theoretical arm of the Teaching Labor Party branch, strengthen the thought leading force

Ideological leadership means to continuously promote theoretical innovation, actively use the latest theories of the Party to strengthen their own thoughts and maintain firm beliefs, so as to resist all external dirty thoughts [6]. It is of great significance to strengthen the ruling ability of the Party. In the new period, the party branch of university teaching staff should view the deficiency in the construction process positively, highlight the important position of ideological construction in the party construction work, and firm the faith of the party members of the teaching staff. First of all, the party branch university teaches to teach the general staff do not forget to teaching and educating the beginner's mind, keep in mind that cultivate new era sense of mission, unswervingly follow marxist belief, strong characteristic socialist beliefs, strengthen to realize China's dream and the great rejuvenation of the Chinese nation's determination to firmly grasp the national historical mission, holding teaching of the Lord. Actively engaged in training talents for socialist modernization. Second, faculty party branch in colleges and universities need to constantly enhance their theoretical armed, faculty party branch in colleges and universities should actively urged the staff learn more new era characteristic socialism theory, strengthen the party's ideological construction, targeted to solve part of the staff members thought error problem, enhance the political awareness of staff members, in the teaching and scientific research task learning outcomes, So as to effectively implement the Party's education policy and better realize the important task of moral education [7]. Finally, faculty party branch in colleges and universities should strengthen the general party member education main land, faculty party branch in colleges and universities should fully realize the faculty members in the new period thought activity has characteristics such as diversity, independence and diversity, continuously strengthen the management of teaching, academic activities, and perform the duty of a good network public opinion supervision, actively teach general staff party members rooted in three feet platform, We should actively carry forward the main theme and inherit the positive energy in education and scientific research posts to reflect the important guiding role of Marxism in ideology.

4.3 Enrich the contents of the activities of the party branch of the teaching staff in colleges and universities, and improve the organizational power of the masses

The Party's mass organization is the party's ability to call on and lead the masses to carry out activities such as production, spiritual culture, innovation and change, which largely reflects the Party's governing ability [8]. Under the background of the new period, the party branch of university teaching staff should unswervingly walk on the party's mass line, strengthen the party's cohesion and combat effectiveness in colleges and universities, and take organizational construction as the main task of party construction. First of all, the party branch of university teaching staff should strictly control the pass of party member development. University faculty party branch should awake awareness of the concept, while the iron is hot still need their own hard work in the development of party members in the political as a guide, adhere to the promotion of political standard of party members, the political standard as the important basis of the inspection party member development, qualified talents for politics don't resolutely resist outside the organization, university faculty party branch party construction quality constantly, Promote the vitality of the party branch of university staff. Secondly, the party branch of university teaching staff should firmly grasp the objective law of mass organization [9]. In the new period, for the staff party branch in colleges and universities, we should take the initiative to grasp the characteristics and regularity of party construction in colleges and universities, and constantly explore era development under the background of staff's growth, development characteristics, reasonable in the whole process of party construction in colleges and universities into centered on people's thought, dialectical thinking to analyze and solve problems, to give full play to the staff party construction, Enhance the cohesion of the party branch of university staff. Finally, the college teaching Labor Party branch should pay attention to the advantages of mass work. In the new period, university faculty party branch in the process of each work should reflect the history of "the people" concept, to maximize the principal role of the general staff, play to the staff of the dominant position, and actively absorb advanced ideas from the general staff, idea, with sincere, open-minded attitude to the staff to study, has always been the vital interests of the staff in the work in the first place, To build a good bond and contact with the majority of teachers, through the party building work to effectively maintain the majority of teachers legitimate interests, so as to strengthen the

centripetal force of the university teachers party branch.

4.4 Strengthen the fortress role of the party branch of university teachers and workers, and give play to the social appeal

Social appeal refers to the ability of party organizations to unite different social classes, groups and forces to make joint efforts and actions around a certain political goal and social vision. Social appeal is an important standard to measure the ruling ability of the Party [10]. Under the background of the new era, the party branch of university teaching staff needs to give full play to its ability to unite different groups, understand deeply and master the immediate needs of the majority of teaching staff, and reflect the importance of discipline and style construction in party construction. First of all, the party branch of university teaching staff should make clear norms and discipline requirements for party branch activities. Faculty party branch in colleges and universities need to unswervingly follow the party's political line, strictly follow the party's political discipline and rules, to pay dues' basic work such as regularly, earnestly strengthen the staff to participate in "three will be a lesson", the party branch in time theme activities, such as management, supervise the general staff effectively implement the party's discipline, the promotion of political discipline consciousness of the general staff, Strengthen the social appeal of the party branch of university staff constantly. Secondly, the executive power of the party branch of university teaching staff should be constantly improved. Staff party branch in colleges and universities should actively improve the university party committee, the administrative department of the proposed all key deployment and the key work, strict to eliminate superficial form in daily work, do not pay attention to the phenomenon such as content, resolutely prevent attaches great importance to the result and the quantity, process and quality problems, to do the daily management of the university faculty party branch, Implement the work of helping and serving the party members of teaching staff, constantly improve the work effectiveness of the party branch of teaching staff in colleges and universities, and enhance the social appeal of the party branch of teaching staff. Finally, the college teaching staff party branch should pay attention to improving the purpose consciousness of teaching staff members. University faculty party branch should be political ability construction through the faculty members in the process of growth and development of all, to teach the staff members in the heart reminding of the party's objective, work for school center dedicated their own strength, improve the service ability of the individual, in daily work themselves actively, actively promote service-oriented party organization construction, Finally, strengthen the social appeal of the party branch of university teaching staff.

5. CONCLUSION

To sum up, the teaching staff party branch is the backbone of the party organization in colleges and universities, but also the front line of the implementation of the party's basic principles and policies, for the realization of the fundamental task of moral education has important practical significance. the report of the 19th NATIONAL Congress of the (C-P-C) pointed out that the Party shoulders the responsibility of leading the people in a great struggle, accomplishing a great cause and realizing a great ideal. In the construction of the Party organization, it is necessary to unswervingly adhere to the overall leadership of the Party and strengthen the construction of the Party organization. Vigorously promoting the construction of the party branch in colleges and universities is related to the implementation of the great project construction of the Party in colleges and universities, and is a good embodiment of further strengthening the political construction of the Party organization in colleges and universities. In the new era, the construction of the party branch of university teachers and workers has ushered in a valuable opportunity, and the party rules and regulations have been constantly improved, and the construction of the Party branch has received more attention. But at the same time, the party branch construction process also faces many difficulties, there are still weak consciousness of party building, secretary party affairs consciousness is not strong, party members ideological education strength is insufficient. Therefore, colleges and universities need to the new era of social development as motive force, adhere to socialism thought as guidance, unwavering the overall performance of the party's construction principle, face to face with the insufficient staff party branch construction, explore new staff party branch construction, development by innovation thinking path, explore a accord with the actual situation of university education characteristics and faculty party branch development road, Continuously improve the quality of the party branch construction, so as to truly build the party branch in colleges and universities as a strong fighting fortress with continuous cohesion and centripetal force, and inject inexhaustible power into the development of socialist higher education in the new period.

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Analysis of Common Problems and Measures in Construction Engineering Pre-Settlement Audit Work

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Abstract: My country has entered a period of modernization development, economic level has been improved, technical strength has also been enhanced, more and different types of buildings have appeared, and the scale is also expanding. Construction companies need to face more severe market competition. the pre-settlement audit of construction projects can determine the economic benefits that construction projects can bring to construction enterprises to a certain extent, which is very important for the development of construction enterprises. Therefore, full attention must be paid to the pre-settlement audit work of construction projects. This article briefly analyzes the common problems of pre-settlement audits of construction projects, and proposes measures to carry out pre-settlement audits of construction projects, hoping to provide support for the smooth development of pre-settlement audits of construction projects.

Keywords: Construction Engineering; Pre-Settlement Audit; Common Problems; Measures

1. INTRODUCTION

When carrying out the construction of a construction project, it is necessary to start from a holistic perspective and negotiate financial management, professional skills, project management and other tasks. the requirements for technology and professionalism are relatively high. When conducting pre-settlement audits of construction projects, cost control is inextricably linked to each construction link. In order to efficiently apply resources and reduce unnecessary resource consumption, it is necessary to increase efforts to analyze and apply existing data, So as to make the audit work more orderly, and provide support for the construction and cost management of construction projects.

2. FREQUENTLY ASKED QUESTIONS ABOUT PRE-SETTLEMENT REVIEW OF CONSTRUCTION PROJECTS

2.1 Analysis from the perspective of total project calculation

After launching the bidding work, construction companies need to clarify the project construction volume from an overall perspective, and do a good job of analysis and processing. This task is more difficult and requires staff to invest more time to deal with it, and it plays a more prominent role in construction engineering [1]. the pre-settlement audit work needs to take the calculation of the total amount of the project as a foothold, so as to improve the accuracy of the audit work and make it contain more comprehensive content. When using construction drawings, it is necessary to clarify whether the quantities of construction in each stage and the quantities proposed in the contract are in a consistent state, and find out the reasons for the differences. In addition, it is also necessary to summarize the engineering quantities after the completion of the construction. If this work is not carried out, it is likely to lead to improper unit price management, and there will be greater conflicts between the carried out design and the actual construction.

2.2 Analyze from the perspective of the staff

The professional level of pre-settlement review staff can determine the effect of pre-settlement review work to a certain extent. If the pre-settlement review staff have low professionalism, they are likely to lack a sense of responsibility and insufficient ability to carry out the work during the work process, resulting in a one-sided understanding of the reported materials and unable to interpret relevant policies and regulations. There are many problems in the review process, which reduces the accuracy of the project cost [2]. In addition, the low professionalism of the pre-settlement audit staff will hinder the comprehensive and deepening of the audit work, which is not conducive to the smooth development of the construction unit's related work.

2.3 Analyze from the perspective of sending audit information

During construction, construction companies need to provide timely feedback to higher-level departments. If the materials sent for review are not true and their validity cannot be ensured, the accuracy of pre-settlement work is likely to be reduced. When conducting pre-settlement audits of construction projects, it is necessary to analyze and apply visas, completion documents, drawings, etc. In this case, construction companies are likely to reduce the waiting time for the audit to ensure that they can complete the construction within the specified time., and choose to report some untrue information, which to a certain extent hinders the development of later project rectification and reconstruction work, and increases cost input.

2.4 Analysis from the perspective of construction materials

When carrying out construction projects, the cost of building materials accounted for about seven-tenths of the total cost. Therefore, it is necessary to pay full attention to construction materials. the quality and price of construction materials can determine the construction effect to a certain extent. If in this case, the material purchasers arbitrarily fabricate the price of the material and the quantity to be applied, and choose to use some

materials that do not meet the quality requirements. Although they can obtain some economic benefits in a relatively short period of time, but from an overall perspective, Is not conducive to the long-term development of the project, and will shorten the life of the project.

3. CARRY OUT WORK MEASURES FOR PRE-SETTLEMENT REVIEW OF CONSTRUCTION PROJECTS

3.1 Pay attention to the basic work of reviewing the engineering quantity

When carrying out project pre-settlement audit work, it is necessary to innovate audit methods and do a good job of auditing key links. It is necessary to ensure the coordination between the engineering quantity calculation and the engineering quantity measurement unit to prevent conflicts in content and characteristics. In this process, it is also necessary to mark the component size in the design drawing to ensure that it can meet the actual needs and prevent large deviations in the engineering calculation process [3].

3.2 Improve the work level of unit price audit management

Unit price review mainly refers to the scientific and reasonable application of construction technology based on drawings, project quality, and functions, so that it conforms to industry standards. This can effectively ensure that the main materials used in the building structure are appropriate and can fully function. In this process, it is also necessary to use the most expensive materials to carry out quota application, so as to promote the smooth development of construction project unit price management.

3.3 Intensify efforts to carry out pre-settlement audit management work

The audit department should step up efforts to audit and supervise construction projects, and scientifically and rationally use information technology to improve the level of audit work. Only when the abilities of the pre-settlement review staff are improved can the quality of pre-settlement review be improved from the root, ensure the scientific nature of fund application, and ensure that the project quality can meet relevant requirements.

3.4 Put the quota application accounting work in place

The local government department of the construction project needs to perform its own functions, conduct reasonable adjustments to the price of local construction materials, and establish a complete set of accounting standards to ensure that the pre-settlement review staff can strictly follow the relevant regulations in the process of carrying out their work. If there is a conflict between the design drawings used and the quota application during the review process, it must be optimized at the first time. In this process, it is also necessary to systematically manage the building materials, funds, etc. that need to be used, which can effectively prevent the occurrence of repeated quota application and control the funds required to be invested in project pre-settlement within a certain range [4].

4. CONCLUSION

Based on the above analysis, it can be found that the pre-settlement audit work of construction projects requires high professionalism for the staff. Therefore, relevant personnel should actively interpret the relevant policies issued by the Chinese government departments when carrying out their work, and actively invest in learning Among them, accumulate professional knowledge to ensure that the standards set by the industry or the conditions proposed by the audit mechanism can be passed, so that the abilities of the staff in all aspects are improved, the effect of the pre-settlement audit work is improved, and more creations are made for enterprises. From a certain perspective, it can provide support for the sustainable development of the construction industry.

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Effects of Inulin Dietary Fiber Made From Jerusalem Artichoke on Intestinal Flora Disorder and Abnormal Lipid Metabolism

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Abstract: To explore the effect of inulin dietary fiber made from Jerusalem artichoke on the treatment of intestinal flora disorder and abnormal lipid metabolism. Methods: a mouse model of intestinal flora disorder was established. 36 mice were divided into normal group, intestinal flora disorder group and inulin dietary fiber intervention group to study the repair effect of inulin on intestinal flora disorder and abnormal lipid metabolism. Results: through the intervention of inulin dietary fiber, the disorder of intestinal flora and abnormal lipid metabolism in mice were repaired. Conclusion: inulin dietary fiber made from Jerusalem artichoke has a good repair effect on intestinal flora disorder and abnormal lipid metabolism, which can be realized by regulating bile acid signal channel.

Keywords: Jerusalem artichoke; Dietary fiber; Intestinal flora disorder; Abnormal lipid metabolism

1. INTRODUCTION

Jerusalem artichoke is an economic crop with strong ecological adaptability, so it can also obtain stable yield on land that is not suitable for staple food. the use of inulin rich in Jerusalem artichoke to make dietary fiber can be used as functional food and improve human health [1]. This paper mainly explores the repair effect of inulin dietary fiber made from Jerusalem artichoke on intestinal flora disorder and abnormal lipid metabolism, as shown below:

2. INFORMATION AND METHODS

2.1 general information

The animal model was established. 36 SPF BALB/c mice, half male and half female, were purchased and divided into normal group, intestinal flora disorder group and inulin dietary fiber intervention group.

2.2 method

Feces were collected at three time points before treatment, successful modeling and the end of the experiment. the inulin dietary fiber group established the intestinal flora disorder model. After successful modeling, inulin dietary fiber was continuously fed for 10 days with a daily dose of 0.05g. After the experiment, the liver samples were obtained, the experimental marks were made, and the study samples were stored in the refrigerator at - 80 ℃. the macrogenes of intestinal flora, blood lipids, fecal short chain fatty acids and bile acids, liver and serum fatty acids were measured.

2.3 observation indicators

The macrogenes of intestinal flora, blood lipids, fecal short chain fatty acids and bile acids, liver and serum fatty acids were measured.

2.4 statistical methods

Graph Pad Prism8.0 analysis data.

3. RESULTS

3.1 effect of inulin on intestinal flora repair

After inulin treatment, the abundance of Bacteroides increased, the biological activity of bile salt hydrolase increased, and the content of conjugated bile acid increased, so as to promote bile acid metabolism and improve body metabolism.

3.2 effect of inulin on abnormal intestinal lipid metabolism

Inulin dietary fiber can effectively reduce the amount of triglycerides and total cholesterol, and reduce the content of high-density lipoprotein. Therefore, it has a good repair effect on dyslipidemia caused by intestinal flora disorder.

4. DISCUSSION

The strong ecological adaptability of Jerusalem artichoke is reflected in its cold resistance, barren resistance, low fertilizer consumption, and good water and soil conservation. the purpose of traditional Jerusalem artichoke planting is to make animal feed. Through research and application in recent years, Jerusalem artichoke has been planted and popularized as a functional food raw material [2]. Jerusalem artichoke tubers are rich in inulin, which is fructan. Therefore, Jerusalem artichoke is of high value as an economic crop, and its biological development prospect is good. Jerusalem artichoke has a good application prospect in functional food. Jerusalem artichoke can be used as a non drug form of health food raw material. It can consume inulin in the diet to make food, so as to improve physical function. Using Jerusalem artichoke as raw material to produce inulin dietary fiber, it can acquire nutritional and functional properties. It can improve the health effects of inulin health food Compositae for obesity, intestinal dysfunction and type 2 diabetes. Inulin is hydrolyzed to fructose in dilute acid environment. the digestive enzymes of human body do not have the environmental conditions for hydrolyzing inulin. the glycoside bonds in inulin cannot be hydrolyzed and digested by the intestinal environment. Therefore, the use of inulin has no effect on blood glucose fluctuation. Inulin is a safe and ideal sweetener for patients with type 2 diabetes who need sweeteners. the dietary fiber contained in inulin is soluble, so it can improve human intestinal function. Inulin can stimulate intestinal peristalsis after water absorption and expansion in human intestinal tract, so as to increase the number of human defecation, and the defecation volume will also increase. At the same time,

inulin intake will greatly promote the mineral utilization rate of human colon, and the utilization rate of calcium and magnesium ions of human colon will also increase, the amount of vitamin B in the human body will also increase. Inulin can produce fructo oligosaccharides through special hydrolysis process. Fructose and inulin are highly similar in function and nutritional characteristics. At the same time, fructose oligosaccharide can be used to increase body satiety by using fructo oligosaccharide not digested by human body. Taking fructo oligosaccharides scientifically can play a better preventive effect on diabetes [3, 4].

In this paper, an animal model of intestinal disorder in mice was established. According to the analysis of the results of intestinal flora, it was found that the abundance of bile acid flora decreased with the disorder of intestinal flora, and the change of bile acid caused the change of signal channel. Therefore, lipid metabolism was related to bile acid secretion. the intervention of inulin dietary fiber can increase the abundance of Bacteroides, Firmicutes and Bacteroides. After the increase of the overall content of bile salt lyase, the content of bile acid produced by the intestine under the condition of hydrolytic conjugation increases, which can regulate the structure of bile acid spectrum, and the signal channel of farneside derivative x receptor is affected. Through animal model analysis, after the care of intestinal flora disorder model, the fatty acids in mouse liver changed significantly. Through gene test, it was found that the key factors were FAS, ACC and SCDI [5, 6]. Therefore, inulin dietary fiber can improve the disordered intestinal flora of mice, regulate bile acid metabolism and fat metabolism with the help of bile acid farneside derivative X receptor, so as to repair the abnormal lipid metabolism caused by intestinal flora disorder.

In conclusion, the application of Jerusalem artichoke to make inulin dietary fiber has a good effect on improving intestinal flora disorder and abnormal lipid metabolism, which is worthy of popularization.

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A Study of the Importance of James Legge in the Spread of Confucianism to the West and Its Translation

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Abstract: As Western learning continued to develop in modern times, more and more missionaries went to China and became important players in promoting cultural exchange between China and the West. As an English missionary to China, James Legge saw the value of Confucianism in the process of living in China, and thus began to devote himself to the study and translation of Confucian classics. This article focuses on the importance of James's translations in the transmission of Confucianism to the West by examining his translations and his ideas on translation.

Keywords: James Legge; Western Transmission of Confucianism; Translated Texts Preface

1. INTRODUCTION

As a renowned researcher of Confucianism, James Legge translated a large number of Confucian classics throughout his life, including the the *She King*, the *Book of Changes*, *Confucian Analects* and a series of other works, eventually classified them into the *Chinese Classics* and *the Chinese Sacred Books*, which were widely disseminated throughout the world, thus establishing Legge's status as a master of Confucianism and being of great importance in promoting the spread of Confucianism to the west. [1] What distinguished James from other foreign missionaries was his ability to see Chinese literature with objectivity and impartiality, and his commitment to the translation and dissemination of Chinese Confucian classics during his decades as a missionary, which enabled more Western scholars to see the wisdom of Chinese Confucianism and expanded the influence of Confucianism in the world. This article therefore focuses on the importance of James's study of the Western transmission of Confucianism and translation, in order to discover the significance of James's translated works in the new era.

2. INTRODUCTION TO JAMES LEGGE

James Legge was a British missionary to China who moved to Hong Kong in 1824, initially with the aim of spreading British Protestant ideas, but gradually came to see the importance of the traditional Confucian classics as he lived in China, and thus began to work on the translation of Confucian classics alongside his missionary work. He is known as "the first Westerner to translate the Four Books and Five Classics into English in a comprehensive and systematic way" and was the first famous sinologist in modern times. [2]. His translations of the Chinese Classics were beautifully and rigorously linguistic, in keeping with traditional Chinese aesthetics, and were able to firmly grasp the essence of Chinese literature, bringing out the philosophical ideas in classical Chinese Confucianism in their entirety, rather than simply interpreting literary works. Even today, James Legge's translations are still of great research value.

3. THE IMPORTANCE OF JAMES LEGGE IN THE THE TRANSMISSION OF CONFUCIANISM TO THE WEST

As an important figure in the Western transmission of Confucianism in modern times, James Legge brought the Chinese Confucian classics to the West through his own translations and became an inspiration to Chinese literature in the West in modern times. To explore the importance of James Legge to the Western transmission of Confucianism, the following aspects can be explored.

3.1 The Translation Contribution of James Legge

The importance of the Four Books and Five Classics to the western transmission of Confucianism was mainly reflected in the translation of the Four Books and Five Classics, including *Confucian Analects*, the *Great Learning*, the *Doctrine of the Mean*, and the *Works of Mencius*, as well as the *She King*, the *Shoo King*, the *Book of Rites*, *the Ch'un Ts'ew*, and the *Book of Changes.* "He was one of the first missionaries to study the Confucian classics, and also took into account the translation of Taoist classics such as the *Tao Te Ching* and *Zhuangzi*, playing an important role in the western transmission of modern Chinese culture. " [3]

3.2 James Legge's Idea of Translation

3.2.1 Religious thought

In his translation of the Chinese classics of Confucianism, James could not escape his own Christian identity, and therefore reflected a strong religious dimension in his translation, starting with religion first and studying the philosophical ideas embodied in Confucianism second. In his initial translation of Confucianism, the starting point was to promote the spread of Christian thought, and he was constrained by language limitations to translate the Bible so as to promote Chinese understanding of Christianity. In this process, the first problem faced by James was the translation of the word "God".

Christianity itself is a form of theology, and 'God' represents the supreme faith of Christianity and is the most central connotation of Christianity. the question of whether God should be translated as "God" or "Spirit" has become an issue. In 1850, James Legge formally proposed that God should be used instead of "God", and argued this

in his 1852 article "The Chinese Concept of God and Spirit", which focused on four issues. the first is that the "God" in Chinese literature is not the same as the "God" in Western literature; the "God" was created by later generations rather than existing since ancient times, and is not the same as the "God" in Western values. It is not the same as the "God" of Western values, and therefore the two concepts cannot be equated. [4] Secondly, in the study of traditional Chinese culture, there is a tradition of worshiping God, rather than Spirit. In addition, 'God' represents supremacy in Western values, which does not correspond to the Chinese tradition of 'God', which is diverse and subject to a degree of restraint, and therefore does not translate accurately as God. the idea of monotheism existed in the traditional conception, but the worship of God was not pure, so James proposed to translate 'God' as 'God' in order to highlight the supreme authority of God. This translation of God comes from the Confucian classics, such as the *Book of Changes*, the *She King*, which all refer to the concept of God. [5] in 1877, at the Shanghai Missionary Conference, James Legge read "The Relationship between Confucianism and Christianity", in which he further explained the difference between Confucianism and Christianity in terms of God. Confucianism is not pure in its belief in God, and people believe in other gods alongside God, and Confucianism is based on the idea of "good nature", which contradicts the Christian idea that man is born sinful. He believed that Confucianism's emphasis on literature, ethics, devotion and sincerity was in line with the teachings of Christianity, and therefore advocated that Confucianism should not be placed in opposition to Christianity in the missionary process, but rather encouraged the clergy to study the Confucian classics, which to a certain extent broadened the influence of Confucianism and laid the foundation for the spread of Confucianism to the West.

3.2.2 Philosophical Ideas

The philosophical study of Confucianism is an essential part of the translation of Confucian classics, as many of them reveal strong philosophical ideas, and it is these philosophical ideas that have contributed to the immortality of Confucian classics. Secondly, in the process of deepening his personal study of Confucianism, he was influenced by the words and deeds of sages such as Confucius and Mencius. In the process of getting to know the Confucian sages, he experienced the wisdom and morality in them and thus devoted himself to exploring Confucian philosophical theory. [6] in his later translations, he saw Confucius as the messenger of God, which fully demonstrates his recognition and respect for Confucianism and became an important motivation for his study of Confucianism.

The study of Confucian philosophy by James Legge is divided into three parts: the prolegomena and introduction to the translation, the post-translation commentary, and the text of the translation, of which the text, as the final expression of his translation, reflects to the greatest extent its importance for the translation and dissemination of Confucianism. As one of the core ideas of Confucianism, *ren* is an important expression of Confucian philosophy. Rather than limiting it to a certain fixed word, Legg's translation of *ren* was chosen according to the context of the text, and can be divided into two main categories: benevolence and benevolent conduct. However, there is no clear explanation for *ren* in Confucianism, and James translates both *ren* and virtue as virtue in the Analects, which can easily lead to confusion. This is likely to cause confusion. This is not necessarily an accurate translation of Confucian philosophical concepts, but on the whole it is quite rigorous and is the best English translation of Confucianism.

3.3 The Impact of Jame's Study of Confucianism

Norman Girardot has a high opinion of the study and translation of Confucianism by James Legge, who, as a modern disseminator of Confucian texts, had an important influence on later missionary activity and the western transmission of Confucian thought in China. [7] Although, from the present perspective, James's translation of Confucian ideas and concepts is relatively backward and in some places erroneous, it is still fundamentally the most standard Western translation of traditional Chinese Confucianism, and has generated a great deal of discussion in Western scholarship.

One of the wisest aspects of James's translation was the combination of the concepts of God and Spirit, which created good preconditions for the spread of Christianity in China. His link between Confucianism and religion affirms the religious nature of Confucian thought and uses works from the Confucian classics to support it. To prove the religious ideas in Confucianism, for example, it regarded Confucius as a religious believer and saw Confucius' reverence for heaven as a religious psychology, a notion that was widely recognised in Western scholarship at the time. Confucianism, like Christianity, had a strong religious significance, which shows that in his study of Confucianism, Legge still did not detach himself from his religious identity. Theological ideas limited Legge's inquiry into the nature of Confucianism and inevitably mixed Christian ideas when translating Confucian classics, thus distorting Confucian thought to a certain extent. But even so, there are still many scholars in the West who agree with James's views.

Apart from this, the most influential of Legge's studies of Confucianism is his translation of *the Chinese Classics* and the *Chinese Sacred Books*, which had never before been studied by any foreign scholar in a systematic and comprehensive translation of the Confucian classics. the rigour of his translations is reflected in the fact that James presupposes fidelity to the original text rather than merely a requirement for elegance of line. In the translation of the Chinese Classics, for example, in order to facilitate the reader's understanding of the text's content, James Legge spends a great deal of time commenting on the names and allusions in the text, thus enabling the reader to understand the core ideas of the text. This is one of the highlights of James's translation. [8] All in all, James's translation is a reinterpretation of the Chinese Confucian classics from a Western cultural perspective, which has facilitated the study of Chinese culture by later Western scholars.

On the one hand, as a missionary and a scholar of

translation, he was influenced by his missionary status and was able to assist other missionaries in their research and translation of Confucian classics, thus facilitating the spread of Confucianism among the missionaries. on the other hand, although he initially translated and researched Confucianism in order to better disseminate Christian thought, in the process of his research he gradually came to recognize Confucian thought and thus took it upon himself to translate Confucian classics, thereby allowing, through his own translations, more Western scholars and readers, etc., to see the charm of classical Chinese literature and the traditional Chinese cultural philosophy, led by Confucianism, which conveys the pursuit of good qualities This concept is similar to that of Western culture, and is conducive to the acceptance of Chinese Confucianism in the West. [9] the translation of James Legge's Confucianism can correct Western misinterpretations of Chinese culture, shorten the linguistic and cultural differences between China and the West in the form of a translation, and allow the West to accept Confucian culture with a more open and pluralistic mind, making James's translation of Confucianism an important vehicle for the West to understand China and to introduce traditional Chinese cultural concepts and Confucianism to the West, so that they are recognized in the West in the form of traditional texts, and are important in promoting cultural exchange between China and the West. the translation of Confucianism is an important memorial in promoting cultural exchange between China and the West.

4. CONCLUSION

In summary, as a missionary to China in the modern era, James Legge combined the identities of missionary and translation scholar, embodying the recognition of Confucianism in the process of engaging in the translation of Confucian classical works, and ultimately becoming an important messenger of the western transmission of Confucianism in the modern era. With his own unique approach to translation and translation thinking, he was able to restore Confucianism to the greatest extent possible in the form of translations, enabling Western scholars to see the core connotations of Confucianism, thus promoting the study of traditional Chinese culture in the West, as well as drawing greater attention to Confucianism in the West, and promoting the deepening of the Western transmission of Confucianism.

ACKNOWLEDGEMENTS

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Chinese New Ethnic-Originated Music Composer Jian Liu and His Timbre Fugue "Echoes of the Wind"

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Abstract: A Chinese new ethnic-originated music composer, Professor Liu Jian, and his work "Echoes of the Wind" was introduced. "Echoes of the Wind" was composed of the timbres formed by 16 alto bamboo flutes using four different playing techniques. Its fugue structure was analyzed in this research, and the composer's thinking of sound movement in space was revealed in the different movements of sound.
Keywords: Chinese New Ethnic-Originated Music; Jian Liu; Timbre Fugue; Echoes of the Wind

1. INTRODUCTION

Jian Liu (1954-2012), Chinese composer, was a professor at the department of composition, Wuhan Conservatory of Music, and a director of the Computer Music Experimental Center. He was one of the founders of the Chinese electronic music discipline.

In 1987, he founded the first music audio director profession in Chinese music colleges. In 1996, he was invited as a lecturer in Australia, and was a senior visiting scholar (1999-2004) supported by China to study algorithmic composition at the New England Conservatory of Music in Boston, USA. In 2004, he was invited by the French government to visit the National Conservatory of Music in Paris, the GRM Center of France Radio, the GRAME Center in Lyon, and the IMEB Center in Burgis for academic exchanges.

As a “New Ethnic-Originated Music” styled composer, his main works are: "Textures" (won the "Outstanding Achievement Award" in the New Music Composer Competition of the United States in 1989/1990); "The Daughter of the King Pan" (album, won the first prize of the 35th programmes edition of the Asia-Pacific Broadcasting Union in 1998); "Black Pearl" (album, released by Wind Music International Corporation Taiwan in 2000); "Echoes of the Wind" (was awarded the first prize in the Coroyton Music Festival Composition Competition in London, 2001), "Gate to Heaven" (album, released by Hunan Jinfeng Audio&Video Press in 2006); "EarSaver" (for the Max program, 2000), "Night of the Full Moon on Banpo" (ensemble of Chinese New Flute, Chinese Small Drum and four speakers, 2003); "Paradise" (violin and piano, 2005); "Crossing the Three Gorges" (symphonic chorus, 2005), etc. [1]

Professor Liu’s music was originated from his trips to ethnic minority villages such as Yao, Yi, Tujia and Miao. From the Yao singer’s “The Daughter of King Pan” to Yi people’s singing of "Black Pearl", and "Gate to Heaven" which describes the scenery of the Tujia and Miao nationalities, his music all reflects the strong "root-seeking" complex.

He said, so far, all the potential artistic traits and strong vitality of Chinese ethnic music have not been fully stimulated; many themes or works that have been “processed” with ethnic folk music materials have weakened the ethnic music’s inner vitality and appeal. Therefore, Jian Liu tried to “demonstrate” and “reveal” the vitality in his creative music.

In addition, Jian Liu believed that the emphasis on the continuous development of contemporary music language has shifted from the "pitch" relationship to the relationship between "timbre", "sound" and "rhythm". In the contemporary music, the artistic features such as the accented sound method, the timbre-sound combination, the heavy rhythm change and the individual note meaning are strikingly similar to many traditional Chinese music, including ethnic folk music. We cannot ignore the changes in these styles, and we must not give up the original Chinese ethnic music and the long history and unique cultural spirit it represents. [2]

Professor Liu's "Echoes of the Wind" was made for 16 alto bamboo flutes and was composed in 2001. This work won the first place in the 2001 Coroyton Music Festival Composing Competition in the UK, and the "William Y. Hellstone Memorial Award" and the "Outstanding Award". "Echoes of the Wind" avoids the innovative breakthrough on pitch and rhythm which were brought by 20th-century music, and used only seven basic degrees without changes; the work was focused on timbres and the pursuit of their unity, in which four main playing methods of "regular", "trembling", "breathy sound" and "flutter tonguing" of alto bamboo flute formed the melody line of timbres; in this work, micropolyphony is the texture, which forms a "timbres fugue" through the "transmission", "expansion" "contraction", "penetration" and "layering" of sounds in space. [3]

2. ANALYSIS OF THE FUGUE STRUCTURE

As a genre of polyphonic music, Fugue has a rigorous form of music. It begins with the subject and presents, develops and reproduces based on the relationship of the subject and the counter-subject. Since the 20th century, music innovation has partially diluted the basic musical elements such as pitches and harmonies, and replaced them with rich timbres, textures and densities. “Timbre Fugue" refers to forming a fugue-like structure through the change of timbre, but it itself loses the traditional subject-answer-countersubject structure.

"Echoes of the Wind" is a work created by micropolyphonic techniques. Micropolyphony refers to the same melody entering each part in sequence at short rhythm intervals, thus forming a block acoustic effect. the following provides a detailed structural analysis of this work from the perspective of timbres fugue.

2.1 Introduction (Bars 1-7)

Introduction part of this work includes bar 1-7, which compares the timbres of the regular and the breathy sound performances of the alto bamboo flute, suggesting the timbres of the subject and countersubject.

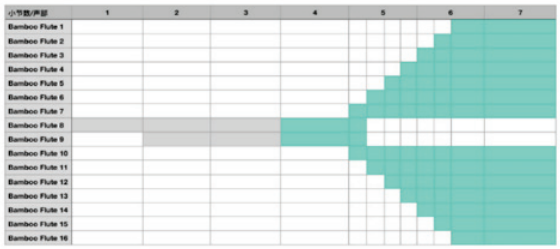


Figure 1. the schematic structure diagram of Introduction

2.2 Exposition (Bars 8-35)

For traditional exposition in Fugue, the answer enters on the subdominant after the statement of the subject, and is accompanied with the countersubject. This fugue made by micropolyphony can be understood as that: after the first voice enters, the answer is sequentially entered in each voice to form an block acoustic effect. At the same time, the countersubject is opposite to the answer with another timbre, forming a block-like contrast on the timbre, which leads to the counterpoint.

The exposition of Fugue is from bar 8 to bar 30. After the subject enters in the first voice with the timbre of traditional performance of the alto bamboo flute, the answer appears in all the 16 voices with the same melody pitch, and with a time interval of a half note.

The subject statement of the first voice ends in the 18th bar, and the answers of other voices are still going on. Beginning in the 19th bar, the countersubject enters with the breathy sound performance of the alto bamboo flute, contrasting with the timbre of the regular performance. As the answer statements end, the countersubject is entered in turn from the high voice until the first sound A of the Bar 30, voice 15 appears, which ends the statement of the subject and the answer. the bars 30-35 of this work can be regarded as the first episode of the fugue, and the timbre continues as those of breathy sound performance in the countersubject and regular performance in the subject.

2.3 Development (Bars 36-73)

In traditional Fugue, development is carried out with the comparison of the pitch, the sound zone and the strength on the subject-countersubject transposition. This work is contrasted with the timbres produced by the different methods of playing the development flute.

In the bars 36-44 of this work, the timbre of flutter tonguing on the alto bamboo flute is entered on the A sound, and the micropolyphonic writing technique is simultaneously extended to the two ends.

Bars 45-51 of the work are the second episode, which use the materials of subject and countersubject, and are composed of sporadic fragments by using imitation techniques. the subject of bars 52-55 continues to follow the micropolyphony, and the alto bamboo flutes are played from the 16th to the 1st in sequence. In this part, the alto bamboo flutes are played with a trembling timbre.

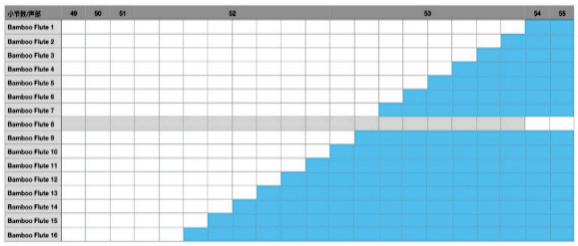


Figure 2. the schematic structure diagram of the second episode

Bars 55-73 of the work are the third episode, and the timbres of four playing methods are used as the materials to compose an episode with the richest timbres, in the way of fragment imitation. In bars 69-73, the timbre of the regular performance, the short and incomplete tendency to return to the subject indicate the emergence of recapitulation.

2.4 Recapitulation (Bars 74-96)

In bars 74-76, the alto bamboo flute timbre of regular performance on the subject is combined with the timbre of breathy sound performance on the countersubject, and the first return of the subject is reproduced from the first to the 16th voice by the micropolyphonic technique. Subsequent bars 76-81 are formed in the same way, from the two ending voices (the subject is down, the countersubject is on the top) to the middle voices. the analysis showed the two returns of the subject have the similar stretto effect in the traditional fugue.

Bars 82-86 of the work are the fourth episode, which is based on the timbre of trembling playing method. In bars 97-92, the timbre of the subject is on the top, and the timbre of countersubject is below. the alto bamboo flutes are played again from the ends to the middle part, with sporadic trembling playing. In the bars 93-96, the timbres of trembling and regular performance are combined, which ends on the regular timbre of the bar 96.

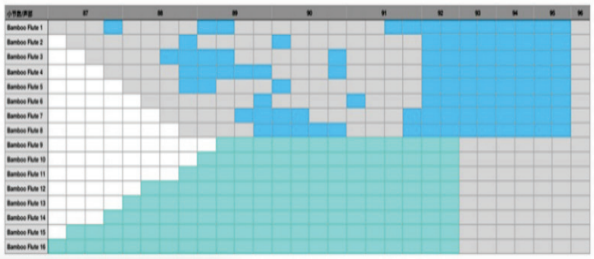
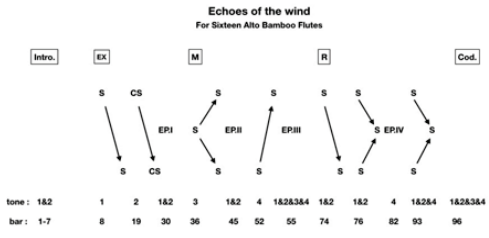


Figure 3. the schematic structure diagram of the fourth episode

2.5 Coda (Bars 96-120)

The coda part is composed of materials of the whole work from timbres and textures, and ends the whole fugue with a comprehensive timbre.

Based on the above analysis, the schematic structure diagram of "Echoes of the Wind" is
shown below.



Timbre 1: regular performance; Timbre 2: breathy sound; Timbre 3: flutter tonguing;
Timbre 4: trembling. The arrow represents the direction of micropolyphony.

Figure 4. the schematic structure diagram of "Echoes of the Wind"

3. THINKING OF SPATIAL SOUNDS

In the performance of "Echoes of the Wind", 16 performers were arranged in an arc, and the the holes of alto bamboo flutes were sealed by tapes but not flute membranes to get a good sound fusion. A timbres fugue was formed through the "transmission", "expansion" "contraction", "penetration" and "layering" of the sound in space. the layout of the timbres in space fully reflects the composer's sense of spatial sounds.

3.1. Introduction

The fugue begins with the timbre transition from regular performance of the alto bamboo flute to the breathy sound performance, and the flutes are played from the middle to the sides, forming an expanding sound effect that gradually changed in thickness from a single part to multiple parts. That is (facing the stage), the flutes on the left side are played from the 8th to the 1st, and the flutes on the right side are played from the 9th to the 16th.

3.2. Exposition

The subject, answer and countersubject of the fugue are sequentially entered from each voice, and follow the direction from 1st to 16th flute. the sound movements are from left to right (facing the stage), which makes a transitive sound effects.

3.3. Development

The first development of the subject is developed by the timbre of the flutter tonguing of the alto bamboo flute, and the sound spreads from the middle to the sides, with the timbre infiltration of breathy sound performance.

The second development of the subject is carried out by the trembling sound. the sound moves from the 16th bamboo flute to the 1st, so the auditory sound is from the right to the left (facing the stage).

3.4. Recapitulation

The timbres of breathy sound performance and regular performance are combined in the subject, and the performance moves from 1st to 16th flute, which makes a transitive left-right sound effect.

Then, the breathy sound of the countersubject moves from the 1st bamboo flute to the middle. At the same time, the sound of the regular performance of the subject moves from the 16th bamboo flute to the middle, forming a contracting layered sound effect.

After the episodes, the timbre of breathy sound is interchanged with the timbre of regular performance, forming a contracting layered sound effect in which the regular sound moves from the first bamboo flute to the middle, and the breathy sound moves from the 16th flute to the middle.

It can be seen that in addition to considering the timbre based on the texture structures, the composer also considers the trajectory of the timbre movement in the performance. the timbres fugue is formed through the "transmission", "expansion" "contraction", "penetration" and "layering" of the sound in space.

4. CONCLUSIONS

"Echoes of the Wind" is made for the folk music instrument "alto bamboo flute" of the Chinese ethnic Yi people. Prof. Liu combines the western micropolyphonic techniques with the Chinese folk musical instruments, and uses the different sounds produced by the different playing methods to form the counterpoint. the layout of the texture structure is made by the creative thinking of fugue, and the spatial sound thinking of electronic music is integrated. the timbres fugue is formed through the "transmission", "expansion" "contraction", "penetration" and "layering" of the sound in space.

This work won the famous international award, and received extensive attention and high praise from the experts at the “Tianjin International Modern Music Festival and 2001 National Young and Young Composers” (Tianjin Conservatory of Music, China). [4] As a representative composer of “New Ethnic-Originated Music”, Jian Liu’s works, while pursuing innovation, never forget the soul of Chinese ethnic music. He said: “In the contemporary music atmosphere, a musician has an unshirkable responsibility to show the beauty of Chinese original ethnic music. "[5] This article is dedicated to Professor Jian Liu, for whom has made great contributions to the spread of Chinese ethnic music and the prosperity and development of Chinese music.

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A Study on Religious Themes in Dickinson's Nature Poetry

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Abstract: Emily Dickinson's religious background permeates her writing. Her poems from the nature cluster, found in the book the Poems of Emily Dickinson, subtly convey her personal thoughts on religion, dogmatic instruction, and demonstrate the poet's superb ability to hide layers of meaning into seemingly simple, brief poems. This essay will explore two of Dickinson's nature poems, and analyze them for their connections to her personal religious beliefs and doubts.
Keywords: Emily Dickinson; Nature; Religion

1. INTRODUCTION

Emily Dickinson was an American poet who was on the forefront of creativity and ingenuity. Her poetry is characterized by a unique, individual style that has influenced generations of writers that followed. Dickinson's poetry was often introspective and greatly influenced by her religious upbringing. Although later in life she became more reclusive, seldom going out of her own home, the peace and beauty that Dickinson found in nature captures her internal struggle with finding her own religious identity outside of traditional religious practices. Her unique perspective, and expression of religious beliefs alongside her questioning of her own religious upbringing is evident in her poetry. Her writings on the subject of nature are no exception to this motif, and offer a glimpse into her spiritual upbringing and the connections she made with the natural world about spirituality. In her two nature poems "These are the days when Birds come back-" and "A Spider sewed at Night-", Dickinson's personal struggle to forge a unique spiritual identity can be seen. These two poems will be decoded with explanations of Dickinson's unique lexicon, alongside the understanding of her religious background and
motivations.

2. THE INFLUENCE OF DICKINSON'S RELIGIOUS UPBRINGING ON HER WRITING

In order to decode Dickinson's enigmatic style, it is beneficial to analyze her poetry within the context of her religious upbringing. the undeniable similarities her writings share with biblical scripture reveal an underlying aesthetic, which can be interpreted with careful attention to reveal some of the poet's hidden meaning. Dickinson's incorporation of religious motifs in poetry illustrates her personal ideologies. She was a skeptic of blind dogmatic faith, but used her own spiritual belief in posing metaphysical questions about life's deeper meanings (Freedman 10).

According to Freedman, Dickinson was well read in the works of contemporary author Ralph Waldo Emerson, who was on the forefront of innovative theological ideas. Many authors and poets during the Romantic and Late-Romantic era viewed nature as the true realization of spirituality. A faction of free-thinking poets began to split from orthodox religion, and challenge traditional values. Dickinson was not irreligious; she was merely expressing her thoughts and contextualizing the beauty and awe in nature using the vocabulary that subconsciously trickled into her writing. Her tendency for a more liberal minded approach to theology challenged the divinity of organized religion (Freedman 18-19). Dickinson shared Emerson's assertion that religion had been corrupted by religious institutions, and that a new form of religious thinking was needed to keep faith and spirituality moving forward (Freedman 18). This new faith was a more personalized interpretation of the connection between humans and a divine creator. Her poetry offers a glimpse into her combative, personal quest to find spirituality and religion outside of a society that she felt had obstructed her from true faith and a meaningful connection with
God.

Raised in the Christian sect of Calvinism, Dickinson was rebuked by traditional preachers for her apathetic tendencies. This rejection further motivated her to forge her own unique beliefs outside of a predominantly church going society (Freedman 24). Although Dickinson stopped attending church regularly, her writing and poetry owe a great deal to her religious background. She was surrounded by a society that was heavily influenced by a Christian revivalist movement, and took inspiration from that movement. At the same time Dickinson avoided indoctrination resulting from her own independent beliefs, as well as a sense of detachment from the status quo. Understanding this paradox of scriptural inspiration, coupled with Dickinson's rebellious and staunchly independent views is instrumental in decoding the symbolism and religious references that permeate her poetry. According to James McIntosh, "…[Dickinson] drew profoundly…on
the language of faith she learned as a child" (McIntosh 148).

3. RELIGIOUS IMAGERY IN DICKINSON'S NATURE POETRY

Nature, for Dickinson, was a source of joy at times and sadness at others. It incorporates truths about human existence, and her poetry on the subject is especially dotted with references to religious themes. At times writing in concert with religious models, while at others bordering on the heretical, Dickinson repurposes the religious vocabulary to suit her own individual ideas
on the mysteries and truths found in nature (McIntosh 144).

The first poem of interest in Dickinson's nature cluster is titled, "These are the days when Birds come back". This example has obvious religious and scriptural references. the pleasant images of birds and animals enjoying a warm, sunny day, masks the poets underlying dread of seasonal changes. A first read through may leave the reader unaware of hidden meanings that are incorporated in her poems about nature. According to Linda Freeman, "Dickinson was well aware that the sun could be a scorching and destructive power that withered life as well as…nourish [ing] the world…Dickinson… both desires and fears possession by sunlight - the transfiguring experience that will leave her irrevocably altered…" (Freedman 78). This explanation, of the sun's multiple roles for either good or evil, is helpful to decipher Dickinson's imagery in her nature poems. An apparently tranquil summer day takes on a more ominous tone.

In the third stanza Dickinson writes,

Oh fraud that cannot cheat the Bee.
Almost thy plausibility
Includes my belief, (Dickinson 7-9)

Dickinson begins to question the righteousness of this summer day. She is not willing to believe totally, or trust completely the perceived innocence of nature. In this instance the reader is shown a parallel for faith. Using the words "plausibility" and "belief" allude to Dickinson's own questioning of faith and religion. Understanding that Dickinson was challenging doctrine at this point in the poem, prepares the reader to analyze the overtly religious lines that follow in

stanzas five and six. In the fifth stanza she writes,

Oh sacrament of summer days,
Oh Last Communion in the Haze -
Permit a child to join - (Dickinson 13-15)

Here Dickinson is continuing to probe faith and personal religious connections. These lines are challenging the indoctrination of belief and reality. Bringing the child into the flock, so to speak, is a common practice among Christians, and the line "Permit a child to join" may even be an homage to her own past experience of going to church as a youth before eventually leaving organized religion. In the final stanza of the poem, Dickinson continues the heavy use of religious imagery. She completes the analogy of the sacrament with the lines, "They consecrated bread to take/ and thine immortal wine!" (Dickinson 17-18). This sarcastic and boisterous ending punctuates Dickinson's skepticism of organized religion. She makes a clear reference to the sacrament of communion, in which congregates consume the metaphorical body and blood of

Christ.

The second poem to analyze by Dickinson from her nature cluster is "A Spider sewed at Night". This poem describes the act of a spider spinning a web, and although this work does not bombard the reader with immediate connections to religion, a closer inspection of key phrases reveals how Dickinson's religious imagery lies just below the surface of her writing on nature.

She describes the spider crafting its web at night, "Without a Light" (Dickinson 2). the capitalization of the word "Light" indicates significance in Dickinson's poetry. the phrase without a light can also be read as without guidance from the sun. the sun has been viewed by many different societies as a representation of a divine being, or god. In this context, Dickinson is again questioning blind faith. the spider is building a web for what purpose? in the second stanza Dickinson is questioning the meaning of the spider's motivations. She writes, "If Ruff it was of Dame/ Or Shroud of Gnome/ Himself himself inform -" (Dickinson 3-5). the spider, without spiritual guidance is seeking personal knowledge. Dickinson's last stanza in this poem

gives the reader the answer to the questions being asked.

Of Immortality
His strategy
Was physiognomy- (Dickinson 7-9)

According to the Emily Dickinson Archive, the spider is an insect that has cunning instincts. Here Dickinson may be personifying herself within the spider. Physiognomy is also defined by the archive as a person's face, or mortal beings. the spider, therefore is contemplating life and death. Examining this poem highlights Dickinson's religious self-exploration. According to Linda Freedman, "Resurrection allows for…possibly the clearest expression of the 'Compound Vision' of Dickinson's religious imagination as it engenders a mutually enriching discussion between religious and aesthetic forms of rebirth and renewal" (Freedman 159). Thoughts on "immortality", rationalizing and conceptualizing the meaning of life and death without the guidance of religious dogma was what Dickinson's probing and curious mind relays through this particular poem. Although this poem is short, a complex range of ideas is portrayed by Dickinson's careful choice of words and her irregular and unique style.

4. CONCLUSION

These two examples, from Dickinson's nature cluster of poetry, illustrate her complex and original views on religion. They demonstrate her combative spirit and reluctance to follow the status quo. It can be easy to write Dickinson off as irreligious because of her unorthodox views and her reluctance to accept traditional dogmatic teaching. While it is true that she was skeptical of institutionalized religion, the assertion that she rejected religion in and of itself would be unfair and shortsighted. Dickinson was at the core of her being a highly intelligent and studious person. What she observed and wrote about in nature demonstrates that Dickinson had a deeply rooted connection to her religious upbringing. According to Lynda Szabo, "Many of her poems…become 'fragmentary sermons' on scripture" (Szabo 357). This style of jumping in and out of religious imagery can be confusing without the proper analytical tools to navigate Dickinson's hidden meanings. Careful reading of her poetry takes the reader alongside Dickinson's most personal existential reflections. She does not rely on others for answers. Instead, she is forging her own unique religious and spiritual reality and documenting her journey through poetry. Dickinson teases the reader with her wit, sarcasm, and style. A picture of her internal

dialogue is given to the reader, hidden inside of her challenging and cryptic prose. Demystifying her poems about nature, through the lens of her religious background, showcases her ability to think critically in a way that is beyond the reach of casual reading. Dickinson's inquisitive mind brings the attentive audience into her own personal and spiritual battles. With the guidance of research into her past religious life, and knowledge of her unique lexicon, an understanding of Dickinson's religious undertones and themes can be obtained.

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Teaching Optimization Research on Civil Aviation Service English

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Abstract: In recent years, the development of China's civil aviation has made great progress, which puts forward higher requirements for the service content and service quality of aviation service personnel, especially their English skills. Therefore, colleges and universities should strengthen the teaching of civil aviation service English and cultivate a large number of high-quality flight attendants. Taking civil aviation service English teaching as the research content, this paper deeply studies the factors affecting the development of civil aviation service English teaching, and explores the specific solutions from the aspects of clarifying the teaching objectives, focusing on practical teaching, integrating teaching contents and innovating the teaching mode.

Keywords: Civil Aviation Service English; Teaching; Practice Strategy

1. INTRODUCTION

In the context of economic globalization, China's market economy is no longer limited to domestic and has deeper and broader exchanges and cooperation with the international market. In this process, more possibilities and connection points have been provided for the country's economic development. In the process of civil aviation service in line with international standards, the English level of flight attendants not only reflects the quality of service to a certain extent, but also reflects China's economic development level. Therefore, English training for students majoring in air crew has become the focus of colleges and universities.

2. THE IMPORTANCE OF CIVIL AVIATION SERVICE ENGLISH COURSE

Civil aviation service English course is a professional basic course for air crew major. It is a professional course set up according to the professional characteristics and the needs for students' English ability in aviation market. the purpose is to improve the English service ability of air crew major students. At present, China is moving towards a powerful aviation country, and the English of service personnel will play a vital role in ensuring air transportation safety and improving air service quality. In addition, civil aviation service requires communication and service skills. Therefore, it is urgent to improve the English service ability of civil aviation flight attendants. [1] However, in recent years, the enrollment of air crew students in China mainly comes from art students in the college entrance examination. Compared with other ordinary high school students, art students' English is relatively weak, especially their English listening and speaking skills, which seriously restricts the students' career development and the improvement of civil aviation service level. Therefore, higher vocational colleges should strengthen the teaching of civil aviation service English.

3. PROBLEMS IN THE DEVELOPMENT OF CIVIL AVIATION SERVICE ENGLISH TEACHING

3.1 single teaching mode

In the context of economic globalization, the relationship between countries is becoming closer and closer. In the process of communication, English has become one of the media for people to communicate with the world. Coupled with the essential attribute of aviation service communication, English service ability has become the core business abilities of flight attendants, especially their English listening and speaking abilities. At present, there are still some deficiencies in the cultivation of flight attendants' professional English application ability in most civil aviation colleges and universities in China. In the traditional English teaching mode, teachers often use the oral teaching method, resulting in a low rate of classroom interaction between teachers and students. on the one hand, students cannot actively express their learning opinions or confusion, which weakens their learning enthusiasm; on the other hand, teachers cannot get students' learning feedback in time to adjust their teaching content and plans, which affects their teaching quality. [2]

3.2 laying particular stress on language teaching

Civil aviation service English is a basic course for air crew major. Its purpose is to improve the English service level of students majoring in air crew. Therefore, civil aviation service English is an interdisciplinary subject across English and civil aviation service, so teachers should balance the relationship between English and civil aviation service while teaching. However, in practical teaching cases, teachers often focus on the teaching of students' basic English skills and ignore the reference of civil aviation service knowledge, which leads to the disconnection between students' knowledge and professional needs, and is not conducive to the improvement of students' ability.

3.3 paying a little attention to practical teaching

The purpose of English teaching is to train people to use English, and English practical teaching plays an irreplaceable role in improving students' English ability. Actually most teachers often ignore the oral practice of students in English classes. In the long run, it is easy to lead to students' "mute English", and not apply their knowledge to work practice. [3]

4. PRACTICAL STRATEGIES FOR OPTIMIZING CIVIL AVIATION SERVICE ENGLISH TEACHING

4.1 to clarify teaching objectives

Teaching objectives are the starting point and foothold of some teaching activities. the teaching process must closely focus on the teaching objectives. An accurate and practical teaching objective can provide effective guidance for

teaching activities. Based on this, the teaching objectives of civil aviation service English in colleges and universities must be clearly defined. Civil aviation service English teaching should be market-oriented. That's to say, apart from taking the actual English level of students and teaching rules into consideration, we should also determine the objectives of civil aviation service English teaching according to the market demand for the knowledge, ability and quality of students majoring in air crew. the study of this course will make the students improve their civil aviation professional knowledge, English application ability and other basic professional knowledge and make them better and faster develop into inter-disciplinary talents needed by the market. In addition, while improving students' comprehensive English ability, the teachers of this course should also pay attention to the cultivation of students' professional quality, so that they cannot only have the professional quality of dedication, but also have rich Chinese cultural knowledge, and can spread and carry forward the excellent traditional culture of China in the process of international exchange. [4]

4.2 to focus on practical teaching

First, teachers should strengthen practical teaching. on the one hand, in the process of civil aviation service English classroom teaching, teachers should balance the relationship between English knowledge and practical teaching, and gradually improve students' English ability, so that students can speak English fluently while mastering the basic knowledge of English, and improve their theoretical and practical ability of English; on the other hand, colleges and universities can also strengthen exchanges and cooperation with airlines, jointly establish a practice base, regularly organize students to participate in practical training, and carry out professional practical training for students in strict accordance with market standards, so as to effectively improve students' practical ability. [5] Second, focus on situational teaching. For students majoring in air crew, the purpose of learning English is more to serve English users and provide them with help during their flight. Teachers should carry out targeted teaching for the characteristics of this major, design teaching content according to the characteristics of this major, and consider the various needs of passengers in flight as much as possible, and provide them with corresponding service and assistance. Therefore, while giving lessons, teachers should imitate situations in civil aviation service for students, for example, reception during boarding, security inspection before taking off, catering service in flight, etc, which can improve students' mastery of English knowledge and pragmatic ability, and better improve students' professional quality.

4.3 to integrating teaching contents

At present, although there are many civil aviation service English teaching materials for air crew major, it's still hard for teachers to choose a proper one for their students. In view of this problem, teachers can make useful materials with the help of curriculum resource database. For example, teachers can collect English announcements, other related audio materials and select high-quality teaching content in the Internet to carry out the teaching and to effectively improve students' English ability. [6]

4.4 to innovate teaching mode

At present, the traditional teaching mode does not meet the teaching needs in civil aviation service English class, so teachers should speed up the transformation of their teaching mode. Basing on teaching rules and the characteristics of this major, teachers should explore a civil aviation service English teaching mode in line with the teaching practice, which aims to strengthen students' learning subjectivity and effectively improve their English learning consciousness and learning ability. Firstly, teachers should create English teaching situations. Situational teaching in civil aviation service teaching refers to the use of certain teaching resources to reasonably imitate the situation in the actual work, so that students can fully perceive the workplace working environment, so as to improve their professional ability. [7] for example, teachers can create a teaching situation of boarding and security inspection, let students play the roles of passengers and flight attendants and carry out English dialogue. In the process of situational teaching, teachers should encourage students to open their mouths and enhance students confidence. Secondly, teachers can carry out group research and cooperative learning model. Teachers can set relevant questions according to the teaching content, explore the problems in groups, give appropriate suggestions, and guide students to work together to get the knowledge of civil aviation service English. Lastly, teachers should also apply Internet to teaching. on the one hand, they should use the Internet to improve teaching efficiency in teaching classes; on the other hand, online APP allows students to preview new courses or review at any time after class, consolidate their learned knowledge and effectively improve their comprehensive English ability. [8]

5. CONCLUSION

At present, the development of the civil aviation industry has higher and higher requirements for the English service level of practitioners. Colleges and universities should pay more attention to the teaching of civil aviation service English for air crew major. Teachers should clarify teaching objectives, focus on practical teaching, integrate teaching contents and innovate teaching models to improve students' English ability needed in workplace.

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Research on the Construction of Smart Campus Based on 5G Technology

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Abstract: With the rapid development of China's economy, colleges and universities have gradually carried out many aspects of exploration and practice on campus information construction. In the development of campus informatization in recent years, the concept of smart campus has gradually penetrated into the key points of college education construction in China. the emergence of 5G technology is the key to building a unified and integrated one-network office system and a harmonious and efficient multi system. Nowadays, 5G technology makes the system network have the characteristics of high speed, massive connection and low delay. It provides a specific development direction for the future intelligent campus information construction of colleges and universities in China.

Keywords: 5G Technology; Smart Campus; Application and Construction

1. INTRODUCTION

Since the construction of educational informatization, the process of educational modernization in China has made great progress. Among the components of educational informatization, the construction of smart campus is a very important content and advanced stage. Since the birth of 5G technology, China has put forward more requirements for educational informatization. With the help of 5G technology, the construction of smart campus should take big data management as the important core, so as to build multi system integration and interworking, extensive data fusion and sharing, campus office affairs and business operate under the same network, and make decisions on data support. Establishing and improving the integrated information service platform is an important content.

2.5 G TECHNOLOGY ADVANTAGES

Compared with the current 4G technology, 5G technology has the characteristics of high rate, large connection and low delay, and has more advantages in the application scenarios of enhanced mobile broadband, large-scale machine communication and ultra reliable low delay communication. Because 5G technology has the advantage of high rate, its network speed is 10 times higher than that of 4G network, up to 100 to 1, 000 Mb/s. 5G technology can bring better experience for webcast or interaction, game entertainment, VR or AR use, HD VOD, etc. the large network connectivity of 5G technology is embodied in the application of ultra dense networking and other technologies. on this basis, the maximum number of network connections can reach equipment access of nearly 1 million/km^2, which is applicable in most fields, especially in business scenarios such as environmental monitoring, smart city and smart home. [1] the low delay characteristic of 5G network is mainly reflected in the application of mobile edge computing technology, which can sink the core network to the user side, and then reduce the network delay between the two ends. 5G technology refined the technology to the millisecond level. 5G technology with ultra-low delay is more widely used in industrial control, Internet of Vehicles and other business scenarios.

3. CURRENT PROBLEMS OF SMART CAMPUS

At present, China's smart campus construction mainly focuses on infrastructure construction, information construction and business system construction. Although it has achieved little results, it is undeniable that there are still many problems in the existing smart campus construction in colleges and universities, and there is still broad room for progress in meeting the needs of smart campus users.

3.1 slow campus network speed

Although 4G network and WiFi 5 network have realized the coverage of university campus, people on campus use mobile phones or computers for a relatively intensive period of time, due to the characteristics of university network. If mobile phones, computers and other network communication equipment are used in a certain period of time, it is difficult to maintain the network speed consistent with the usual network in terms of the network system and technology covered by the university campus, and there will be lag phenomenon in varying degrees. [2] Meanwhile, the current network technology used in college campuses is vulnerable to external factors, such as severe weather; there may be a signal but no network. With the development of our society, more and more mobile terminal systems will be added to the network system in the future. That is, the future smart campus construction needs more powerful network technology to support the future higher quality network needs; but only compared with the current network construction of colleges and universities in China, it cannot fully meet the needs of campus teachers and students for smart campus.

3.2 isolated campus data island phenomenon

Although most colleges and universities in China attach importance to the construction of smart campus and invest a lot, the data measurement and data standards among major colleges and universities have not formed a unified phenomenon, which is an adverse factor for the rapid development of smart campus in China's colleges and universities in the future. Most colleges and universities have a network system selected according to the characteristics of their own campus. Therefore, the process and standard forms, methods and contents of data collection in colleges and universities are different, resulting in disharmonious information among various

data. the data collected by major colleges and universities form isolated data islands, and there is a lack of bridge for communication and common sharing among data islands, so that effective combination cannot be realized. For example, in some colleges and universities, it is difficult to realize effective sharing between campus one-card system and campus library management system. [3]

3.3 insufficient bearing capacity of business system

The information construction of colleges and universities and the construction of smart campus are conducive to teachers and students to obtain convenient resources and improve the efficiency of teaching and learning activities through the network, so as to enhance the convenience and efficiency of teaching and learning. However, due to the variety of business and office affairs that colleges and universities need to carry out, and the increasing wisdom of campus construction, various business systems lead to redundant data, unable to make efficient and unified use of data information, let alone co construction and sharing. In the final analysis, the construction of smart campus in colleges and universities lacks sufficient unified data specification and data management, resulting in insufficient carrying capacity of business system.

4. PROSPECT OF SMART CAMPUS CONSTRUCTION UNDER 5G TECHNOLOGY

4.1 to achieve full campus network coverage

In view of the higher requirements of colleges and universities for network construction in the future, as well as the fact that more and more mobile terminals and PC terminals are added due to the real database construction, cloud intelligent management and other services, it is an important goal for colleges and universities to fully cover 5G technology network in the smart campus of colleges and universities. the construction of smart campus can realize massive data management through 5G technology, provide high-speed and low delay services for massive terminals and mobile terminals, and meet the needs of smart campus users for network stability, reliability and high-speed. In addition, the campus network construction and services under the background of 5G technology network can also meet a variety of educational scenarios, office and other services. In addition to the basic high-speed network transmission, it can also provide a variety of solutions to meet the rich needs of more network access points, and provide reliable network services and more ecological business systems for the information construction of smart campus and colleges and universities, to meet the needs of smart campus users in learning, teaching and life to a great extent. [4]

4.2 to realize data-aided decision-making

According to the isolated data island phenomenon existing in the construction of university database in China, the application and construction of 5G technology in smart campus can comprehensively collect data, effectively manage and apply the system, upgrade the smart campus data center and expand the database. 5G communication technology can provide necessary technical support for campus auxiliary decision-making and dynamic management to a great extent through advanced data processing technologies such as big data, cloud computing and artificial intelligence, and can effectively collect, utilize, analyze and apply data. It can also promote the business construction and information system construction of colleges and universities through the construction of unified and harmonious data management, and provide optimized information system and management system.

4.3 to improve the information literacy of teachers and students

The information literacy of college teachers and students has a certain relationship with the information environment. the relatively complex information environment has a certain impact on the information literacy of teachers and students. the intelligent, efficient and three-dimensional learning information environment under the background of 5G technology is conducive to all kinds of new teaching modes and curriculum practice. For example, the combination of 5G network technology and network teaching makes teachers' teaching activities break the restrictions of time and space, and both teachers and students can be at any time and place. As long as you are connected to the network, you can carry out teaching activities, and 5G technology can greatly improve the video and voice effect of network teaching, and the teaching quality and effect will also be improved. Moreover, in this process, teaching methods can also be innovated frequently. For example, using VR technology, students can feel the immersive classroom effect. [5] With the support of 5G network technology, the information literacy and information level of smart campus users have been greatly improved, and promote the continuous optimization and innovation of smart campus.

5. CONCLUSION

To sum up, the birth of 5G technology promotes the construction of smart campus in colleges and universities in China. In the specific application of 5G technology in the future, we can expect the smart campus of colleges and universities to successfully build a network system and platform that can meet the needs of the majority of smart campus users with a higher speed, lower delay and wider connection.

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Study on Extraction of Phenolic Acids From Salvia Miltiorrhiza By Boiling Method

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Abstract: Salvia miltiorrhiza is a Labiatae herb. It uses dry roots and rhizomes as medicine. It has the effects of promoting blood circulation and removing blood stasis, expanding coronary artery, cooling blood and activating blood circulation, clearing heat and removing annoyance. the chemical constituents of Salvia miltiorrhiza can be divided into fat soluble and water-soluble. Among them, phenolic acids are high in the water-soluble components of Salvia miltiorrhiza. It has the effects of inhibiting cardiomyocyte hypertrophy, promoting blood circulation and removing blood stasis, dredging meridians and activating collaterals. It has a good application prospect for the treatment of cardiovascular and cerebrovascular diseases. the phenolic acid compounds in Salvia miltiorrhiza were extracted by boiling method. Through the experimental study on the material liquid ratio, boiling time and extraction times, the OD value of phenolic acid compounds in the extraction solution was measured by spectrophotometry, substituted into the regression equation to calculate the extraction rate of phenolic acid compounds, and then the optimal process conditions were analyzed. Through the analysis of the experimental data, it is concluded that the extraction rate of phenolic acids in Salvia miltiorrhiza is the highest when the solid-liquid ratio is 1:10; the decocting time is 50 minutes and the extraction times are 2 times, and the highest extraction rate is 7.15%.

Keywords: Salvia Miltiorrhiza; Phenolic Acids; Boiling Method

1. INTRODUCTION

Salvia miltiorrhiza is a dicotyledonous perennial herb in Labiatae. Its roots and rhizomes are used as medicine. It has the effects of relieving congestion and swelling, relieving pain, restoring qi and blood, stimulating the menstrual flow, clearing heart and removing annoyance. It mainly treats symptoms such as poor sleep, coronary heart disease, irregular menstruation and so on.

2. OVERVIEW OF PHENOLIC ACIDS IN SALVIA MILTIORRHIZA

The chemical constituents of Salvia miltiorrhiza can be divided into liposoluble components and water-soluble fraction. the fat soluble components include tanshinone I, cryptotanshinone, methylene tanshinone, hydroxytanshinone IIA, etc., of which tanshinone is the main liposoluble component. Water-soluble fractions include phenolic acid compounds, danshensu, lithospermic acid B, protocatechuic aldehyde, etc. [1] Danshensu has a good protective effect on the circulatory system and digestive system. Shikonic acid B can treat cardiovascular diseases and protect the liver, etc. Protocatechuic aldehyde can protect cardiomyocytes, antithrombotic formation, and inhibit cell apoptosis. Among them, water-soluble components are represented by phenolic acid compounds; Phenolic acids are most widely used in the elderly because they can protect the human heart and prevent atherosclerosis.

In this experiment, phenolic acids, water-soluble components of Salvia miltiorrhiza, were extracted by classical decoction method, and the best extraction process was obtained by different decoction time, extraction times and solid-liquid ratio. [2]

3. EXPERIMENTAL STUDY ON EXTRACTION OF PHENOLIC ACIDS BY DECOCTION

3.1 treatment of raw materials

The experimenter crushes the prepared salvia miltiorrhiza slices into powder with a pulverizer, then pours out the powder and filter with a screen mesh to remove the large disintegrating slag; Puts the screened Salvia miltiorrhiza powder into a constant temperature drying instrument (drying temperature 60 ~ 70 ℃, drying time 2h) for drying; Takes out the dried Salvia miltiorrhiza powder for sealing and storage, and keeps it away from light.

3.2 selection of determination wavelength by spectrophotometry

The experimenter takes salvianolic acid B standard, add the developer, use deionized water commonly used in the laboratory as the blank control to zero, and use a spectrophotometer to detect it at the wavelength of 400 ~ 500nm. It is found that the absorption value is the most obvious at 493nm. Therefore, it is decided to use 493nm as the determination wavelength.

4. EXPERIMENTAL STEPS

4.1 drawing standard curve of salvianolic acid b

4.1.1 Preparation of salvianolic acid B standard solution: the experimenter weighs 10mg of salvianolic acid B standard solution and fixes the volume with 50ml volumetric flask to obtain 0.2 mg/ml salvianolic acid B standard solution.

4.1.2 Drawing of standard curve: the experimenter pipettes 0.2 mg/ml salvianolic acid B standard solution 0, 2.5, 5.0, 7.5, 10.0 and 12.5ml respectively, and fixes the volume to 25ml respectively. the experimenter determines the absorbance value with a spectrophotometer and record the data as shown in the table below; sets the OD value of salvianolic acid B as the abscissa and the concentration as the ordinate, draws the standard curve, and obtains the regression equation $Y=0.1282X-0.0073$, $R^2= 0.9753$.

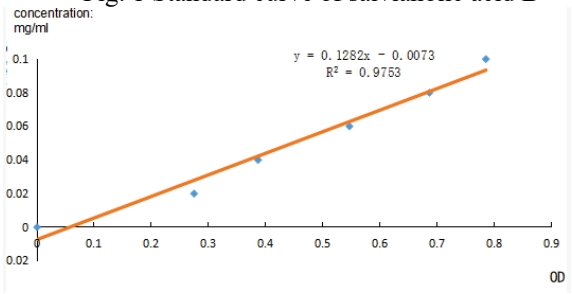
Table 1 Record of salvianolic acid B concentration and OD value

Tube number	1	2	3	4	5	6

Concentration mg/ ml	0	0.02	0.04	0.06	0.08	0.1
OD value	0	0.275	0.387	0.547	0.687	0.786

4.1. 3Drawing the standard curve of salvianolic acid B

Fig. 1 Standard curve of salvianolic acid B



4.2 effect of decocting time on extraction rate of water-soluble active components of salvia miltiorrhiza

The experimenter turns on the spectrophotometer to preheat, accurately weighs 10g dry Danshen powder, adds 100ml deionized water, stirs evenly, heats it on the electric furnace, keeps the solution slightly boiling and decocts for 30min;

To let it cool slightly, filter it, decoct and filter it again, mix the filtrate twice, decoct and fix the volume to 100ml, put it in a conical flask and label it;

To pipette a certain amount of filtrate into the centrifuge tube, balance it with a balance, put it into the centrifuge rotor in alignment, and set the parameters. After centrifugation, the experimenter takes out the centrifuge tube, tries to avoid shaking the tube body, and pours the centrifuged supernatant into the test tube prepared in advance;

To suck 0.4ml of supernatant after centrifugation, put it into a clean test tube, repeat the operation twice, label, and then suck 0.4ml of deionized water for blank zero adjustment;

To add color developing agent in sequence and perform dark treatment;

After the dark treatment, the experimenter takes out the test tube, corks it, shakes it well, pours it into the cuvette, moistens it for the first time, uses it for measurement for the second time, uses the blank as zero, and measures the OD value. According to the same method above, the experimenter carries out 40 min, 50 min and 60 min experiments, and records data. [3]

Table 2 OD values of phenolic acids in Salvia miltiorrhiza at different decocting times

Decoction time(min)	30	40	50	60
OD value of tube 1	0.425	0.513	0.614	0.615
OD value of tube 2	0.423	0.517	0.618	0.620
OD value of tube 3	0.403	0.507	0.613	0.611
Average OD value	0.417	0.512	0.615	0.615

(control variable: solid-liquid ratio 1:10, extraction times 2 times)

4.3 effect of extraction times on extraction rate of phenolic acids in salvia miltiorrhiza

The experimenter accurately weighs 10g dry Salvia miltiorrhiza powder, adds 100ml distilled water, stirs with a glass rod to dissolve the salvia miltiorrhiza powder, heats in an electric furnace, and waits until the temperature rises slowly. the solution in the beaker reaches a slightly boiling state, reduces the temperature appropriately, and keeps the solution in a slightly boiling state all the time, always observes the beaker and stir, and adds a small amount of distilled water if necessary;

To keep the solution slightly boiling and decocting for 50 minutes;

After decocting, the experimenter turns off the electric stove, folds the gauze into four layers, puts it on a clean funnel, and slowly pours the liquid medicine on the gauze for filtration. the experimenter firstly decocts the filter residue after one filtration, and then decocts the filter residue after two filtration. the experimenter mixes the filtrate for three times, decocts to be bottled with 100ml and labeled;

To pipette a certain amount of filtrate into the centrifuge tube and balance it with a balance;

The experimenter puts two centrifuge tubes of equal quality into the centrifuge symmetrically, closes and tightens the cover, closes the centrifuge and sets parameters. the centrifugal parameters shall be consistent each time to eliminate the interference of redundant factors (parameters: rotating speed 8000r/min, time 5min);

After centrifugation, the experimenter takes out the centrifuge tube and pours the supernatant in the centrifuge tube into the washed and dried test tube;

The experimenter pipettes 0.4ml of the supernatant after centrifugation into the washed and dried test tube, repeats the operation for three times, labels, and then pipettes 0.4ml of distilled water into the test tube for blank zeroing; [4]

To add the component reagent of the developer in sequence and perform dark treatment.

After the dark treatment, the experimenter takes out the test tube, corks it respectively, shakes it evenly, pours it into the cuvette, moistens it for the first time, uses it for measurement for the second time, and uses the blank as zero to measure the OD value. the experimenter use the same method to do one extraction and two extraction experiments.

Table 3 OD values of phenolic acids in Salvia miltiorrhiza with different extraction times

extraction times	1	2	3
OD value of tube 1	0.471	0.614	0.575
OD value of tube 2	0.463	0.618	0.572
OD value of tube 3	0.464	0.613	0.586
Average OD value	0.466	0.615	0.578

(control variables: solid-liquid ratio 1:10, decocting time 50min)

4.4 effect of material liquid ratio on extraction rate of effective components of salvia miltiorrhiza

The experimenter accurately weighs 10g Salvia miltiorrhiza powder, adds 100ml distilled water to form a 1:5 solution, stirs it evenly with a glass rod, heats it on an electric furnace, and keeps the solution slightly boiling for 50 minutes. After decocting, the experimenter filters, mixes the filtrate twice to a constant volume of 100ml, puts it into a conical flask, shakes it well, and labels it for standby;

The experimenter pipettes a certain amount of filtrate into the centrifuge tube, divides it into two parts, and balances it with a balance. the experimenter puts the centrifuge tube of equal quality into the rotor symmetrically, closes the

cover and tighten it, closes the centrifuge, and sets the centrifugation time and speed;

After centrifugation, the experimenter takes out the centrifuge tube and pours the supernatant in the centrifuge tube into a clean test tube for standby; [5]

The experimenter sucks 0.4ml of the supernatant after centrifugation, puts it into the washed and dried test tube, repeats the operation twice and labels it, and then sucks 0.4ml of distilled water into the test tube to be null adjusted;

The experimenter adds the component reagent of the color developing agent in sequence and conduct dark treatment;

After the dark treatment, the experimenter takes out the test tube, cork it, shakes it well, pours it into the cuvette, moistens it for the first time, and measures it for the second time. Distilled water is used as the zeroing solution to measure the OD value. According to the same method, the material liquid ratio is 1:10; 1:15 and 1:20 experiments. the experimenter records data.

Table 4 OD values of phenolic acids in Salvia miltiorrhiza with different material liquid ratio

(control variable: decocting time: 50min, extraction times: 2 times)

solid-liquid ratio	1:5	1:10	1:15	1:20
OD value of tube 1	0.619	0.614	0.368	0.326
OD value of tube 2	0.616	0.618	0.374	0.303
OD value of tube 3	0.621	0.613	0.371	0.301
Average OD value	0.619	0.615	0.371	0.310

5. CONCLUSION

In this experiment, phenolic acids in Salvia miltiorrhiza were extracted by decocting method. the absorbance value was measured by spectrophotometry, and the extraction rate analysis results were calculated. the following conclusions were obtained:

The best extraction process was as follows: the extraction rate of phenolic acids in Salvia miltiorrhiza was the highest when the solid-liquid ratio was 1:10; the decocting time was 50 minutes and the extraction times were 2 times. the highest extraction rate was 7.15%.

The experimental results cannot only provide reliable experimental data and methods for other scientific research institutions, but also provide reference for production and application.

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Analysis on the Current Situation of College Art Education and Teaching Reform Ideas

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Abstract: Since the reform and opening up, college art education has been greatly improved, but there are still many deficiencies in the ways and methods of education, ignoring students' ideological and political education and humanistic quality training. This paper analyzes the current situation of college art education, analyzes several misunderstandings existing in college art education, and discusses the teaching reform ideas of college art education.

Keywords: University Education; Art Status; Teaching Reform Ideas

1. INTRODUCTION

It is observed that the employment situation of college students after graduation is not very ideal, and their employment pressure has become greater and greater in recent years. However, from the perspective of enterprises or employers, college graduates do not have very solid skills and employability. [1] It is difficult for them to complete the tasks that their major should be able to complete and must complete, or they are unable to apply their professional knowledge in specific work. the fundamental reason for this situation is that college graduates do not combine the book knowledge and professional skills learned with the actual needs of the rapidly developing society, and the lack of a college student's due artistic quality and cultivation is the most serious problem. Therefore, it is urgent to strengthen the comprehensive education of college art specialty.

2. CURRENT SITUATION OF ART EDUCATION IN UNIVERSITIES

With the rapid development of China's economy and society, the market demand is also changing. In recent years, in order to meet the needs of the market and the provisions of the education system, many comprehensive colleges and universities have greatly expanded the school running strength of art academies and departments. In this process, it can be clearly found that there is no smooth teaching evaluation system and lack of policy guarantee. [2] While, in many comprehensive colleges and universities, the education of students has not been paid enough attention in thought, measures and concrete actions. In summary, there are the following outstanding performances:

2.1 no clear training objectives

The particularity of art education makes it necessary to pass additional professional examinations in the college entrance examination. the students admitted by professional art colleges are students with good professional foundation, and the quality of students majoring in art education in the university is also decreasing with the expansion of the college entrance examination. In talent training, universities basically learn from the educational mode, curriculum and teaching methods of professional art colleges. While training students' professional basic ability and professional skills, they ignore students' ideological and political education and humanistic quality training. There is no obvious normality and prominent professional development direction, which leads to students' inability to meet the needs of the society.

2.2 no strong practical ability

The practice course of art education is divided into professional skill practice and teaching vocational skill practice. In comprehensive universities, only professional skill practice is generally valued, and the organizational form is relatively single, which generally only appears in the classroom. Practice is the most important link. Many problems in teaching are found in practice. There is no unified management organization, and the internship only adopts the way of decentralized internship. So the internship is lack of monitoring. Therefore, in practice, many students are mere formality and do not solve the problems in time. Naturally, students' teaching vocational skills will not be improved in a real sense. [3]

2.3 students have poor enthusiasm and no motivation to learn

First, due to the pressure of the college entrance examination to realize the university dream, students of non professional art colleges take a surprise way to learn professional basic skills, which is naturally inferior to students of professional art colleges. Second, the quality and culture are not high. the low passing score of culture course makes the students' cultural quality and comprehensive quality very low, and they have no clear understanding of themselves. If these students with low comprehensive quality and low professional level are fully guided by the educational model of normal universities or professional art colleges, they will only be faster than faster. This will lead to students' disagreement with themselves and increase the difficulty of teachers' teaching. the school may lack its own teaching characteristics, but also set up a wide variety of courses and a wide range of professional choices, so that students reduce their recognition, resulting in learning weariness and inferiority complex, and feel more and more confused about their future. Many students lack planning and purpose for their own development, resulting in the lack of enthusiasm in the learning process. Therefore, students will blindly choose their majors, which will naturally affect the quality of learning and their own employment. Once students lose confidence in employment, it will lead to the distortion of learning motivation and attitude. At the same time, it has fallen into a vicious circle that the worse

the ability, the more the loss of learning enthusiasm and the more difficult employment. [4]

3. SOME MISUNDERSTANDINGS IN COLLEGE ART EDUCATION

3.1 misunderstanding of the essence of art

Western ideology and values have impacted all fields of our society since China's reform and opening up. Various western ideological trends have also slowly affected art education, which is reflected in students' values and outlook on life. Therefore, a lot of negative thoughts and phenomena have gradually appeared. For example, some art colleges and universities do not consider China's actual national conditions, but introduce some seemingly avant-garde and fashionable modern western art concepts into the curriculum as a new aesthetic concept and evaluation standard to teach students. Therefore, students cannot have a correct understanding of the essence of art and the law of artistic creation, and even wrongly guide students' values and creative consciousness, resulting in students' loss of enthusiasm for the cultivation of artistic moral quality and the improvement of artistic skills. Impetuous psychology was bred under the influence of utilitarianism. It only knows that it blindly pursues economic interests and formal innovation, and some decadent, boring and absurd "innovative art" was born.

3.2 misunderstanding of target training and teaching mode

At present, higher art education has a very obvious tendency of single knowledge. Students' comprehensive quality and moral cultivation that should be paid attention to are ignored by teachers. the acquisition of pure professional knowledge has become the most important link for teachers. This wrong behavior will only lead to the result of students' imperfect personality quality. the emphasis on students' art theory and artistic cultivation is far from enough in art education of many colleges and universities. Students only master the general operation skills, but due to the lack of cognition and understanding of aesthetic theory and the cultivation of art skills, they cannot deeply understand and fully grasp the essence of art, and it is difficult for students to have long-term development. Another point that cannot be ignored is that there is no rigorous, independent and complete education system and scientific system in college art education. There are only patterned teaching means and contents, and there are no more effective teaching means and teaching contents to adapt to the new era. Therefore, students cannot meet the needs of social development at all.

3.3 misunderstanding of art theory education

A very important link in art education is art theory education. It can cultivate students to establish a correct outlook on life and correct artistic ideology, and form a correct artistic expression style and artistic appreciation ability. In college art education, the western modern art trend is blindly instilled into students by teachers without selection and analysis. It seems to be in line with international standards, but it artificially misleads students' artistic cultivation and aesthetic tendency actually.

4. THOUGHTS ON TEACHING REFORM OF COLLEGE ART EDUCATION

4.1 determining the correct orientation, clarifying the goal, and then training talents

With the deepening vigorous development of market economy, the standard of social demand for talents is getting higher and higher. the change of talent demand also has a great impact on the traditional teaching content and mode. To meet the needs of society, a single teaching model and training objectives are far from enough. Compound and applied talents are the most urgent needs of society. We should set a diversified educational goal of cultivating compound art talents in college art education. Compound talents are compound characteristic talents with the basis of art professional ability and other relevant professional knowledge. Its ultimate training goal is to form a diversity and complexity, so that a variety of art related industries can meet the talent needs of the society, not to train a full-time painter or primary and secondary school teachers. This kind of talents can be divided into two types: universal compound talents and professional compound talents. In talent training, professional skill courses should be dispersed into these two types of talents, and the courses that used to pay too much attention to professional skills should be cancelled, so as to realize the simultaneous development of extensive knowledge and characteristic specialties. In this way, students can avoid learning blindness, clarify their direction, objectives and scope of employment at the beginning of choosing a major, and more rationally choose a road suitable for their future. In this way, the comprehensiveness and complexity are particularly prominent, weakening the deficiency that the specialty is not as good as the professional design college, the academy of fine arts and the normal university. Therefore, students have the ability to choose employment widely, and the scope of employment has been expanded a lot.

4.2 guiding college students' autonomous learning ability

If you want to learn any knowledge well, you need to step by step, from shallow to deep; Aiming too high and being divorced from reality will only be counterproductive. Therefore, we should customize a feasible self-study plan according to our professional level, grasp the phased and systematic knowledge during self-study, and reliably and effectively complete the specified self-study objectives and plans. In art learning, it is very important to formulate a perfect and feasible learning plan, because art learning in higher education has a strong purpose. When making a study plan, we must take into account the characteristics of our art major, our foundation and strength. Learning needs enthusiasm and strong motivation, so don't set your goals too high. We should study step by step and take the initiative to formulate a clear self-study plan. In the process of art teaching, teachers should focus on cultivating students' awareness of autonomous learning, let students gradually develop the habit of autonomous learning, and eliminate the idea of relying on the classroom and teachers. the main body of learning is the students themselves. the effect of autonomous learning also depends on whether the students' awareness of autonomous learning reaches a certain degree to a great extent.

4.3 paying attention to cultivating students' comprehensive ability and improving students' initiative

At present, among many ordinary universities in China, the cultivation of top-notch talents is graduate education, and undergraduate education has basically become universal education. However, as students, the learning process of any major should have the spirit of "pursuing with lifelong energy", especially in the art discipline. the ability of active learning, independent inquiry and independent problem-solving are what students should have in undergraduate learning. After undergraduate teaching, students' internal quality has been improved; thinking space has been expanded; students' internal drive has been stimulated, and their knowledge reserves have been enriched. They have also learned to think independently, freed themselves from the training of traditional unitary techniques, become the subject of real active learning, and no longer blindly and passively accept the knowledge and skills taught by teachers. Teachers should also transition from the main teaching of education to guiding teaching, avoid traditional preaching, guide students to acquire knowledge independently, and give students enough independent space to understand the surrounding professional knowledge, learn to use various media around them, and use artistic literacy to indirectly improve their skill level.

4.4 cultivating students' multicultural awareness

Art has been more and more widely used in life. Students should study hard and have solid basic functions of art major. Art is a medium of visual communication. It has its own characteristics. It not only has professionalism, but also covers the fields of knowledge including literature, music, history, folk customs and so on. Students must dabble in other related professional knowledge. From a single art skill learning to a diversified direction, so that they can specialize in many skills and master extensive and professional knowledge. [5]

4.5 paying attention to the connection between various disciplines, and optimizing and recombining the courses

In order to improve the efficiency of higher art education, we can adopt the course type of combining integrated courses, wide area courses, related courses and core courses. of course, the content and thinking methods of higher art teaching should also be integrated into the teaching content and educational thinking methods of ordinary art teaching. In order to turn education from theory into practice and turn students' art creation process into the process of understanding art, we should integrate the ideas and methods of general art education into the teaching process of art. Based on the environment of globalization, multiculturalism and social market economy, art education must have flexible curriculum and adjustment methods. It should also pay attention to the diversified choice of students, the development of the discipline and the practical requirements of the changing society.

4.6 strengthening the content of modernist art education

Many modern art works aim to express subjective consciousness, so some works are very obscure and difficult to understand. In order to explain thoroughly, teachers must also have high self-cultivation and quality. First of all, teachers should pay attention to cultivating creativity and imagination in the teaching and appreciation of modernist art. What our students lack is the innovative spirit in modern art works. Another important factor in modern art is rich imagination. Students can develop rich associations and imagination in appreciation, experience the thoughts or emotions to be expressed by painters, appreciate the core ideas of modernist art from a different perspective, and let their divergent thinking be used and exercised. Secondly, teachers should pay attention to the comparison and communication between modern art and other art forms in appreciation teaching. [6] for example, the spiritual cores of traditional Chinese freehand brushwork and abstract expressionism are interlinked. They are both unrestrained and straightforward.

5. CONCLUSION

Universities and colleges must have a strong sense of business and responsibility in order to complete the important task of teaching and educating people, and cultivate students with high political quality and professional level. the curriculum reform also serves the training goal for art education. the curriculum setting and arrangement should be discussed around the basic nature of art. the direction of teaching reform should constantly reflect the national and social demand for talents and be in line with international standards, which is a continuous and long-term dynamic process.

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Research on the Strategy of Optimizing the College Administrative System in China

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Abstract: The administrative level of colleges and universities is closely related to the overall quality of running a school. This paper explores the strategies for the optimization of China's university administrative system. Firstly, it analyzes the importance of the optimization of China's university administrative system, points out the existing problems in China's university administrative system from the aspects of role orientation, system construction, department cooperation and personnel quality, and finally puts forward the corresponding optimization strategies, in order to provide some reference for China's higher education administration.

Keywords: Optimization; Colleges and Universities; Administrative System

1. INTRODUCTION

The great role of science and technology in the economic field makes people realize that the era of knowledge economy has come, which puts forward higher requirements and promotes the development and reform of higher education in various countries. In the reform of higher education, the role of administration cannot be ignored. With the rapid development of China's economy, the reform of colleges and universities has also made great progress, but the problems in administrative management are also increasing gradually. Therefore, it is urgent to optimize the management system of China's higher education. Therefore, we should fully analyze the problems in the administrative system of colleges and universities in China, optimize them, improve the modernization level of administrative management, and finally realize the progress of higher education in China.

2. THE IMPORTANCE OF OPTIMIZING THE COLLEGES ADMINISTRATIVE SYSTEM IN CHINA

2.1 It Is Helpful To Improve the Efficiency of University Administration

Administrative management is one of the most basic work in colleges and universities. It has many contents, involving teaching, scientific research, logistics and other work. It can be described as the most complicated work in colleges and universities. Optimizing the administrative management mechanism can effectively improve the quality of managers, strengthen the cooperation between departments, change the working mode, and improve the efficiency of administrative management in colleges and universities to a great extent.

2.2 It Is Conducive To Promoting the Overall Quality of Colleges and Universities

The teaching and scientific research work in colleges and universities is the core of colleges and universities, which needs the administrative work to provide efficient basic services in order to achieve great progress. Therefore, it is of great significance to optimize the administrative management mechanism in colleges and universities. By optimizing the administrative management mechanism, we can ensure the harmony and unity within the administrative management, give full play to the maximum efficiency, provide great energy for teaching, scientific research and other work, and promote the improvement of the overall quality of colleges and universities. [1]

3. PROBLEMS IN THE COLLEGES ADMINISTRATIVE SYSTEM IN CHINA

3.1 Role Positioning Deviation

The administrative work of colleges and universities in China is mainly to provide service guarantee for teaching and scientific research. However, from the actual situation, there is a problem of role positioning deviation in the college administrative management mechanismin China. Many staff have insufficient service consciousness, regard themselves as managers, ignore their own obligations, and pursue their own interests too much. the phenomenon of bureaucracy administration is more prominent, and the ideological conservatism and outdated concept of department personnel have a direct impact on the efficiency of administrative work. [2]

3.2 Relevant System Construction Is Not Perfect and in Place

China's colleges and universities mostly adopt two-level management levels, and some colleges and universities adopt three-level management levels. Although this refines the work, there are also problems such as overlapping departments and unclear responsibilities, which seriously affect the improvement of work efficiency and even cause work paralysis sometimes. At the same time, such a management level has a superior subordinate relationship. Some personnel cater to the superior leaders for their future and ignore their own work, which is not conducive to the development of administrative work. In addition, the imperfect administrative promotion mechanism and the difficult promotion of managers are also important factors affecting the efficiency of administrative work.

3.3 There Is No Tacit Understanding Between the Administrative Departments

To a certain extent, the setting of colleges administrative departments in China is similar to that of government administrative institutions in China, which makes it easy to have more departments in order to refine the work. Although this is to ensure the maximization of work efficiency, there is also a problem of tacit cooperation between departments. Departments only pay attention to the completion of their own work, fail to cooperate with other departments as a whole, and even the problem of

unclear responsibilities and mutual prevarication is unfavorable to the overall development of administrative management. [3]

3.4 The Quality of Administrative Personnel Needs To Be Improved

The quality of administrative personnel is also the key factor affecting the colleges administrative effect in China. From the current actual situation, the overall quality of administrative personnel needs to be improved, mainly due to institutional factors. There is still a certain gap between them and teachers in terms of salary and promotion, which is also a blow to the enthusiasm of regular work. At the same time, there are many work contents, which are difficult to improve themselves, and also affect the optimization of work. In addition, the school does not pay much attention to the moral quality of managers, which will also affect the level of administrative work.

4. STRATEGIES FOR OPTIMIZING THE COLLEGE ADMINISTRATIVE SYSTEM IN CHINA

4.1 To Change Ideas and Reposition

In view of the deviation in the role orientation of administrative work, colleges and universities should change their ideas in time and reposition the administrative work. First of all, colleges and universities should properly handle the relationship between administrative management, academic research and teaching, clarify the work responsibilities of various departments, and accurately locate their own roles. Secondly, administrators should recognize the service nature of their work, do basic service work for students, teachers and scientific research in specific work, keep in mind the working standards of service and dedication, and realize their value in work. Thirdly, administrative personnel should update their ideas in time, keep pace with the times, arm themselves with market-oriented, nationalized and scientific work ideas, do their own work carefully, and improve the quality and level of administrative work.

4.2 To Improve the Mechanism and Put It in Place

The imperfect and inadequate construction of administrative mechanism in colleges and universities leads to the overlapping of management institutions, resulting in the waste of resources, low work efficiency and other adverse effects. Therefore, it is necessary to improve the administrative mechanism and implement the relevant systems in place. First of all, colleges and universities should establish and strictly implement the evaluation mechanism, create a fair, democratic and open evaluation environment, transfer qualified personnel from their posts or make rectification within a time limit, and effectively ensure the efficiency of administrative work. Secondly, colleges and universities should reasonably manage posts, improve the construction of promotion system, reasonably plan posts according to the situation of the school, and fully merge departments with similar or overlapping functions, so as to realize the scientization of the setting of management departments. At the same time, we should improve the promotion system of administrative managers, encourage managers to work actively and improve their management ability. Thirdly, colleges and universities should introduce incentive mechanism, encourage people who work actively and have innovative ability in management, and adopt the way of survival of the fittest, so as to excavate excellent talents and improve the overall quality and level of administrative work. [4]

4.3 To Strengthen Communication and Coordination in Place

Administrative management is a highly systematic work, and the work content is complex, which needs the mutual cooperation, communication and cooperation between various departments. Therefore, the optimization of university administrative management mechanism should strengthen the communication between various departments and coordinate the work in place. First of all, the administrative work of colleges and universities should have an open, fair and just good working environment, so that all departments can communicate smoothly. Weekly, monthly and annual reports can be used to make all departments familiar with the work progress between departments. Secondly, colleges and universities should establish an information sharing mechanism to promote the connection between administrative departments and other departments of colleges and universities, ensure the smooth flow of information and improve work efficiency. Thirdly, colleges and universities should regularly organize some activities, such as gatherings and tourism, improve the contact between administrative personnel of other departments, strengthen communication and mutual understanding while being leisure and entertainment, so as to reduce unnecessary trouble and improve work efficiency.

4.4 To Improve Quality and Service in Place

The administrative management of colleges and universities ultimately depends on managers for service management. Therefore, the quality of managers is the key to improve the level of administrative management. First of all, colleges and universities should create various conditions to improve the cultural quality of administrative personnel. Managers should also strengthen the study of administrative knowledge, learn from advanced experience, and constantly enrich their own knowledge system in work practice. Secondly, administrative personnel should have advanced ideological and political quality, firm faith in Marxism and socialism, strictly abide by rules and regulations, establish service awareness, improve ideological consciousness, and have the courage to take responsibility in their work. Thirdly, colleges and universities should pay attention to the improvement of the comprehensive professional quality of administrative personnel. They should not only make managers familiar with national laws and policies and educational theory, but also make managers have good language ability, computer application ability, cooperation ability and executive response ability, so as to continuously improve the efficiency of administrative work. [5]

5. CONCLUSION

As the basic work of colleges and universities, administration plays a key role in the overall development. Under the background of deepening the reform of colleges and universities, the administration of colleges and universities should deeply analyze the problems in the work, put forward corresponding optimization countermeasures in time, and strengthen innovation in management concept, mechanism construction, department coordination and personnel quality. It can constantly improve the administrative system, improve the efficiency of administrative management, realize the overall promotion of the work of colleges and universities, and promote the development of China's higher education.

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Digital Electronics Technology Curriculum Reform and Teaching Quality Improvement Based on Curriculum Ideology and Politics

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Abstract: Curriculum ideological and political education is an important measure in higher vocational colleges under the background of education and teaching reform of building morality and cultivating people. It is the foundation of teaching quality and talent training quality. This paper closely adheres to the curriculum ideological and political guidance, promotes the curriculum reform of digital electronic technology, and improves the teaching quality around the connotation and requirements of talent training quality, so as to promote the common improvement of the digital and electrical curriculum reform and teaching quality based on curriculum ideological and political construction.

Keywords: Curriculum Ideology and Politics; Digital Electronic Technology; Curriculum Reform; Teaching Quality

1. INTRODUCTION

The important speech of the general secretary at the National Conference on Ideological and Political Work in Colleges and Universities points out the direction for colleges and universities to carry out curriculum ideological and political construction. [1] Ideological politics and teaching quality are always important contents in the school education system, which is of great significance in cultivating students' comprehensive quality. This paper actively responds to the practical exploration of ideological and political construction and teaching quality improvement of digital electronic technology in higher vocational colleges.

2. DIGITAL ELECTRONIC TECHNIQUE COURSE IN HIGHER VOCATIONAL EDUCATION

Digital Electronic Technique is a professional basic course of applied electronic technology in higher vocational colleges. Through the study of basic professional knowledge of digital circuits such as logic algebra, gate circuit, combinational logic circuit, trigger and sequential logic circuit, students can master the functions of common electronic devices, the knowledge structure of digital circuits and the ability of circuit analysis. It is to master the basic skills of engineering practice and lay a good foundation for in-depth study of the follow-up courses of the specialty. This course plays an important role in the talents training of applied electronic technology specialty. Ideological and political education should be integrated into the curriculum system and the whole teaching process, promote education and teaching reform and classroom teaching quality, and cultivate students' professional quality and patriotism.

3. CURRENT PROBLEMS IN DIGITAL ELECTRONIC TECHNOLOGY TEACHING

3.1 Teachers' Teaching Concept Needs To Be Changed

At present, the current situation of ideological and political teaching in professional courses is that most teachers focus on the teaching of professional knowledge and the training of practical skills before, during and after class. It seldom involves ideological and political education. Some teachers insist that ideological and political education is the responsibility of ideological and political teachers, the work of counselors and the responsibility of head teachers, resulting in the unrelated relationship of them. Moreover, the strength of integrating ideological and political elements into electronic technology teaching by professional teachers is not enough, and the integration degree is not well grasped. It cannot achieve the teaching effect of curriculum ideological and political education. There is still a lack of systematic and comprehensive thinking on how to moisten things silently into the whole process of teaching.

3.2 Unclear Course Objective Positioning

The course of Digital Electronic Technique has many complex and abstract knowledge points, strong logic and system. the curriculum reform of integrating ideological and political elements into digital electronic technology is mainly reflected in the unclear positioning of curriculum objectives, the lack of scientific and systematic thinking, and the formulation of a more implementable teaching reform scheme based on the principles that should be followed in the integration practice. the course is mainly to carry out ideological education and guidance for college students in higher vocational colleges. At the same time, it should be recognized that in the promotion of this reform; it should promote the good interaction between ideological and political courses and professional courses in cultivating highly skilled talents, rather than keeping their own channels. [2]

3.3 Single Teaching Mode

The social information in which students live alters from day to day; the curriculum teaching mode is still relatively single; the means of information technology are insufficient; the cases are not updated in time, old and boring; the interest points of contemporary college students are not grasped in place; the teaching is too deliberate, and the improvement of teaching quality needs to be realized urgently. In addition, subject to the mechanism and system, the curriculum development is

somewhat formalistic, which leads to the strong subjective color of ideological and political education and cannot ensure the realization of the final educational goal and teaching quality. For example, in course teaching, the ideological and political content is taught separately, resulting in the differentiation of teaching content and ideological and political content in the whole course, which is not conducive to students' systematic and related mastery. the effective combination of ideological and political and professional courses, and the systematic presentation of integration content in these courses cannot be guaranteed. Moreover, even if ideological and political elements are added in the course teaching process, it cannot achieve the expected effect, because the teaching method is monotonous and stiff. the digestion and acceptance of higher vocational students is not high. it is difficult to achieve the goal of building morality and cultivating people.

4. STRATEGY TO IMPROVE DIGITAL ELECTRONIC TECHNOLOGY TEACHING QUALITY IN HIGHER VOCATIONAL COLLEGES UNDER CURRICULUM IDEOLOGY AND POLITICS

4.1 To Strengthen the Construction of Teachers and Clarify the Role of Ideology and Politics

Educators receive education first, and a high-level teacher team with excellent political literacy, exquisite professional ability and excellent educational level is indispensable. First, colleges should enhance teachers' understanding of professional ideological and political education. the construction level of teachers is closely related to the quality of courses. Professional teachers should continue to strengthen the ethics construction, enhance the ideological and political learning, develop binder-Style textbooks for ideological and political courses, and form a unique content system with distinctive characteristics, prominent advantages and cross complementarity; [2] Secondly, colleges should guide teachers to clarify the important position of ideological and political elements in curriculum construction, curriculum standards, talent training system and vocational education reform, pay attention to the necessity of integrating, and deal with the relationship between ideological and political elements and professional courses. Finally, colleges should vigorously improve the ideological and political theory level of professional course teachers and promote teachers to feed back their research and practical results into teaching; actively participate in the skill competition of vocational colleges, improve teachers' influence, professionalism and understanding, and promote the teaching quality to achieve good results.

4.2 To Dig Deep Into the Ideological and Political Elements of the Course and Enhance the Correlation of Knowledge

Professional course teachers appropriately select the corresponding ideological and political elements in combination with the characteristics of their specialty and the content of digital electronic technology courses, excavate and select the teaching cases of interest to students as much as possible, and realize the organic integration of them in teaching and case analysis.

According to the characteristics of Digital Electronic Technique course and the development and changes of the times, teachers should continue to excavate the ideological and political elements contained in this professional course, ensure the knowledge relationship between ideological and political elements and professional courses, and analyze specific problems. In the course of teaching, it spreads the core socialist values, inherits the fine style of the Chinese nation, penetrates the new ideas, strategies and routes of the development of (SWCC) into the contents of professional courses, effectively improves the teaching quality of courses and enriches students' moral and professional quality.

4.3 To Optimize the Teaching Mode and Aim At the Case Environment

The purpose is to implement the teaching goal of combining teaching with value guidance, build a "Trinity teaching system of ideological and political theory course, comprehensive quality course and professional course", and optimize the ideological and political teaching mode of the course from the following aspects.

Firstly, the curriculum standard is integrated into the ideological and political education. Combined with the characteristics and ideological and political connotation of the digital electronic technology curriculum, it improves the original digital electronic technology curriculum standard, improves the talent training scheme, optimizes the professional curriculum implementation report, and truly realizes "teaching" and "education".

Secondly, advanced ideological and political cases at home and abroad, national and provincial skill competitions, electronic competitions, science and technology competitions and other practical cases are introduced throughout the course. Combined with local characteristics, college characteristics, professional characteristics and curriculum characteristics, and the cutting-edge technologies such as artificial intelligence, Internet of things, and smart home, teachers should guide and discuss the social and ethical problems brought by them, and stimulate students' multi-dimensional thinking. Teachers also should introduce the application of great scientists and students' self-examination chips, stimulate the innovative spirit of higher vocational students, edify and educate from multiple levels and angles, and improve students' innovative ability and social responsibility.

Thirdly, in the post epidemic era, the epidemic situation occurs from time to time, and the normal teaching process of digital electronic technology in higher vocational colleges is also facing a test at any time. the "Online+offline" teaching mode provides a guarantee for the normal teaching of theoretical courses, but it challenges the experimental and practical teaching. Teachers should integrate ideological and political elements into teaching methods, teaching means and experimental project design, constantly put forward reforms and attempts, start with interest, meet the requirements of practical courses, constantly optimize teaching methods, practice training guidance methods, adopt online and offline mixed teaching methods, and

introduce philosophical professional thinking of practice, skills and reflection into the teaching process through information-based teaching. Colleges should reform the curriculum evaluation system, break the traditional assessment assisted by a test paper, attendance and homework, closely connect the spirit of professional ethics with practical teaching links, realize the combination of process assessment and final assessment, and jointly guide students to truly integrate ideological and political education into their professional courses. [3] [4] Students are encouraged to implement "promoting teaching through competition" and "combining research with teaching" through virtual simulation technology, vocational education “1+x” certificate system and various knowledge competitions. the integration of teaching methods into ideological and political education will help to improve the talent training mode, re sort out the curriculum system, and promote the overall reform of school teaching mode and education and teaching.

4.4 To Improve the Evaluation System and Strengthen the Ideological and Political Concept

By effectively improving the curriculum evaluation system, Digital Electronic Technique carries out final assessment and process assessment according to each project completed by students. the learning score of each project is divided into three parts: practice, engineering norms and professional ethics. Only by integrating professional ethics and engineering norms into the education evaluation system can the ideological and political elements be truly implemented in the whole course. At the macro level, teachers should enhance the use of multimedia information technology, use the Chaoxing learning platform to realize blended teaching, take students as the center, respect students' body feeling, reform the traditional teaching and evaluation system, keep up with the trend of the times, use the platform functions such as short video, theme discussion, rush answer and voting, students' habitual network discourse and multi-ethnic habits, to promote the formation and development of the three outlooks, and imperceptibly achieve the goal of building morality and cultivating people. At the micro level, teachers should design specific and feasible teaching links, infiltrate the key points of ideological and political education, break the scattered ideological and political elements into parts, and systematically infiltrate into each knowledge unit of the course, so as to make students have a new learning feeling and realize the reconstruction of the curriculum evaluation system.

5. CONCLUSION

Higher vocational colleges implement the fundamental task of building morality and cultivating people, reform the ideological and political teaching of professional courses, and achieve the goal of bringing together public feelings, improving personality, developing human resources and cultivating talents. By taking appropriate teaching reform and quality improvement measures, the professional courses of Digital Electronic Technique and ideological and political education are skillfully integrated in the whole process of education and teaching, so that students can more effectively master professional skills and knowledge under the influence of moral education thinking, shape scientific thinking and professional quality, and improve teaching quality and improve the ideological and political education system, to realize the great country craftsman spirit.

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Research on Science Education Development Strategies in Science Museum

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Abstract: This study explores the current background of the development of information technology represented by artificial intelligence, and the needs of the era of rapid development of national science education, science and technology venues need to establish their own independent operation mechanism of science education, so science and technology museums need to complete the real-name responsibility of carrying out science education as a supplement to school formal education, and propose some strategic ways for this problem, in order to provide reference and reference for China's science and technology museums to carry out science education.
Keywords: Science Education; Science and Technology Venues; Educational Research

1. THE SCIENCE AND TECHNOLOGY MUSEUM THE NEEDS OF THE TIMES OF RAPID CONSTRUCTION AND DEVELOPMENT

At present, the development of China's science and technology museum industry has a good policy environment and social foundation the formulation of the "Science Popularization Law", especially the promulgation of the "Outline of the Action Plan for the Scientific Quality of the Whole People", clearly put forward the need to strengthen the construction of science popularization infrastructure, and determine the responsible units and specific requirements, and the construction of national science popularization venues has been incorporated into the work plans of governments at all levels. Its significance can be borrowed from a phrase often said in the history of science and technology, "When science becomes the cause of society and the construction of the national government, it obtains a situation of unexpected great development. " Under the current situation, China's science and technology museum has not only become a public welfare facility focused on the government, but also a cause of concern to the whole society. the effect of overall linkage first appeared in the provincial science and technology museum, followed by the prefectural and municipal science and technology museum, and now gradually expands to the city and county. In recent years, 27 provincial capitals across the country have science and technology museums, but most of them are 10 At the construction level of the past few years, more and more museums have been dissatisfied with the original scale and level, and are stepping up the pace of renovation and expansion projects. There are no science and technology museums in the four provinces of Jilin, Hainan, Qinghai and Tibet, but according to the author's understanding, the construction of local science and technology museums has been put on the agenda of the government's work, and the preliminary work has been carried out intensively. the effect of the linkage development of prefectural and municipal science and technology museums is emerging in Jiangsu and Zhejiang, and will gradually affect a wider range of provinces, cities and regions with the general trend of China's economic development.

2. THE SCIENCE AND TECHNOLOGY MUSEUM UNDERTAKES THE MISSION OF CARRYING OUT SCIENCE EDUCATION

The development of the World Science museum has gone through a history of about 200 years. It was born in the middle of the 18th century, 50 years after the first industrial revolution, and began to appear in France, England, and then in other European countries for the purpose of collecting, displaying and researching industrial products museums. This continuous enrichment and improvement of the science museum lasted for 150 years, and this history is known as the first stage of the development of the science museum. At the end of the 1960s, the Science Museum underwent breakthrough changes, the Exploration Museum in San Francisco, the Ontario Science Center in Toronto, Canada, innovated the concept of building the museum, eliminated the barrier between the audience and the exhibits, and actively created conditions to encourage visitors to operate or experiment, so that the audience can experience science and technology and learn knowledge in practice, realizing the true openness of the Science Museum to the audience. There is also a major change, the science and technology museum does not collect exhibits, but according to the needs of scientific and technological development and scientific communication, it will study and develop products on its own. As soon as this type of science and technology museum appeared, it received widespread attention and praise from the public, and was called the second stage of the development of science museums. Learning from and learning from the experience of the Discovery Museum and the Ontario Science Center around the world, a large number of science and technology museums of this type have been built, and China is also among them. However, by the end of the last century, some experts put forward more and more criticisms of these science and technology museums, and proposed to further change the concept and realize the re-innovation of the construction of science and technology museums.

From the perspective of development opportunities, over the past 40 years of reform and opening up, China's scientific and technological development has followed, paralleled, and led in some fields, indicating that the

world's scientific and technological pattern has undergone major changes, and the future world science center is expected to shift to the East for the first time. Science education, communication and science popularization are extremely important, and the understanding is becoming more and more profound, and it is becoming a social consensus. National science education policies and regulations have been introduced, and science education, dissemination and popularization have ushered in unprecedented development opportunities. the Several Opinions on Strengthening the Popularization of Science and Technology, issued in 1994, became the first administrative regulation on science popularization since the founding of the People's Republic of China. the Law of the People's Republic of China on the Popularization of Science and Technology promulgated in 2002 is the world's first special law for the popularization of science, emphasizing "popularizing scientific knowledge, advocating scientific methods, disseminating scientific ideas, and carrying forward the spirit of science". the Outline of the Action Plan for the Scientific Quality of Chinese Citizens 2006-2010-2020 promulgated in 2006 clarifies the goals and tasks for the construction of citizen science quality. the report of the Eighteenth National Congress of the (C_P) of China in 2012 clearly pointed out: "Popularize scientific knowledge, carry forward the spirit of science, and improve the scientific literacy of citizens". the report of the 19th National Congress of the (C_P) of China in 2017 proposed: "Carry forward the spirit of science and popularize scientific knowledge", highlighting the importance of the "spirit of science". In May 2016, (X_JP) proposed at the national "Three Science and Technology Sessions" that "scientific and technological innovation and scientific popularization are the two wings of innovation and development, and scientific popularization should be placed in the same place. " the equally important position of scientific and technological innovation"clarifies the dialectical relationship between scientific and technological innovation and scientific popularization, and emphasizes the basic role of scientific popularization in scientific and technological innovation.

3. STRATEGIC ORIENTATION OF SCIENCE AND TECHNOLOGY MUSEUMS TO CARRY OUT SCIENCE EDUCATION

Fully apply information technology to strengthen user experience and public service to strengthen user concepts and experience-oriented service awareness, make full use of virtual reality, artificial intelligence, holographic simulation and other information technologies, and apply multimedia, animation, games, virtual communities, andAPP and other information expression and presentation forms, timely and vivid reproduction of the frontier of science and technology to the public, enhance the user experience effect, interactivity and stickiness. the use of information technology to provide the public with scientific popularization services and accurate push on demand, while serving in interaction and guiding in services, enhance the public's participation, attention and satisfaction with the science and technology museum. the construction of a network system covering the main components of the science and technology museum system will build the digital science and technology museum into an important resource distribution platform, transportation channel and information center in the science and technology museum system, and provide services such as project management and operation, resource development and sharing, activity synergy and efficiency for the overall operation of the science and technology museum system. Through the combination of online and offline (O2O), the construction of physical science and technology museums, mobile science and technology museums, science popularization caravans, digital science museums, rural secondary school science and technology museums, etc. forms an organic and integral benign interaction model, and promotes the combination of virtual and real science resources in science and technology museums and interactive exchanges between science and technology museums and the public. Promote innovation with Internet thinking Under the impetus of Internet thinking, all kinds of enterprises and institutions and the public are mobilized to participate in the development and creation of science popularization and education resources, forming a situation of science popularization work in which everyone participates and everyone benefits, and a good social foundation for mass innovation and entrepreneurship. the construction and operation of the science and technology museum adheres to the concept of "opening the door and running the museum", and attracts and encourages various social forces, funds and resources to actively participate in the construction of the science and technology museum system through multiple channels through crowdsourcing and crowdfunding, so as to promote the coordinated development of the cause and industry of the science and technology museum.

Regarding the operation and management of the science and technology museum itself, this is an eternal topic that domestic and foreign industry managers and experts study and try to solve. Because the management system and market economy of Western society have remained unchanged and relatively stable for many years, they have basically formed a relatively stable operating mechanism for social welfare scientific and cultural facilities such as science and technology museums in some developed countries, and they mainly rely on the appropriate investment of the government and the sponsorship of various foundations and enterprises, and most museums also have tickets and sales of souvenirs. What you see there is a tense, orderly, enthusiastic and serious work scene of professional and technical workers and service personnel. But when it comes to funding guarantees, none of the managers of science and technology museums in various countries, like our country, consider themselves to be relaxed. Since the implementation of China's reform and opening up policy, the establishment of the market economic system and the gradual deepening of reform by the government and public institutions have had a profound impact on the development and construction of China's science and technology museums and their own

management work. From the lessons learned from the development of science and technology museums across the country, we should identify one thing, whether the units adjacent to us or similar to us have become richer and developed after the transformation, or whether they have not been transformed are more difficult and shrinking than before, the nature of science and technology museums as a typical national public welfare unit cannot be changed, and the basic operating funds of science and technology museums should be supported by government finances in a stable and unchanged manner. At the same time, it is also necessary to use policies to actively win the support of enterprises and various funds that have gradually developed, and effectively ensure that the state's management system for science and technology museums remains unchanged.

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Challenges and Countermeasures of Privacy Protection Under Ai Context in China

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Abstract: Nowadays, there is a risk of infringement of private information at the present stage of AI applications for the processing of user information and privacy. and with the development of strong AI technology, it is highly likely to bring more serious risks of personal privacy infringement. This research note starts from exploring the balance between technological development and privacy protection, and on the basis of summarizing previous experiences, explores the current challenges of privacy protection in China. and inspired from the protection models of the EU and the US, proposes countermeasures and suggestions at the level of the relevant subjects involved in privacy protection, in order to provide a feasible solution and policy countermeasures for the development of AI technology and privacy protection in China under the current context.

Keywords: Privacy Protection; Artificial Intelligence; China; Countermeasures

1. INTRODUCTION

As the development of society enters a new period, more and more countries are continuously promoting the development of Big Data and Artificial Intelligence technologies. However, machine learning, as one of the core technologies of AI, requires a large amount of data to analyze, train, etc. and then master the experience for deep learning (Haipeng et al., 2017). Therefore, with the continuous development of AI technology, will inevitably need more and more data to improve their own services and meet their own development needs. In this process, the customer as the user of the technology and the producer of personal information, the relevant technology adopted by AI is likely to violate their privacy and lead to new types of privacy infringement.

In a word, the emergence of AI has undoubtedly brought changes and development to the human lifestyle, but the development of AI technology is based on a large amount of data collection and analysis. and with the development of strong AI technology, it is highly likely to bring more serious risks of personal privacy infringement. Therefore, exploring the balance between technological development and human rights protection and establishing a privacy protection mechanism in the context of AI can better promote the sustainable development of AI.

2. CHALLENGES OF PRIVACY PROTECTION UNDER THE CONTEXT OF AI IN CHINA

2.1. Inadequate legal system of privacy protection.

Establishing a sound legal system for privacy protection is the cornerstone for promoting the healthy development of AI technology and balanced data sharing and privacy. Due to various factors such as the rapid development of AI technology and the hysteresis quality of law-making, China's legal system for the protection of citizens' privacy in the AI stage is not sound enough. With the development of big data and AI technology, China has become one of the countries with the largest amount of data and the richest types of data, but the Personal Information Protection Law of the People's Republic of China only just came into effect in China on November 1, 2021. Compared with the earlier practice in Europe and the United States, China still needs to improve and develop at the level of legal system.

2.2. Impact of new technologies on privacy protection.

AI is based on Big Data technology and has been developed centered on data and algorithms. However, there are still some black boxes at the technical level that can cause great obstacles to privacy protection. For example, the problem of algorithm transparency, the current AI algorithm models are too professional and lack of public supervision and evaluation, which can easily cause the phenomenon of technology bullying. Second, there are also new technologies that can have an impact on privacy protection. For example, the de-anonymization techniques by some people through linking technology attacks, homogeneity attacks, and background attacks make the privacy information after the anonymization process may still suffer the risk of secondary infringement (Jing, 2019).

2.3. Lack of industry self-regulation for privacy protection.

The U. S. has a well-established industry self-regulatory model for privacy protection, and it has more than 20 relevant privacy data industry regulations (Min & Zuosu, 2016). Meanwhile, in recent years, the European Union has begun to draw on industry self-regulation models, such as the European Privacy Seal privacy certification, in order to make up for the inadequacy of legislative protection. However, compared with advanced countries and regions, the existing industry self-regulation in China is still imperfect, and the regulations on privacy and personal information protection issued by self-regulation organizations are mostly advocacy recommendations, such as the China Internet Industry Self-Regulation Convention issued by the Internet Society of China (ISC). In general, at the level of industry self-regulation, the regulatory efforts for data controllers are still weak.

3. INSPIRATIONS FROM EU AND USA

3.1 Analysis of EU's Privacy Protection Model

The EU model of protection is Legislative regulation is the main focus, supplemented by industry self-regulation. In 2018, the EU introduced the GDPR, a uniform data privacy law created for the whole of Europe. At the same time, based on the legislation, the EU also carries out certification of privacy protection by third-party organizations, such as EuroPriSe and ePrivacyseal, which

certify the privacy protection capabilities of companies and organizations, and such certification helps users to better understand the privacy protection capabilities of companies.

The advantage of the EU model is that it establishes a complete legal system that clearly defines the rights of users, the path to protection, and the infringement liability borne by the infringers. Its model incorporates the use of AI technology in its legislative provisions, allowing users to better understand the data processing process and have a better control of their privacy. However, on the other hand, strict legislation increases the legal obligations of enterprises or organizations, increasing their input costs and the technical difficulty of data management. To a certain extent, it will limit the enthusiasm of enterprises to the R&D of AI technology.

3.2 Analysis of USA's Privacy Protection Model

The U. S. protection model is that industry self-regulation is the main focus, supplemented by legislative regulation. the protection of privacy through industry self-regulation, such as authoritative privacy certification organizations like TRUSTe, BBBOnline, etc. At the same time, relevant laws are continuously improved, such as the CCPA in 2018.

One of the advantages of the U. S. model is that it is conducive to promoting the development of technology. the U. S. model of decentralized legislation combined with industry self-regulation in the context of AI is conducive to the formulation of industry regulations suitable for the development of their own industries according to the characteristics. This industry self-regulation model can make up for the inadequacy of legislation without hindering the development of the industry, play a complementary and interpretative role to the legislation, and promote the development of the industry while protecting the right to privacy. But on the other hand, the industry self-regulation is not mandatory and guaranteed, and the effectiveness and scope of use of industry self-regulation is very limited.

3.3 Inspirations to China

As mentioned earlier, there are two main models of personal privacy protection: legislative regulation and industry self-regulation. In view of the development of China, Hanhua (2018) suggest that the development trend of the two models should be integrated, and a comprehensive privacy protection model should be established with both legislative regulations and industry self-regulation, or exploring the way of incentive-compatible personal data governance.

In addition, exploring the technical path of privacy protection at the beginning of AI technology development. the protection of personal privacy should be taken into account at the beginning of the technical research. and the problem of privacy infringement should be addressed and solved from a practical perspective other than ethics (Shaoxin, 2019).

4. COUNTERMEASURES

4.1 National Level

First of all, accelerating the legislation on AI in China. At this stage, AI is still at the stage of weak AI, and the infringement on citizens' privacy has already caused such a serious situation that legislation should be formed to enhance the legal regulation of AI technology development. At present, as the most effective, widely applicable and complete law in the field of information protection in China, and as a special legal document for personal privacy protection, the Personal Information Protection Law of the People's Republic of China has been brought into effect, but there is still a need to use it as a basis to formulate differentiated and more adaptable specific implementation rules according to the different scope and degree of personal information processing within the AI industry. In turn, a complete system of legal regulation of the privacy rights in the context of AI will be formed.

Besides, in order for citizens to engage in reasonable behavioral expectations, it is necessary to clarify the specific rights that citizens can enjoy in terms of privacy protection. In addition, if privacy data controllers illegally process personal privacy, their responsibilities should be clarified and legal penalties should be imposed, thus reducing the related illegal acts to a certain extent.

4.2 Social Value Level

Safeguarding social interests while maintaining personal dignity. Privacy exists to preserve the personal dignity and integrity of the user. Data sharing is a kind of exploitation and utilization of data resources, as well as the process of collecting, storing, and utilizing personal data. Therefore, it is necessary to achieve the protection of the dignity of individual privacy subjects. the first thing is to protect the personal safety of the user. the second thing is to protect the economic interests of users' privacy data in the information market. Information has become a new production factor, and there are huge economic interests in users' privacy information. Therefore, an attempt can be made to explore the mechanism of paid use of information.

In the process of privacy protection, we also need to be clear about the existence of social interests. For example, during the COVID-19, the government collected health information and travel information of individual citizens to better prevent and control the epidemic. Therefore, in such cases, we also need to put the interests of society first.

4.3 Industry Level

Establishing industry self-regulatory organizations and encouraging companies to certify its ability of privacy protection. In the development of AI, the use of industry self-regulation for self-management and self-restraint is one of the essential ways. and relevant experience also shows that only legal regulations cannot restrain all forms of technology, and the combination of legal regulations and industry self-regulation is an effective way to effectively regulate AI technology. Therefore, China should establish a series of industry self-regulatory organizations to develop industry regulations suitable for the development of its own industry according to their characteristics. Use the flexibility of industry self-regulation to make up for the hysteresis quality of the law. At the same time, take advantage of the professionalism and neutrality of such organizations to cooperate with

administrative authorities that have the authority to conduct regulation, supervise or punish companies and institutions in the industry.

Besides, the introduction of privacy certification programs is one of the most important measures for the protection of personal privacy information adopted in many countries and regions today. These kinds of certifications help users effectively identify the privacy protection capabilities of the service providers they use through certification marks. Therefore, in China, relevant companies should be encouraged to carry out relevant privacy protection capability certification.

4.4 Institutional or Company Level

Innovating privacy protection technology and innovating informed models of privacy protection contracts. Legislative protection is the foundation and industry self-regulation is the supplement, but in the face of rapidly developing AI technology. Seeking multi-dimensional protection of personal privacy and regulating technology with technology is one of the feasible ways to protect privacy information. Examples include anonymization techniques, fully homomorphic encryption and blockchain technologies (Hui, 2020) that can be used for privacy protection. In addition, the use of Privacy by Design (PbD) theory, which embeds privacy protection in the original system, leads to a better form of technology to solve the privacy protection problem.

In addition, many of the current privacy contracts are actually one-time agreement, which means lifelong agreement, which is actually unreasonable. It is possible to adopt contractual terms and conditions according to the degree of privacy and sensitivity of the information in a hierarchical and step-by-step agreement, and give users different degrees of agreement on the use of information in the authorization process. In other words, let the user decide what information can be collected. As Golden Krishna's (2015) book the Best Interface is No Interface also mentions a way to design a "forget" button on the user interface, so that users can delete information they do not want to be collected, thus this would respect customers' rights and gain their trust in the company's privacy protection.

4.5 Individual Level

Currently in China, many individuals are still not aware of the importance and great value of personal privacy. Therefore, strengthening education on personal privacy protection throughout the society and raising general awareness of privacy protection are conducive to the formation of top-down supervision and management of the use of privacy information in the context of AI.

5. CONCLUSION

AI, which can make automatic decisions with the core technology of Big Data and intelligent algorithms, has changed people's production and life style, but also caused infringement to human beings, especially the challenge of personal privacy protection. In order to cope with the impact of AI technology on personal privacy, all the subjects covering privacy protection should work together to balance technological development and privacy protection, and seek a modern top-down multidimensional protection model that is different from traditional protection methods, so as to find a balance between privacy protection and rational use of information to promote technological development.

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Practice Research on College English "Curriculum Ideological and Political Teaching" in Higher Vocational Colleges

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Abstract: The concept of "curriculum ideology and politics" is conducive to promote the connection between different courses, and then work together to complete the task of building morality and cultivating people. However, due to the lack of teachers' ideas, teaching resources and single teaching methods in higher vocational colleges, the ideological and political elements in college English have not been fully excavated, and the ideological and political effect is also very limited. In order to improve this situation, higher vocational colleges should actively guide English teachers to study and improve their ideological and political ability, promote the improvement of teaching methods and the expansion of teaching resources, so as to improve the effect of ideological and political practice of college English courses.

Keywords: Higher Vocational Colleges; College English; Curriculum Ideology and Politics; Teaching Practice

1. INTRODUCTION

Building Morality and cultivating people is the fundamental goal of today's higher education. As an important part of higher education, higher vocational colleges should shoulder the task of this goal in this period. In the process of college English teaching, we should also constantly promote the penetration and implementation of the concept of "curriculum ideology and politics", improve students' professional ability and moral cultivation, so as to lay a good foundation for students' future development.

2. THE PRACTICAL VALUE OF "CURRICULUM IDEOLOGY AND POLITICS" IN COLLEGE ENGLISH TEACHING

2.1 To Improve the Comprehensive Ability of Contemporary Students

For a long time, there have been many different views in the process of balancing professional education, college ideological and political education in China. Because higher vocational colleges pay more attention to cultivating students' professional skills, they have always ignored ideological and political education. By infiltrating the concept of "curriculum ideological and political education" into college English, we can undertake the corresponding education tasks in the process of English teaching, so as to improve students' English ability, improve their moral cultivation and promote their all-round development. [1]

2.2 To Realize the Innovation of English Teaching Content

The concept of "curriculum ideological and political education" is actually to carry out ideological and political education in the teaching process of other courses, so as to improve students' ideological and political cultivation. To carry out English teaching under the concept of curriculum ideological and political education, it is necessary to integrate some contents of ideological and political education into college English. In this way, the college English materials of higher vocational colleges will be more abundant. At the same time, teachers will have their own subjective feelings and experience in the process of teaching, so the content of college English teaching will be enriched and bring new feelings to students. the continuous updating of English teaching content can greatly improve students' ideological and professional ability.

2.3 To Enhance the Synergy Between University Courses

With the penetration of the concept of "curriculum ideology and politics" between different courses, the relationship between courses has also been strengthened. First of all, English courses and other professional courses should carry out curriculum ideological and political work; for each course has its own characteristic, so we should start from our own courses, achieve the same goal by different ways, and finally cultivate high-quality talents with high ability. [2] in addition, college English and other courses can also cooperate with each other to jointly play the role of "curriculum ideology and politics", realize the integrated development of talent training, make full use of the link of curriculum ideology and politics, and strengthen the mutual cooperation between different courses.

3. PROBLEMS OF "CURRICULUM IDEOLOGY AND POLITICS" IN COLLEGE ENGLISH TEACHING

3.1 English Teachers Have Weak Awareness of "Ideological and Political Education"

As the initiator and organizer of teaching, teachers' own teaching ideas will have a certain impact on the specific implementation effect of the curriculum. However, most English teachers in higher vocational colleges only pay attention to the teaching of professional English and realize the connection between English teaching and professional skills, but they ignore the importance of the connection between English teaching and ideological and political education, and do not realize the goal of ideological and political education undertaken by English teaching. Moreover, many professional English teachers do not have high level of the ideological and political. So if English teachers do not improve their ideological and political ability, it will inevitably affect the role of

"ideological and political" in college English teaching,

3.2 Lacking Professional Teaching Material System As Support

In the process of college English teaching, teaching resources are key elements. With the development of the times and the progress of information technology, the material of teaching resources has also changed from the original teaching materials to today's electronic resources. Although the resources of college English curriculum are very rich, the teaching resources based on curriculum ideology and politics are very limited. [3] From the content of the teaching materials used in the current school, we find that most of them are mainly based on the history, economy and culture, but lack the local teaching content of China, and lack the content of morality and values. Due to the lack of professional teaching resources, it cannot provide effective support for college English ideological and political education.

3.3 Lacking Diversified Teaching Methods

Good teaching methods can achieve the corresponding teaching objectives more efficiently, so appropriate teaching methods play a very important role in the effective implementation of teaching effects. However, in the process of college English teaching in higher vocational colleges, it is obvious that teaching method is single, so the ideological and political content cannot be effectively transmitted to students through English courses. [4] All along, people think that teaching is to follow the steps of teachers, so they lack of active thinking. Especially when they convey the connotation of ideological and political education by English content, so if students can't think actively and deeply, college English can't achieve the ideal effect of ideological and political education,

4. EFFECTIVE STRATEGIES FOR THE PRACTICE OF COLLEGE ENGLISH "CURRICULUM IDEOLOGY AND POLITICS" IN HIGHER VOCATIONAL COLLEGES

4.1 To Improve the Ideological and Political Level of English Teacher

In order to promote the application and practice of curriculum ideological and political education in college English teaching, colleges need to constantly improve the ideological and political level of English teacher. First of all, English teachers should establish the concept of lifelong learning, constantly learn the theory of ideological and political education, and then effectively integrate English content to ideological and political content in English teaching process, and finally transfer the correct values to students, for the purpose to improve students' English ability and moral cultivation at the same time. [5] Secondly, English teacher should actively change their education and teaching concepts, enhance their social responsibility, recognize the importance of the concept of "curriculum ideology and politics" in English teaching, and then constantly ensure the effective application of "curriculum ideology and politics" in college English.

4.2 To Enrich College English Ideological and Political Education Resources

Teaching resource is an important basis for teaching, especially in the process of ideological and political teaching of college English course. Therefore, higher vocational colleges need to constantly improve the teaching resources of ideological and political teaching of college English course. First of all, colleges should make certain adjustments to the contents of the current teaching materials, add local elements to let college students have a deeper understanding of Chinese culture, and integrate some contents that promote the socialist core values into them, so as to help college students develop good quality and establish correct values. Secondly, on the basis of the original teaching materials, colleges should continue to explore the ideological and political elements to ensure that teachers can improve students' ideological and moral quality while teaching English.

4.3 To Innovate College English Teaching Methods

Teachers should choose the corresponding teaching methods according to different teaching contents. Only in this way can the teaching effect be improved. Therefore, in the process of carrying out the ideological and political practice of college English curriculum in higher vocational colleges, teachers need to constantly innovate teaching methods, take students as the core, highlight students' subjectivity, and then mobilize students' enthusiasm. [6] Teachers should fully consider the characteristics of English and ideological and political education idea, strengthen the connection between this two, and then promote the effective integration of them with the help of good teaching methods. For example, the use of case teaching method and group discussion method can fully mobilize students' initiative, let students actively participate in the learning process, highlight the ideological and political elements while accepting English learning, and strengthen the effect of ideological and political teaching in college English.

5. CONCLUSION

In short, the concept of curriculum ideology and politics has gradually been greatly promoted in colleges and universities, as a compulsory course, college English is naturally particularly important to practice "curriculum ideology and politics" in teaching. Therefore, English teachers in higher vocational colleges should re-examine and think about the current English teaching, find the coincidence between English and ideological politics, and promote the effective practice of college English "curriculum ideology and politics" by using appropriate and effective teaching strategies.

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Research on the Third-Party Special Logistics Service of Auto Parts

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Abstract: For more than ten years, China's third-party logistics market has developed rapidly and become more and more mature. With the public's higher and higher standards for service quality, the traditional goods delivery, and the unified transportation and distribution without classification will not meet the needs of the market. the market segmentation of third-party logistics will be a significant embodiment of the maturity of logistics industry in the future. There is no need to say more about the popularity of the automobile market in China. Cars of different brands can be seen everywhere. Thus, the logistics service of spare parts transportation and distribution for automobile repair and maintenance is derived. According to the characteristics of logistics services required by auto parts, this paper expounds the necessity of the implementation of special logistics for auto parts and briefly explores its operation and supply mode.

Keywords: Auto Parts; Market Segmentation; Special Logistics

1. BASIC CONCEPTS OF SPECIAL LOGISTICS

The professional term of special logistics is literally similar to special line logistics, also known as freight special line, which refers to the logistics service that logistics companies use their own trucks, special vehicles or aviation resources to transport goods to their special line destination. the special line logistics mode can also be seen everywhere in the market, and special logistics is different from special line logistics. It refers to the provision of special logistics services for a certain kind of materials, which is mostly seen in the first-party and second-party logistics operated by buyers and sellers.

2. LOGISTICS STATUS OF CHINA'S AUTO PARTS MARKET

The commodity attribute of auto parts is relatively high in the cost of third-party logistics, and the domestic demand for auto parts logistics is also extensive. In recent years, most of the logistics services are contracted to the third-party logistics, in order to reduce costs and concentrate on developing their core competitiveness. the demand side of China's market for auto parts and its logistics status are briefly summarized as follows:

2.1 demand and current situation of spare parts supply logistics in automobile manufacturers

In recent years, with the improvement of people's living standards, the demand and purchasing power for cars are increasing day by day. the production of each car, whether large or small brands, and the spare parts required for vehicle assembly are not all produced by itself, but supplied by major spare parts manufacturers, including core parts. Therefore, automobile manufacturers can also be understood as automobile assembly manufacturers, resulting in the circulation of a large number of spare parts. Almost all spare parts suppliers are responsible for the logistics services required by manufacturers. There are two logistics modes selected by suppliers of spare parts:

The first is enterprise self-support supply logistics. the advantages of self-support logistics are fast supply, retaining control, and rapid response to problems in logistics links. It avoids the disclosure of trade secrets and improves the value of its own brand. the disadvantage of self-support logistics is the high investment cost, especially for small enterprises. Logistics will occupy a lot of manpower, material resources and space, and the maintenance cost of logistics management and equipment is high. Many logistics personnel are part-time personnel. They are not good at doing business, and their professionalism is difficult to be guaranteed.

The second is outsourcing third-party logistics enterprises. Most small and medium-sized enterprises will choose third-party logistics. the cost advantage and customer service advantage show that they have more energy to develop their core competitiveness. However, logistics services are often not targeted at one enterprise. There are many uncertain factors including multiple types of goods, multiple customers, multiple service objects, gathering, waiting, missing, wrong transit or distribution routes, and commodity damage. the control ability of logistics is weak, so it is necessary to bear the risk of logistics out of control. In case of disputes, it is easy to shirk and affect logistics efficiency. [1]

2.2 current situation of auto parts supply in 4s stores and service stations of auto brands in various regions

Compared with manufacturers, 4S stores in various regions of the country require less parts but frequent batches, and there will be a small amount of inventory. Most auto spare parts are large and bulky. There are not many manufacturers in China, but 4S stores are distributed in various cities, which are far away. Enterprises mostly choose third-party logistics enterprise services and a few choose express services. Compared with express delivery, China's logistics has slow timeliness and long waiting time. the transportation of automobile spare parts has high professional requirements, but the logistics enterprises do not pay enough attention to it. Cargo damage often occurs. the disputes and compensation derived from cargo damage are often not only the damage of accessories, but also the delay of the completion of vehicle maintenance and the loss caused by customer complaints. the reverse logistics of automobile spare parts is also an important part of logistics. the transportation of core parts required to be returned by the 4S store or service station for three guarantees is not valued, and its value is often higher than

that of new spare parts. If the core spare parts are not managed properly, it will also pollute other goods. Therefore, disputes caused by logistics are common.

2.3 spare parts supply status of parts distributors, dealers, enterprises and automobile repair shops

Most of these enterprises choose third-party logistics for parts supply. Due to the large number of vehicle brands and too many types of parts, most spare parts are in spare parts inventory and ordered on demand, in addition to hoarding some general parts. Many required parts cannot be purchased locally, and most of them are purchased from the place of origin or relatively large parts dealers. the logistics cost cannot be underestimated. There will also be disputes such as long waiting cycle and damage of spare parts.

3. ANALYSIS ON THE NECESSITY OF THE EXISTENCE OF THIRD-PARTY SPECIAL LOGISTICS ENTERPRISES FOR AUTO PARTS

According to the statistics of the Ministry of Public Security, the number of motor vehicles and drivers has continued to grow at a high level, with the sustained and rapid development of China's economy and society. So far, China has 393 million motor vehicles (more than 300 million vehicles) and 479 million drivers. Each year, more than 30 million new motor vehicles are registered and more than 20 million new licensed drivers, ranking first in the world in terms of total amount and increment. According to incomplete statistics, there are 364 automobile brands in the current market, and there are many car lines under each brand. Throughout every city, every county has large and small 4S stores, and hundreds of millions of vehicles are running. Even in no man's land, we may not see people, but we can see cars running, which can promote the huge circulation market of automobile spare parts in China. [2] It can fully support the operation of special logistics enterprises. At present, special logistics transportation of logistics enterprises is not common. Except for those with special requirements for commodity attributes such as temperature and humidity, most commodity logistics services do not subdivide their market. Many disadvantages and high costs of automobile spare parts logistics market service also need more professional and efficient special logistics services to solve various problems, which will also be the inevitable trend of mature competition in the logistics market.

4. ANALYSIS ON BUSINESS MODEL OF THIRD-PARTY SPECIAL LOGISTICS ENTERPRISES FOR AUTO PARTS

Different from other enterprises, logistics enterprises are nationwide circulation services. Most of the operation and management of enterprises intend to adopt similar modes. the choice of enterprise operation mode will also be the cornerstone of the future development of enterprises. Only when the cornerstone is stable can it be safe for a long time. A reasonable and effective operation mode can make the enterprise grow rapidly and develop in the long run. Combined with the characteristics of the logistics industry, there are two mature operation modes in China:

4.1 brand direct-sale model

Chain stores are set up in the company's headquarters, that is, the form of each marketing network directly operated, invested and managed by the company's headquarters. the headquarters adopts the in-depth management method, directly orders to take charge of all stores, and the stores shall be under the command of the headquarters, and the ownership and operation rights shall be centralized and unified in the headquarters. All member enterprises must be a single owner, owned by a company, a joint organization or a single individual, and centrally led and managed by the headquarters, such as personnel, procurement, planning, advertising, accounting and business policies. A unified accounting system shall be implemented, and all direct-sale stores shall implement standardized operation and management. the advantage of this model is that it can uniformly mobilize funds, unify business strategy, and uniformly develop and apply integrated undertakings. It is easy to give full play to its overall advantages in talent training and use, product development and promotion, information and management modernization, etc. the disadvantage of this model is that the investment is large; the autonomy of each member store is small; the enthusiasm, creativity and initiative are limited. There are successful logistics enterprises such as Debang, SF, JD, etc.

4.2 brand franchise model

The enterprise organization authorizes its service stamp to the franchise owner, so that the franchise owner can use the image, brand and reputation of the franchise headquarters to solicit business in local markets. the franchise headquarters will first teach its own experience to the franchise owner and assist him in entrepreneurship and operation. Both parties must sign a franchise contract. the main feature of franchise stores is that the franchise headquarters only provides necessary image, brand, training and management support, and each franchise store operates independently and bears legal responsibility independently. Its advantages are small investment and strong flexibility, initiative and autonomy of franchise stores. the disadvantage is that each franchise store is easy to form their own array, with decentralized power and lack of teamwork spirit, which is not convenient for unified management and operation, and has poor binding force. Most domestic logistics enterprises operate in the franchise mode, with low entry threshold, and their long-term development is not as competitive as direct-sale stores. [3]

5. CONCLUSION

With the strong support and promotion of the state, emerging industries such as logistics have developed rapidly in a short period of more than ten years, with obvious results, but there are also many problems. At present, the collection business in the logistics service market is almost one-stop, except that it cannot be transported due to special attributes. In this case, the performance will be improved in a short time, but each commodity has special attributes. If the circulation can support the survival and development of the enterprise, it is necessary to subdivide the logistics market, so as to enjoy high-quality and professional services. the circulation market of automobile spare parts in China can

fully support the development of its special logistics service enterprises, provide enterprises with more efficient and high-quality special services, and reduce unnecessary costs, especially the problem of excessive packaging caused by unprofessional. Moreover, the value of auto spare parts is often high, and the amount involved in disputes is also large. Special logistics services are bound to reduce the occurrence of such events and improve customer satisfaction and cognition of logistics services. With the intensification of the mature stage of logistics and the emergence of the third-party special logistics enterprise for the supply of auto parts, it is bound to be recognized by the majority of customers with more specialized and better service.

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Study on the Psychological Motivation of Webcast from the Perspective of Social Exchange Theory

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Abstract: The phenomenon of webcast has witnessed a blowout growth in the current media environment, which hides extremely complex psychological phenomena of all parties. From the perspective of social exchange theory, this paper regards webcast as a kind of social exchange, takes the two groups of anchor and audience as the starting point, explores the psychological motivation of webcast exchange process, and investigates the critical point of the pursuit of self-interest by anchor, audience and live broadcasting platform in webcast. the purpose is to seek the scope of reasonable treatment of self-interest in the exchange system of all parties, meet the needs of self-interest, standardize the live broadcast market and realize a healthy live webcast space.

Keywords: Webcast; Social Exchange Theory; Psychological Motivation; Self Interest

1. INTRODUCTION

Social exchange theory holds that the driving force of interpersonal communication is people's self-interest. People hope to exchange all kinds of resources, including money, goods, love, status, information and so on. This paper will analyze the psychological motivation of the anchor and the audience in the webcast through the social exchange theory, and investigate the critical point of the pursuit of self-interest by the anchor, the audience and the webcast platform in the webcast, so as to improve the market order and promote the development of the fan economy and the webcast ecological environment in the webcast era.

2. INTERACTION AND MEANS IN THE PROCESS OF WEBCAST EXCHANGE

The current live broadcast is based on the network technology platform and has turned to a form of private and personalized feature display. There is a high degree of two-way interaction between the participating subject anchor and the object audience. the anchor forms a kind of communication with users by disseminating live broadcast content to users and on-site interaction; Users participate in the live broadcast room of the anchor through the bullet screen and reward function in the webcast. At the same time, the network anchor caters to the needs of the audience through impression management and increases the "quality time" with the reward. Some anchors will interact frequently and even add WeChat to each other, so as to promote the further development of private relations. It can be seen that the interaction in the webcast is essentially a kind of social exchange. the network anchor and the users watching the webcast are the interactive subjects, and their interaction process has certain characteristics of social exchange. [1]

3. EXCHANGE PSYCHOLOGICAL MOTIVATION OF WEBCAST

3.1 psychological motivation of users' watching behavior

In the live webcast field, platform users are not only recipients and bystanders of one-way information dissemination mode, but also can participate in the process of information production and dissemination, realize real-time two-way interactive communication with the anchor, and conduct multi-directional interactive communication with the onlookers through barrage and gift appreciation, which brings great sense of discourse satisfaction to users. In the context of participatory culture, more and more people participate in the creation of social culture through the Internet, show themselves, express their opinions and share their views on the network platform, so it is easier to find friends with similar interests in cyberspace and form psychological group identity. This sense of identity can make up for people's sense of identity loss in real life. For users, forming groups and tribes in cyberspace has become an important way to seek a sense of identity, belonging and identity. [2]

In the new media environment, users' media use shows more non-utilitarian characteristics. It does not just for obtaining information. Emotion has become an important basis for media use. Webcast can fully mobilize the emotions of participants and immerse people. [3] It is precisely because of the control and involvement of emotion in webcast that this complex theater performance field is constructed. In the relatively independent worldlet of the live broadcasting room, due to the anonymity of the network media. Various social information of the audience is hidden, so that individuals can put down their psychological burden and express their inner real words. [4]

3.2 behavioral psychological motivation of network anchor

Self presentation can meet the virtual compensation of the anchor. As a new way of individual self presentation, webcast anchors tend to actively seek social identity and attract the attention of others. Jacques Lacan gave a new interpretation of Freud's psychoanalysis. Lacan found that part of the construction of human self-image came from others. In terms of people's sociality, there is hope to be concerned. In the live broadcasting platform, the live broadcasting contents of most anchors are talent display, chat and personal life. the anchor shows the positive aspects of life such as personal interaction, talent display

and personal life to the audience to cater to the majority of the audience. He wears and dresses in order to get everyone's recognition, praise and love. [5]

The consumption scenario can meet the anchor's economic profit. In the network information age, the convenience of information acquisition and the anonymity of communication will accelerate the prevalence of consumerism culture. People can pay for their personal preferences without scruples, or exposing their real information. In the webcast activity, the audience pays a lot of money for the anchor with good figure and exquisite makeup, which can be regarded as a kind of body oriented consumption. Compared with text and picture information, people tend to watch video and live broadcast, which can be regarded as a kind of visual consumption. the webcast market is like a "milch cow", which not only brings "eye feast" to the audience, but also brings huge economic benefits to the anchor and platform, and has potential huge economic value.

4. ENLIGHTENMENT OF SOCIAL EXCHANGE THEORY TO THE DILEMMA OF WEBCAST

4.1 viewers need to correctly view the network "intimate relationship"

"Intimacy" is an important index used by American scholar Walster to measure the development of interpersonal relationship. With the deepening of the relationship, there is often a kind of dependence between people. Whether emotional or behavioral dependence, it aims to share more valuable resources to complete social exchange. During the live broadcast, the anchor always keeps chatting with fans and answering their questions. Fans can feel the anchor's attention and care for themselves, and they can get pleasure in this interaction. the resource provided by the anchors in the live broadcast is love. [6] But the value of love cannot be measured, and it is difficult to define how much love someone gives in this exchange relationship. Viewers watch webcast out of identity compensation, emotional release and meeting the desire to peep. It is easy to rely on or even infatuate with the anchor. Viewers should improve their media literacy, rationally treat the relationship with the anchor, and correctly select the live content that can meet their legitimate needs.

4.2 The anchor needs to establish the correct way to win "social approval"

American sociologist Blau believes that people often modify their views, change their behavior, try to improve their judgment, and try their best to contribute to the welfare of others, in order to win social approval. In webcast, the anchor wins social approval by increasing the number of fans, so as to obtain attention and "reward". [7] the phenomenon that audiences throw a lot of money to reward the anchor is the embodiment of people being materialized. the anchor's behavior can be exchanged through the amount of reward. Therefore, the anchor must keep in mind that he cannot cause "amusement to death" by involving pornography and trampling on privacy, so as to obtain benefits. Anchors need to establish a sense of standardization, establish the concept of disseminating healthy content and respecting others' privacy. It can ensure that the behavior in the live broadcast process is kept within a reasonable range, continuously optimize the live broadcast content, adopt a healthy chat way to interact with fans, and make the live broadcast a platform for spreading positive energy. [8]

4.3 The operation of live broadcasting platform needs to correctly treat the "competition of status"

In just a few years, webcast has experienced the transformation from PC personal video to national mobile live broadcast, and major capital has continuously poured into the live broadcast industry. However, it can also be seen that the chaos of webcast is closely related to the supervision and development mode of the webcast platform. Excessive competition has produced a abnormal profit model. To a certain extent, it can be considered that the webcast platform provides conditions for the generation of anomie behavior in webcast. If the live broadcasting platform blindly pursues the maximization of interests without supervision and innovation of live broadcasting content, it is likely to trigger vicious competition among industries, thus affecting the survival of this media form of live broadcasting. [9] If platform operators want to gain respect and enhance brand influence in industry competition, they should highlight brand characteristics, drive content production with characteristics, and strengthen cooperation among industries.

5. CONCLUSION

Social exchange theory provides us with a new perspective to explore the psychological motivation of audience and anchor, and find that the demand satisfaction of subject and object does not only stay in the pursuit of material level, but more in the spiritual level. While affirming the rationality of the demands of webcast parties for interests, we also need to note that webcast excessively pursues economic interests and is satisfied with superficial visual comfort, which is easy to ignore the value and mission of webcast itself. In the context of continuous collision and blending of multiple values, this theory is used to put forward the path to avoid the dilemma for all parties of webcast, and find countermeasures for creating a healthy webcast environment.

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Research Status of Chinese Scholars on Marx's Thought of Publicity

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Abstract: In recent years, Chinese scholars' papers and works related to the research field and exploration object of public philosophy have appeared one after another and increased year by year. This paper studies the concept and connotation of publicity, and the existence and status of publicity in Marxist philosophy. It makes a beneficial exploration on the elements and meaning of publicity in Marxist philosophy.
Keywords: Marx; Publicity; Human Development

1. INTRODUCTION

In recent years, Chinese scholars have carried out philosophical research on the issue of publicity. Even without using the academic concept of "public philosophy", they have obviously paid attention to the publicity elements in philosophical research. the analysis and research on Marx's concept of publicity in China's philosophical circles mainly include the following four aspects.

2. THE CONCEPT AND CONNOTATION OF PUBLICITY

"Publicity" has always been a vivid and powerful "idea" in the development history of western philosophical thought and political thought, rather than an abstract "concept". the etymology of "publicity" comes from two sources. First, it comes from "Pubes" and "Maturity" in ancient Greek, which means the public spirit or strong public consciousness that citizens of a country should have. In contemporary English, it is "public", which has the same meaning as "公共" in Cihai Dictionary and is mainly used in political thought. [1] Second, it is expressed as the "common attribute" of society in philosophical thought, that is, "Communal". From a philosophical point of view, the term publicity is more often used. Many domestic philosophical scholars have made their own definitions on Publicity:

Wang Weiguo and others believe that publicity is embodied among people as follows: 1) Co existence and republicanism; 2) Public ownership, commonality and public interest; 3) Commonality, collusion and consensus; 4) Public will, justice and axiom; 5) Openness, fairness, impartiality, etc. [2] Publicity shows different forms in different stages of development, which belongs to a kind of social and cultural phenomenon.

Shen Xiangping believes that the ideal type of method should be used to analyze the three-dimensional level of publicity. It is mainly summarized into four aspects: the publicity between nations and countries, the publicity within nations and countries, the publicity between individuals across national boundaries, and the publicity between human beings and nature. [3] the integration of these four aspects takes time and is a long process.

Yuan Zushe analyses and summarizes Marx's publicity, based on the cultural concept of publicity. He believes that publicity in Marxism represented a value orientation and a rational concept. It contains the rationality of public practice, the transcendental and ideal hypothesis of communist society, and the rationality of human and community living together. [4]

Cao Pengfei believes that the attention and consideration of the natural world should be incorporated into the publicity of human social affairs, under the development background of modern society and economic globalization. on the premise of dominating the two dimensions of the human world and the natural world, he interprets the concept of publicity as follows: publicity is the unity of integration and diversification, including the universal connections between different individuals in social life, and there is an interdependent relationship. [5] Thus, it constitutes the formation and development of the real world and becomes an essential attribute prevalent in the real world. His interpretation of publicity is based on the understanding of other relevant definitions, does not favor any theoretical expectation, and connects the signifier and the signified of the publicity concept to the greatest extent.

Hu Qunying first distinguishes from the perspective of subject. the individuals existing in social life and other levels belong to the category of publicity. Secondly, it interprets publicity from the perspective of the times. Publicity is the unity of monism and pluralism. It generally exists in contemporary social life not only as a value attribute, but also as a communication principle; in addition to the above two points, the purpose and mode of subject behavior are included in the concept of publicity, from the perspective of the object referred to by publicity. Finally, from the perspective of publicity, the community and the related characteristics between things are the main contents of publicity, such as sharing, openness and so on. [6]

According to the analysis of the ideas of various disciplines proposed above, "publicity" is mainly composed of the following angles: 1) Space. That is, the social public area. Public life is carried out together in this area. This space not only refers to static, but also dynamic and actually developing individuals. 2) Subject. the subject of publicity is the group and the public. Contrary to its meaning, it is the private citizen. 3) Spirit. Publicity requires citizens in the public sphere to have moral education, citizens' public position and their own life attitude. 4) Process. Publicity is actually the process of taking publicity as the basic principle and taking it as the guide to practice. In a word, publicity takes "people" as

the main body, maintains a living state of "class existence" and "class attribute", and is the embodiment of the coexistence of people to people, and man and society. [7]

3. WHETHER PUBLICITY EXIST IN THE SYSTEM OF MARXIST PHILOSOPHY OR NOT

Although the word "publicity" is not directly mentioned in Marx's works, it is a general consensus among scholars that publicity exists in the Marxist philosophy system.

Zhou Zhishan and Feng Bo believe that Marx's thought of social relations embodies his thought of publicity. Although sociality and publicity are two different concepts, the concept of social relations essentially emphasizes the cooperative coexistence between subjects, which involves the concept and pursuit of publicity with a kind of publicity implication. According to their point of view, it requires all groups to cooperate with each other, which is not only the essence of social relations, but also the value and development direction of the concept of publicity. [8]

Jia Yingjian explores the publicity thought hidden in Marx's historical materialism from the perspective of practice, human and so on. the main focus is on the meaning of publicity embodied in Marx's philosophy. Taking the publicity platform opened by Marx as the core, we cannot only clarify the idea of publicity in Marxist philosophy, but also reflect its practical value. [9] Huang Xiaofeng and Xue Junqiang think that there are rich public thoughts in Marx's social history theory. Marx believes that publicity is the content of philosophical category, so he adds it to the analysis of historicism. In his theoretical research, Marx's core is the liberation of all mankind and pays attention to the capitalist society, especially the binary division of "civil society" and "political state". Therefore, publicity is also the core of his future social theory. [10]

Yin Yiming also supports the legitimacy of publicity thought in historical materialism. His research is based on the original works of Marxist philosophy, deeply studies the publicity spirit contained in Marxist philosophy itself, summarizes the meaning of publicity in Marxist philosophy theory, and deeply studies the internal relationship between the category of publicity and historical materialism. He studies Marxist philosophy from the perspective of human publicity, which attracted our attention and began to think deeply from the perspective of publicity of historical materialism. [11]

Bian Shaobin believes that for the efforts to rebuild "public life" under the conditions of capitalist society, Marx spares no effort to reveal the "power" relationship based on "private property rights". Although Marx has realized the impact of the disintegration of "public life" in contemporary society on society, he does not rearrange it under the background of capitalism, but revealed that the "social relationship" constructed by him is fundamentally a "capital illusion" while seeing the great changes brought by the existing social system. [12]

4. THE POSITION OF PUBLICITY THOUGHT IN MARXIST PHILOSOPHY

Yuan Yuli stresses that in Marx's philosophical world outlook, the public view put forward by Marx is an important part of his ideological and theoretical system, and can also be regarded as an effective part of the development of practical materialism philosophy. In fact, the publicity content under Marxist philosophy further guides people to treat the development of social practice from the perspective of truth. At the same time, it also fits well with the social essence of human being under the background of the development of global integration. [13] At the same time, publicity can effectively guide people to have a comprehensive understanding of epistemology. It can also grasp that dialectics can rise to the appearance and break through to the essence, so as to ensure that the value interests of all mankind can be realized.

Jia Yingjian puts the issue of publicity at a higher level - based on Marx's ideological reform, because Marxist philosophy has its transcendence on this basis, compared with the publicity theory included in traditional philosophy. While, the common value of all mankind is developed from the perspective of publicity theory. This is scientifically expounded in Marx's theory, and the various stages of the development of human society are mainly the history formed by the connection between history and publicity. [14]

5. PUBLICITY AND HUMAN DEVELOPMENT

Publicity is undoubtedly a part of people's social attributes, and with the improvement of the maturity of the social community, the connotation of people's publicity is richer. Tan Qinghua believes that people are the product of society and are inextricably linked with all aspects of society. When people's publicity develops in social connection and development, it is the sublation of the survival social connection in social relations to some extent. Man's publicity reflects that man, as a higher animal, has the human attribute and the essential attribute of man, and it is the foundation of building a positive community. Human publicity will be fully developed in the "free association of human beings" and the "kingdom of freedom", and will become the main social attribute of human beings in the future society. [15]

Mo Chunju believes that "man" and "society" occupy an important position in Marx's philosophy, and Marx fully embodies the thought of publicity in his philosophical view system to explore the formation and development of the relationship between man and society. [16] in Marx's public theory, the connection between man and society is its basic unit; in the real society, "the society of real people and the people of real society" is the objective reality reflection of publicity. Then, in order to better analyze that "man" is an important part of Marx's philosophical system, it is explained through multiple dimensions, such as people in the realistic dimension.

6. CONCLUSION

It is undeniable that Chinese scholars pay more attention to the publicity in the field of philosophy than western scholars, and their early research is limited to sociology and ethics, while ignoring the relationship between the environmental, moral and economic problems in the trend of social modernization and the problems brought by public ideas. It results in shallow academic research, lacking new and broad vision. However, with the

deepening of the study of Marxism in China and the rapid development of the Sinicization of Marxism, the study of publicity in the sense of philosophy will be more in-depth.

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Review and Prospect of International Chinese Language Education and Communication in Recent 20 Years

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Abstract: In recent years, the popularity of international Chinese education has continued to rise in the world. This paper takes "Chinese international education and communication" and "international Chinese language education" as the key words to search relevant literature, and finds that the current academic research focus is "overseas Chinese international education and communication" and "Chinese international education and communication discipline construction". Therefore, this review clarifies the research status from these two levels, and reflects on the international Chinese education and communication under the new situation, and summarizes the relevant countermeasures of the existing research.

Keywords: Chinese International Education and Communication; International Chinese Language Education; Discipline Construction; Communication Countermeasures

1. INTRODUCTION

With the continuous enhancement of China's comprehensive strength, Chinese is gradually interested by people all over the world. At the same time, the discipline construction and talent training of international Chinese education have also entered the research vision of domestic scholars. In the literature searched with the keywords "Chinese international education", "Chinese international communication" and "international Chinese education", the “Chinese language education”, “One Belt, One Road Initiative”, “the Chinese international education professional master's degree”, “the Chinese language education program” and the “Confucius Institute” are the five most important topics in the literature. It can be seen that the academic research focus is on overseas Chinese language teaching and communication and discipline construction.

2. RESEARCH STATUS OF OVERSEAS INTERNATIONAL CHINESE EDUCATION AND COMMUNICATION

2.1 History and Different Countries Studies of International Chinese Education

At present, the academic research on the education and dissemination of Chinese in one country and one place is not deep enough. From the country level, it mainly includes the research on Asia. From the perspective of research content, it mainly includes the investigation and analysis of the development of Chinese language teaching and the current situation of Chinese communication. Chaoming Wang combs the communication history of Chinese and Chinese characters in Southeast and East Asian countries, and introduces the development and communication of Chinese from the two dimensions of time and country. Xue-Ao Piao focuses on Chinese education in university, peeps into the current situation of Chinese language teaching in South Korea, points out the problems of Korean university Chinese language education, and puts forward the corresponding improvement direction. the above research describes the current situation of Chinese langauge communication and education in a region, finds out the problems, and puts forward some suggestions.

2.2 Research on the Strategy of International Chinese Education

International Chinese education needs to clarify the objectives, so as to formulate corresponding plans around the objectives of each stage, and formulate scientific and feasible policies, strategies and implementation plans according to the plans. Qiufang Wen proposes to set up a textbook compilation fund, select local scholars and Chinese experts to jointly compile Chinese textbooks, and take the development of national textbooks as a cooperation project between the ministries of education of China and foreign countries. [1] Yuming Li believes that accurate support should be given to countries, regions and enterprises with Chinese learning needs. Jing Guo and Yinghui Wu believe that international Chinese communication resources should be allocated based on demand. [2] the above research on the strategy of international Chinese education is conducive to promoting great progress in international Chinese education and communication.

2.3 Application of Modern Education and Communication Technology in International Chinese Education

With the progress of modern science and technology, modern education and communication technology is gradually applied to international Chinese education and communication. Jianming Lu believes that we should strengthen the knowledge base construction of Chinese language teaching, improve the Chinese language distance construction, and develop modern information software and courseware. [3] Yuan Xu believes that while making full use of the media for communication, we should also pay attention to the optimization of the communication content of international Chinese language education. Through scientific and technological innovation, the above research makes a new exploration in the field of international Chinese education and communication, and

provides new ideas for the information development in the field of international Chinese education and communication.

3. RESEARCH ON INTERNATIONAL CHINESE EDUCATION AND COMMUNICATION DISCIPLINE CONSTRUCTION

3.1 Research on the Theoretical Construction of International Chinese Education

The development of international Chinese education is inseparable from theoretical guidance. However, the academic circles' control over the macro law of international Chinese education communication is relatively insufficient. Yinghui Wu expounds that the development of international Chinese education must strengthen discipline construction and consolidate discipline theoretical guidance in order to successfully transform. [4] Bin Shao and Shuaiqi Liu believe that the connotation of "international Chinese education" is richer and conduct in-depth research on the discipline naming and positioning of international Chinese education. [5] As an emerging discipline, the discipline theory construction of international Chinese education still needs to be further integrated and standardized.

3.2 Research on Talent Cultivation of International Chinese Education

The research on talent cultivation is conducive to the training program and planning of international Chinese education to meet the needs of society and the times. Qiufang Wen thinks that colleges and universities should gradually expand the enrollment of doctors and build high-quality talents for international Chinese education. [1] Shufang Lu believes that the construction of "Chinese language teaching ability" should be in the central position of the construction of the whole curriculum system, and puts forward the path of modular curriculum construction from five aspects, such as the goal of overall planning, constructing modular curriculum and so on. the above research points out the problems existing in talent cultivation of international Chinese education and communication, and actively puts forward practical solutions.

3.3 Research on the Discipline Standard and Evaluation System of International Chinese Education

Strengthening the theoretical research on the evaluation of the professional degree level of master of international Chinese education can promote the development of this discipline. Qiaoyu Cai believes that the professional skills of discipline evaluation personnel should be improved; discipline evaluation institutions should be set, and systems and indicators should be defined. Yinghua Zhong believes that the degree level evaluation system of international Chinese education discipline should highlight morality, cultivate talents, pay attention to training quality and strengthen professional ability. the above studies agree that the academic community should establish a set of discipline evaluation indicators, which puts forward requirements for the construction and development of discipline standards.

4. REFLECTION AND COUNTERMEASURES ON INTERNATIONAL CHINESE EDUCATION AND COMMUNICATION

In 2019, the International Conference on Chinese Education put forward the name "international Chinese education". International Chinese education has entered a new era, but there are many new problems and challenges to be solved.

First of all, the discipline construction of international Chinese education still needs reasonable planning. So far, this discipline has gradually established three levels, including undergraduate, master and doctoral. However, we should also clearly see that the current discipline positioning and talent training need to be adjusted.

Second, the compilation of teaching materials should reflect the differences of nationalization. Relevant teaching materials for international Chinese education should be mainly prepared by local teachers, and relevant Chinese personnel can participate in the auxiliary work. However, this cannot be done at present, because Chinese language teaching has not been incorporated into the local national education system, and the local government has not taken the initiative to compile localized teaching materials.

Third, college should strengthen the quality construction of international Chinese teachers. Qiufang Wen suggests to improve the quality of master's degree training. In addition, we must realize that only when international Chinese language teaching is basically taught by local teachers can we achieve national teaching.

5. CONCLUSION

Transformation and development is imminent. Under the global COVID-19, the large-scale online teaching has changed the original teaching method. We should grasp the historical opportunity of the information age and organically unify online and offline, physical and virtual education and teaching activities. [6]

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Reform and Optimization of the Teaching Mode of Chain Operation Training Courses Based on School-Enterprise Cooperation

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Abstract: School-enterprise cooperation refers to the joint implementation of education and teaching between schools and enterprises. Its application in the education system of higher vocational colleges not only effectively improves the quality and efficiency of vocational education, but also strengthens the comprehensive ability and quality of students. Based on this, in order to better reflect the value and advantages of school-enterprise cooperative education, higher vocational colleges need to make reasonable and scientific improvements and innovations for professional curriculum teaching models, aiming to create an adaptable, efficient and scientific chain operation practice. Training curriculum model, and then provide students with more favorable learning and development conditions. the text first analyzes the importance of implementing the school-enterprise cooperation teaching model, and then expounds the strategies that will help reform and optimize the teaching model of the chain operation training course, hoping to help the development of higher vocational education in our country.

Keywords: School-Enterprise Cooperation; Chain Operation Training; Teaching Mode; Reform and Optimization

1. INTRODUCTION

Higher vocational college education is the main way to cultivate professional, applied and compound talents for the society. Therefore, our country has always attached great importance and support to the education reform of vocational colleges. Favorable conditions provide favorable support for the development of higher vocational education. Based on this, in order to realize the reform and optimization of the teaching mode of chain operation training courses from the perspective of school-enterprise cooperation, higher vocational colleges must base themselves on the shortcomings and shortcomings of traditional classroom teaching, and combine the characteristics, content and characteristics of professional teaching. the goal is to rebuild the curriculum teaching mode under the cooperation of school and enterprise, so as to create a good practical, developmental and comprehensive learning environment for students.

2. THE IMPORTANCE OF IMPLEMENTING SCHOOL-ENTERPRISE COOPERATIVE TEACHING MODE

School-enterprise cooperation is an important teaching model in the current higher vocational education system. It is mainly based on the school-led use of the resources of social enterprises to provide students with abundant opportunities for practice, training and practice. Classroom theory teaching is the traditional form, so it is very important and necessary to implement the school-enterprise cooperative teaching mode [1]. First of all, the school-enterprise cooperative teaching mode helps students quickly adapt to professional positions. For example, companies provide students in higher vocational colleges with jobs that match their majors, and encourage students to engage in actual work as interns and follow the masters in their posts for further study and exercise. This will not only strengthen students' practical operations Level, can also help students to develop good job quality and familiar with the specific work process as soon as possible. Secondly, the school-enterprise cooperative teaching model meets the current society and market demand for talents. For example, social enterprises can feed back the characteristics of talents they need to higher vocational colleges. In this process, schools can achieve the goals of targeted education and special education based on corporate feedback, which will not only help fill the gap in talents in society and enterprises, but also It also helps to lay a foundation for the development of students after employment. Third, the school-enterprise cooperative teaching model is helpful to alleviate the problem of insufficient school training equipment. For example, social enterprises and schools jointly build training venues, and enterprises can also provide schools with training equipment to create rich training conditions for students, and ultimately achieve the goal of improving teaching quality and efficiency.

3. REFORM AND OPTIMIZATION STRATEGY OF TEACHING MODE OF CHAIN OPERATION TRAINING COURSE

The chain operation training course mainly covers many sections such as chain operation cognition, chain store development, store design and merchandise display, chain store promotion management, etc. This course is a course that combines theory and practice closely, so the school-enterprise cooperation From the perspective, the curriculum reform should be based on practical operation, so as to ensure the effectiveness, scientificity and adaptability of the chain operation training course teaching [2]. the following will propose more applicable curriculum reform and optimization strategies from the three levels of establishing a school training center, rationally arranging training teaching content, and realizing a dual-teaching teaching model.

3.1 Establish an on-campus training center and introduce

actual projects from enterprises

Although school-enterprise cooperative education has been implemented and implemented for a long time, there are limitations in the specific implementation process and development methods. For example, in the initial stage of the chain operation training course, because the colleges and universities did not have a stable training place, students in order to exercise their own practical ability and Accumulated a wealth of practical experience, can only independently look for internship opportunities for chain operations outside the school. However, due to the large number of intern students and obvious individual differences, students often have uneven grasp of abilities during corporate internships and cannot effectively integrate into corporate training projects. In the end, the result of the internship of the students is poor and the ability training is not good. Based on this, in order to ensure that students get adaptable, comprehensive and efficient chain management training conditions, the course should further upgrade the school-enterprise cooperative teaching mode. First of all, establish a chain operation training center in the school to create a comprehensive training place for students, first to avoid the problems of students seeking internship opportunities on their own, and second, to facilitate the realization of guidance and teaching for students. Secondly, the school should reach a consensus on cooperative teaching with the enterprise, introduce actual projects in the enterprise, and then provide students with a realistic, experiential and practical operation opportunity. Finally, it is advisable for technical personnel in chain business enterprises to go to the school training center to teach students a wealth of practical experience and methods. Especially in the implementation of actual projects, enterprise technical personnel should give students knowledge, experience and knowledge that are not available in the books. Technology, in order to achieve the purpose of improving students' practical operation ability. In addition, the establishment of an on-campus training center facilitates the unified management of students to a certain extent, and can prevent students from being deceived when seeking internships on their own.

3.2 Reasonable arrangement of practical training teaching content

After two years of theoretical knowledge learning, students have formed a preliminary understanding and understanding of chain operation management. At this time, they need to be practice-oriented, job-oriented, and scientifically design the content of school-enterprise cooperation chain operation training teaching to help Students carry out specific training and practical activities under the support of theory, and finally realize the dual goals of theoretical knowledge teaching and practical ability training. Based on this, under the background of school-enterprise cooperation teaching, the reform of the teaching content of chain operation training courses should fully integrate the development status of chain operation enterprises in the society, explore the needs and standards of professional talents for enterprises, and then design a chain operation training course that is in line Curriculum teaching objectives and practical teaching content.

3.3 Implement the dual-teaching model of school-enterprise cooperation

The construction of a dual-teaching model from the perspective of school-enterprise cooperation is a more critical and important part. Teachers responsible for carrying out chain management training courses must not only have the teacher qualifications prescribed by the Higher Education Law, but also have relevant courses and majors. Practical experience and application skills. Based on this, higher vocational colleges should devote themselves to forming a team of dual-qualified teachers, first to provide students with professional chain management training courses and theoretical teaching, and second to provide students with rich practical experience and practical skills. For example, the school can assign professional teachers of chain operation training courses to practice and learn in social chain operation enterprises to ensure that teachers can integrate theoretical knowledge into practice, and then provide correct teaching guidance for students to carry out chain operation training activities.

4. CONCLUSION

To sum up, the reform and optimization of the chain operation training course from the perspective of school-enterprise cooperation has played a very important and critical significance in strengthening the effectiveness and scientificity of the chain operation training course teaching. the above mainly puts forward several suitable reform and optimization strategies from the three aspects of establishing the school training center, rationally arranging the training teaching content and implementing the dual-teaching mode.

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Discussion on the Management Strategy of Intellectual Property Rights of Enterprises Based on the New Situation

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Abstract: While science and technology are developing rapidly under the new situation, and new technologies and techniques are widely used within enterprises, some enterprises are lagging behind in their awareness of intellectual property rights, and seriously lack a scientific intellectual property management system. Therefore, this paper will discuss the meaning of enterprise intellectual property management under the new situation, the existing problems and its solution strategies, in the hope that it will be of substantial help to readers.

Keywords: Enterprise Intellectual Property; Intellectual Property Management; Management Strategy

1. INTRODUCTION

The Fourteenth Five-Year Plan for the Protection and Application of Intellectual Property Rights has clearly put forward the "four new" objectives, and the so-called "four new" objectives are to achieve a new level of protection, a new level of application the so-called "four new" goals are to achieve a new level of protection, a new level of application, a new level of service and a new breakthrough in international cooperation. In order to further enhance and develop the country's soft power, the 14th Five-Year Plan has deployed a number of initiatives for China's international cooperation on intellectual property, placing the development of intellectual property protection as a strategic position in the country's development, which requires enterprises to put intellectual property management on the agenda as soon as possible.

2. THE SIGNIFICANCE OF ENTERPRISE INTELLECTUAL PROPERTY MANAGEMENT

High-speed development also means fierce competition, and for this reason, fairness is particularly important. Therefore, intellectual property protection, which is essential for maintaining a competitive environment, needs to be highly valued and implemented. A company that attaches importance to the management of intellectual property rights will not only create a good level playing field, but will also have the potential to bring about technological innovation and significant economic benefits. Firstly, in terms of technological innovation, if an enterprise attaches sufficient importance to the protection of intellectual property rights, then employees with the potential to innovate in the enterprise will develop a sense of innovation, and will then actively invent and create, and under the leadership of a large number of innovative employees, those who once did not have the ability to innovate will also be inspired to innovate, making the whole enterprise form a benign environment for technological creation, thus improving Secondly, in terms of economic benefits, as the core of intellectual property rights is to emphasise the exclusivity of knowledge, this also leads to the fact that if an enterprise wants to be invincible in the market, it has to have independent intellectual property rights, and the economic strength of the enterprise cannot be improved without the contribution of "How to make these intangible assets grow in value in an orderly and sustainable manner depends on the reasonable and effective protection of intellectual property.

3. EXISTING PROBLEMS OF ENTERPRISE INTELLECTUAL PROPERTY MANAGEMENT UNDER THE NEW SITUATION

3.1 Imperfect intellectual property protection system

China joined the World Intellectual Property Organization in 1980, and the first Patent Law was implemented in 1984, four years later. Although a more comprehensive set of laws for the protection of intellectual property rights has been formed after years of continuous revision and adjustment according to the actual situation, some of the unreasonableness of the law itself is still frequently revealed in the actual operation of the law. For example, as the Patent Law provides for a patent approval period of 30 months+the time required for approval in the designated countries, most enterprises are afraid of investing too much time and energy, and the patent examination bodies are often delayed because they are not bound by the deadlines, which seriously leads to the loss of the original advanced nature of the patent application and damages the interests of the applicant, thus discouraging the application for a patent. the applicant's interests are jeopardised, thus discouraging patent applications.

3.2 Lax enforcement by judicial organs

The most important thing is not only the enactment of the law, but also the implementation of the law. However, a survey has found that enterprises are deterred from protecting intellectual property rights because they are more likely to blame the relevant judicial departments for lax enforcement, saying that the courts and arbitration bodies are slow, inefficient and sometimes unable to make correct decisions, neither determining the rightful ownership nor vigorously combating infringement [1]. the courts and arbitration bodies are slow, inefficient and sometimes unable to make correct decisions, neither determining proper ownership nor combating infringement [1]. Coupled with the fact that infringement of intellectual property rights is common in today's market,

enterprises wishing to protect their rights and interests have to seek help from the criminal courts, which lack the ability to pursue criminal liability, due to the division of labour in the courts, which has resulted in enterprises being unable to find the applicable penalties to defend their rights and interests, leaving enterprises with a lack of capacity to protect intellectual property rights.

3.3 Insufficient attention from enterprises

In recent years, China's small and medium-sized enterprises have seen explosive growth, and with this rapid development comes the fact that in actual management, enterprises simply care about the management of "tangible assets", thus neglecting the management of "intangible assets". the awareness of intellectual property rights, which has always been a major weakness of enterprises, is generally weak in two major ways, one is that they do not pay enough attention to the protection of their own intellectual property rights, and the other is that they do not respect the intellectual property rights of others, resulting in infringement and infringement. the first is that some enterprises only attach importance to the reward of the results, but ignore the protection of the results after they are produced, making a large number of innovative achievements become public resources, or by others to seize the opportunity to apply for a patent first, inadvertently hit the enthusiasm of the creator; the second is that some enterprises have a fluke mentality, on the basis of knowing that it is an infringement still unrepentantly gratuitous the use of others' patents.

3.4 Lack of intellectual property management personnel in enterprises

On November 8, 2021, the World Intellectual Property Organization (WIPO) released the "World Intellectual Property Indicators" report in Geneva, which mentions that China ranks first in the world in a number of intellectual property indicators, indicating that Chinese creativity continues to drive the development of the global intellectual property cause, and that China is playing a leading role in the world of intellectual property and has made great contributions to it. However, some of the new micro and small enterprises in China do not even have a dedicated IPR management department. In the absence of IPR management personnel, the enterprises' IPR cannot be effectively managed, while a few of them only see the surface of the problem and only think of hiring lawyers, but do not go into the substance of the problem and think of creating a dedicated IPR management agency.

4. SOLUTION STRATEGIES FOR ENTERPRISE INTELLECTUAL PROPERTY MANAGEMENT

4.1 Improve the intellectual property protection system

China should give full play to the advantages of joining the World Intellectual Property Organization, communicate more with foreign intellectual property management systems, and learn and draw on the excellent components of foreign intellectual property protection laws, so as to further modify and improve its own legal policies and formulate a more stringent system, for example, the government can correspondingly and appropriately shorten the cycle of patent applications and stipulate specific examination periods, so as to in addition, some unnecessary and repetitive fees should be abolished in order to reduce the time and money spent on patent applications and lower the cost of patent applications [2]. Improving the protection system of intellectual property rights requires not only the efforts of the state, but also the cooperation of enterprises themselves. For example, in the case of Cisco v. Huawei, Huawei did not lose the case, but learned from its experience and focused its attention on IPR management, and put the emphasis on "strengthening awareness of IPR protection" and "spending money to hire the best patent protection". Huawei has made "strengthening awareness of IPR protection", "spending money on the best lawyers" and "clearing up the 'original sin' of infringement" as its principles of IPR management.

4.2 Strengthen the enforcement of intellectual property protection

As the laws and regulations related to intellectual property rights are too complicated and complex, this requires a high degree of professionalism from law enforcement officers. Therefore, judicial and law enforcement departments should communicate and study with professional researchers, increase communication with intellectual property experts, and also hire relevant experts as legal advisors, or assist in handling difficult cases that are difficult to enforce and difficult to solve, for example, the China Intellectual Property Network for example, the establishment of the China Intellectual Property Network, through which enterprises can inquire about laws relating to IPR or make patent applications, and the establishment of a huge library of IPR documents, which not only provides enterprises with automatic searches of IPR, but also vigorously publicises the process of judicial and law enforcement departments in dealing with infringement issues on the website, so that enterprises can once again trust the law enforcement of the relevant departments and regain confidence in being able to successfully defend This will restore the confidence of enterprises in the relevant authorities and their ability to successfully defend their IP rights. In addition, when the government is regulating the market, the relevant judicial and law enforcement departments can strengthen their management and guidance on the ownership of property rights in the market, so as to reduce the number of infringements and give full play to the functions of market operation and industry self-regulation and form a perfect IP market.

4.3 Increase the importance enterprises attach to intellectual property rights

In order to improve the management of intellectual property rights, the first and most fundamental thing for enterprises is to raise their ideological awareness. Only when they attach importance to it in their awareness can they reflect it in their actions. Enterprises should always remember that they are the main body of intellectual property protection, enhance their awareness of intellectual property management, formulate a strategic plan for the entire process of forming intellectual property rights, i. e. from the beginning of the formation of intellectual property rights, the protection of the process,

the final development and the final operation of the entire value, and integrate intellectual property management closely with the enterprise's technology research and development management, so as to improve the enterprise's This will improve the operational efficiency of converting "intangible assets" into "tangible assets", thereby creating greater benefits for the enterprise and enhancing its core competitiveness [3]. In addition, enterprises should strengthen their knowledge of intellectual property protection and raise their awareness of intellectual property protection, so as to learn how to protect their own intellectual property rights and avoid infringing on the legitimate intellectual property rights of others by taking a chance.

4.4 Optimize the structure of enterprise intellectual property talents

A more complete intellectual property management department is inevitably composed of many professional intellectual property management personnel, and how to have a group of professional and excellent intellectual property talents, here are two more important methods, the first is internal transformation, that is, the introduction of certain foreign enterprises advanced intellectual property management experience for the relevant management departments within the enterprise to learn from, and become the specific implementation process of the first method is internal transformation, which means that some foreign enterprises' advanced IP management experience can be imported for the internal management department to learn from, and become the technical support for the implementation process. the second method is external absorption, i. e. using university researchers specialising in intellectual property, and working with the government and universities to strengthen the training of reserve talents in intellectual property management, breaking through the limitations of geography and experience, and expanding the scope of recruitment by extensively recruiting fresh graduates from universities specialising in intellectual property management.

5. CONCLUSION

In summary, under the new situation, it is imperative to improve the management of intellectual property rights in enterprises, and there are two main strategies to solve the problem: one is to improve the law and enforce it severely, mainly by the government, and the other is to raise awareness, optimise the management structure and recruit professional talents, mainly by enterprises themselves. It is believed that by mastering these four strategies, the key to improving the management of intellectual property rights in enterprises will be mastered.

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Thoughts on the Recognition and Conversion Mode of Continuing Education Credits in Application-Oriented Colleges and Universities

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Abstract: With the continuous advancement of education reform in our country, the state pays more and more attention to the construction of continuing education, and promotes the development of continuing education through the form of credit recognition and conversion. However, in the actual implementation process, the recognition and conversion mechanism is not clear., the problem of inconsistent standards hinders the construction of the credit mechanism for continuing education. Therefore, this paper aims to explore the current situation and countermeasures of the credit recognition and conversion mode of application-oriented colleges and universities.

Keywords: Applied Colleges and Universities; Continuing Education; Credit Recognition and Conversion; Measures

1. INTRODUCTION

Continuing education, as an important part of my country's lifelong learning system, is mainly aimed at people who have left formal education, participated in work and have adult responsibilities. TV University, etc. [1]. With the development of my country's economy and society in recent years, more and more people have begun to realize the advantages of continuing education and invest in the study of continuing education, which makes the coverage of continuing education more and more extensive. 's continuing education is very popular and has become a popular choice in continuing education. However, there is a big difference between continuing education and traditional general higher education, which makes the original credit recognition model unsuitable for continuing education. In this way, the mode conversion is promoted, and the credit recognition is more suitable for the actual needs of continuing education.

2. THE SIGNIFICANCE OF ESTABLISHING THE CONTINUING EDUCATION CREDIT RECOGNITION AND CONVERSION MECHANISM

In 2016, the Ministry of Education issued the "Opinions on Promoting the Recognition and Conversion of Higher Education Credits", which clearly pointed out that it is necessary to explore the establishment of various forms of learning achievement recognition mechanisms, so as to realize the interoperability between different types of academic education. Its practical significance is mainly divided into the following points:

2.1 Improve the quality of adult education

In the implementation process of continuing education, the credit recognition mechanism has not been widely promoted, especially the mutual recognition system of credits makes it impossible to realize the exchange of credits between institutions, so the answer to a certain extent hits the learner's interest in learning. By developing the credit recognition mechanism in continuing education, the learning achievements of learners can be visualized, and the improvement of educational achievements can be achieved through the accumulation of credits. Actively participating in the learning of continuing education expands the choice of students, thereby breaking the current deadlock of continuing education and promoting the improvement of the quality of continuing education [2].

2.2 Optimize the allocation of educational resources

In conventional continuing education, excellent educational resources are usually concentrated in better application-oriented universities, and it is very difficult for ordinary universities to obtain excellent educational resources. Through the recognition and conversion of credits in continuing education, the full use of educational resources can be achieved, and the relevant conversion of different types of learning outcomes can be achieved through the credit conversion mechanism, so as to avoid repeated learning. Communication and exchanges between different types of education, to create a bridge for communication between schools and between academic and non-academic education, so as to promote resource sharing between different regions and education types, to optimize the allocation of educational resources, and to promote continuing education Efficiency improvement.

2.3 Building a Learning Society

In the process of social development in our country, the concept of lifelong learning has become an important driving force for social progress, and continuing education is an important part of lifelong learning. the type of education enables learners to choose the type of education spontaneously according to their own needs, and promotes the formation of the overall educational atmosphere in the society, which also provides a good development platform for adult continuing education, thus contributing to the construction of a learning society.

3. CONTINUING EDUCATION CREDIT RECOGNITION AND CONVERSION MODE FOR APPLICATION-ORIENTED COLLEGES AND UNIVERSITIES

In the process of continuous practice, the continuing education of application-oriented colleges and universities has gradually explored several suitable credit recognition and conversion modes, in which it is established that the course credits for applying for credit conversion shall not

exceed a certain credit ratio in the training of professional talents, that is, 20%, so as to ensure the effect of education when promoting credit transfer. At present, in the continuing education of application-oriented colleges and universities in my country, the following credit recognition and conversion modes have been formed:

3.1 On-campus curriculum recognition and conversion mode

In the continuing education of application-oriented colleges and universities, it is divided into two types: undergraduate and junior college. For students who have corresponding continuing education undergraduate degrees or are in undergraduate study, according to the similarity between the courses they have studied and the courses they have previously studied, they can carry out A certain percentage of credits are converted, so as to prevent students from repeating learning [3]. For example, basic public courses in colleges and universities such as college English can be recognized and converted according to the relevant system of the school. Secondly, for the transfer of majors, a certain proportion of credits should be determined according to the similarity of the courses between the original major and the major to be transferred, so that they can obtain basic students in the process of changing majors, and prevent students from being suppressed by low credits in the early stage. Learning positivity. This includes the same for students with grade changes. As for the students of continuing education of the junior college, they need to be more rigorous in the process of credit recognition and conversion. Considering that the junior college is mainly technical learning, the conversion can be carried out for courses with strong practicality and application. Class studies generally do not carry out credit recognition and conversion. All in all, in the process of credit identification and conversion, a reasonable ratio must be adopted, which needs to be formulated by applied continuing education colleges and universities to ensure the teaching effect of continuing education.

3.2 "Course Supermarket" and Online Course Recognition and Conversion Mode

"Course Supermarket" refers to a platform that provides students with course selection through online education. Students can choose corresponding courses to study according to their hobbies and needs. It not only provides professional courses for continuing education students, but also provides courses for students in continuing education. It is open to the general public and conducts comprehensive and comprehensive curriculum summary teaching. Every semester, colleges and universities will count the online learning credits of continuing education students as the standard for credit recognition and conversion. the credit recognition of online courses and on-campus courses must be implemented according to a certain proportion, and in general, it cannot exceed 25% of the credits of professional courses, so as to ensure the importance of professional learning. Secondly, the courses that can transfer online course credits are also very limited, usually based on the students' online learning time, learning content and learning difficulty as the basis for credit transfer. the credits of each course are different. the courses used for credit recognition and transfer must be at the same credit level. the credits of the latter courses are lower than the credits of the original courses, and the credit transfer is limited to one time [4]. In the future credit recognition and conversion of online courses, it is necessary to actively enrich the course content, so as to promote the exchange of credits between more courses.

3.3 Higher Education Self-study Exam Course Recognition and Conversion Mode

For the recognition and conversion of course credits in the self-study examination for higher education, students need to obtain a certificate of qualification for the self-study examination and be recognized by the university before they can participate in the conversion of credits. the basis of the conversion is the similarity between courses, which requires that the courses taking the higher education self-study exam have similar names to the continuing education courses, and are consistent in the scope of the exam, the difficulty of the exam, and the talent training plan, in order to guarantee the students' course credits scientific and effective. Specifically, the similarity between courses needs to reach more than 80%, and learners who meet these conditions can realize the recognition and conversion of credits, and this conversion mode is not limited by the level of education, whether undergraduate or junior college students are all the credits can be exchanged, and the proportion of credits transferred in general cannot exceed 50%. Compared with other conversion modes, the credit recognition of self-study examination courses in higher education has a higher conversion ratio, which also reflects the current recognition of self-study examinations by colleges and universities, so as to ensure the authority of self-study examinations and promote more continuing education. Students' participation in self-study examinations has become an important means to test students' learning achievements.

3.4 "Credit Bank" Model

"Credit Bank" was originally a credit recognition model developed by South Korea. Students register through the online education platform, and store their learning results in the "Credit Bank" in the form of credits, which are provided by relevant universities and units for their Provide proof to use when credit transfer is required [5]. Take Anhui Continuing Education Network Community as an example. Relying on Anhui Radio and Television University, Anhui Continuing Education Public English Alliance was established in 2018, which provided continuing education learners with an online examination of English bachelor's degree. the qualified certificate can be converted into "University English" students who are specializing in undergraduate courses, thus realizing the exchange of credits between online courses and on-campus courses. Continuing education in application-oriented colleges and universities actively uses the rules of the "credit bank" as the driving force for the credit recognition and exchange mechanism, which can effectively promote the realization of various learning goals, thereby improving the credit recognition and

exchange between colleges and universities, and promoting inter-school education. the exchange of resources enables students to receive high-quality higher education in the form of online, and promotes the in-depth development of continuing education of application-oriented colleges and universities in China.

4. REFORM MEASURES FOR THE RECOGNITION AND CONVERSION OF CONTINUING EDUCATION CREDITS FOR APPLICATION-ORIENTED COLLEGES AND UNIVERSITIES

The recognition and conversion of continuing education credits for application-oriented colleges and universities requires long-term reform and implementation, which involves education in and out of school, academic and non-academic education. Due to the rich practical experience in the education process, problems such as imperfect systems and mechanisms, lack of unified certification standards, and difficulties in the conversion of non-academic certificate credits have led to stagnation in the recognition and conversion of continuing education credits for application-oriented colleges and universities in my country [6]]. In view of the current problems, the following aspects should be targeted to solve:

4.1 Adhere to the principle of substantial equivalence

When carrying out the recognition and conversion of continuing education credits, we must always adhere to the principle of substantial equivalence. Promote the horizontal circulation of continuing education resources [7]. on the other hand, for credits with different educational levels but similar course content, the method of vertical comparison should be implemented, and the conversion principle of "difficult for easy" should be implemented. the learner replaces the original high-credit course with the existing low-credit course, thus ensuring the quality of the credit exchange. According to the principle of equivalent conversion of credits, the educational quality of continuing education can be guaranteed to the maximum extent, and the waste of learning resources caused by repeated learning by students can be avoided, and the overall educational efficiency can be improved.

4.2 Adhere to a clear and feasible approach

In the process of continuing education credit identification and conversion, it is necessary to formulate clear and feasible methods to create a unified construction scope [8]. First of all, the types of continuing education courses that can carry out credit recognition and conversion should be clearly divided. Only courses of the same type can be converted into credits. At the same time, the classification should be based on the nature and type of the courses. For example, theoretical and practical courses can only be Corresponding course credits can be exchanged, but there can be no credit conversion between theoretical courses and practical courses. Secondly, it is necessary to make clear regulations on the similarity of course content. Only courses with a similarity of more than 70% of the course content can participate in the recognition and conversion of credits. In addition, continuing education, as a part of lifelong learning, must have corresponding timeliness for the recognition and conversion of credits. Generally, students' learning achievements in a certain period can be retained according to the content of the course, but when changes in course content are involved, the limitation period of credit recognition and conversion is reduced to ensure the authority of credit recognition and conversion [9].

4.3 Adhere to a standardized and orderly process

Creating a standardized continuing education credit recognition and conversion process is an important driving force to promote the development of continuing education. First, learners are required to provide valid learning achievement certificates, and credits are recognized according to the learning courses. the certification materials, including the learning achievements of the learners in the learning process, course introduction, etc., can only be transferred after the management agency has verified the authenticity and validity of the application materials. During this period, it is advocated to reach a consensus on the results of the certification conversion, and to save the electronic files of the certification conversion, so as to facilitate the follow-up needs of continuing education.

5. CONCLUSION

To sum up, in the construction of the credit recognition and conversion mechanism for continuing education in applied colleges and universities, the joint efforts of the state, colleges and universities and related structures are needed to achieve the effectiveness of credit recognition conversion and become a socially recognized way of evaluating educational achievements. Only in this way can we expand the scope of courses for continuing education, help learners continue to further their studies, and promote the improvement of the overall quality of continuing education in our country.

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Research on Interethnic Interaction and Ethnic Relations in Xinhe Village Jianchuan

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Abstract: The realization of national unity depends on the benign development of cultural interaction among ethnic groups. As the original Bai nationality and the Yi nationality in Xinhe village after relocation, the interaction mode of the two sides presents the obvious characteristics of "harmony in diversity". Under the orderly and healthy interaction mode between the two sides, the ethnic relations between the Bai and Yi in Xinhe village have formed a "harmonious and stable" situation. the cultural logic and reason behind the analysis lies in that both sides uphold the vision of "harmony and great unity".
Keywords: Regional Society; Ethnic Interaction; Ethnic Relations

1. INTRODUCTION

Xinhe Village in Jianchuan County is located in the northwest of Dali Bai Autonomous Prefecture. the population of the administrative village is composed of four nationalities: the Bai, the Yi, Han and the Lisu. the Bai people have lived by Laojunshan River for generations, while the Yi people have scattered in 8 hills and 9 hills with an average altitude of 3, 200m to 3, 700m. Although the interaction between the two existed before, there was not much. on June 30, 2018, the relocation project of the local government was successfully completed, and all the Yi people in Laojunshan Mountain, Jianchuan moved out of the mountain and moved into new homes.

Xinhe Village in Jianchuan, a field site, now governs four natural villages: Laojunshan, Dajudeng, Qingping and Ganhe. Suoma Town, a Yi settlement after relocation, is bounded by Laojunshan River on Ancient Salt-horse Road. About 800 meters to the south is Xinhe Village, a settlement of Bai nationality living there for generations. Bath believes that "stable inter ethnic relations can infer an interactive system: one set of rules controls the interactive social situation and takes into account the integration of some activity fields, while another set of rules on the social environment prevents the interaction between ethnic groups in other fields, so that some cultures avoid confrontation and modification. " [1] Relocation is not only a change of geographical location. After three years, the production and life of the Bai and Yi have basically formed an embedded pattern, and both sides follow the order and rules of "harmony in diversity", which not only retains their own national cultural characteristics, but also promotes the harmonious development of national relations.

2. HARMONY IN DIVERSITY: THE BASIC CHARACTERISTICS OF ETHNIC INTERACTION IN XINHE VILLAGE

After the relocation of the Yi and Bai nationalities in Laojunshan, the communication and interaction between the Yi and Bai nationalities become more and more frequent, due to the close geographical location and the improvement of traffic convenience.

2.1 Complementary Economic Exchanges

The formation of economic complementarity is the basis for the interaction between the Yi and Bai. After the relocation, the economic exchanges between the Yi and Bai show an upward trend. the relocated Suoma Town is 800 meters away from Qingping natural village, Xinhe Village, which greatly facilitates the economic exchange between them. Due to the short relocation time, the Yi people in Laojunshan mostly buy daily necessities from shops in Xinhe Village, while the Bai people buy the pigs and sheep from the Yi. According to a villager in Suoma Town: "we just moved in; there were only two small shops in Suoma Town, and the goods can't satisfy customers' all demands, so they had to buy them form the Bai. They also bought sheep from us when they celebrated the festival and got married. "

There is a complementary relationship between economic exchanges, which is reflected in the fact that the fruit industry, beekeeping industry and mushroom industry attracted by Jianchuan government are mostly managed by the Bai nationality. the primary industries such as fruit industry and beekeeping industry have brought a large number of jobs, attracting some Yi people to participate in the local primary industry, and the two sides have formed a certain complementary economic relationship.

2.2 Frequent Festival Interaction

With the frequent economic interaction between the two sides, the forms of cultural exchange also show a variety of changes. As far as the festival interaction between the two sides is concerned, the Torchlight Festival that both sides have celebrated has become a typical symbol.

The time of Torchlight Festival is different from each other. the festival of the Yi people in Laojunshan is on June 24 of the lunar calendar, and the the Bai people in Xinhe Village is on June 25 of the lunar calendar. the Yi ethnic group before relocation did not interact with the Bai ethnic group in Xinhe Village. However, after the relocation, there was interaction between the Yi and Bai Torchlight Festival, and most of the participants were young people. According to the Bai villagers, "We have a good time with the Yi people. During the Torchlight Festival, they will wear Yi costumes. We dance and sing around the campfire in the square. We are very happy every time we go and feel like a family. "

The cultural connotation of Torch Festival is also different. the the Yi nationality in Laojunshan has two major

cultural functions: ancestor worship and praying for a good harvest. the the Bai nationality in Xinhe Village mostly focuses on the cultural connotation of reverence for life and death.

After the relocation, the Torchlight Festival of the Yi nationality is more of an exhibition nature, mostly to attract tourists, develop tourism and promote economic development; while the Bai nationality in Xinhe village is more traditional and retains the traditional characteristics. Although the interaction between the two sides has been enhanced, the boundary of spiritual and cultural connotation has not disappeared. It not only retains its own national characteristics, but also promotes the cultural exchanges and exchanges between the two sides.

2.3 Mutual Reference of Eating Styles

Diet is an externalized form of national customs. In the historical evolution, all ethnic groups will form their own unique way of life according to their natural and geographical conditions. However, in Suoma Town and Xinhe Village after relocation, there will be pork-pieces (Tuotuo meat) of the Yi nationality in the banquet of Bai nationality's wedding; the wedding banquet of the Yi nationality adopts the "eight dishes" of the Bai nationality. "As long as we live together in the same field, we will naturally form the obligation and responsibility of helping each other, so as to build a specific concept of community of destiny in the long-term process of production and life, and consciously build an ecological friendship and moral society. " [2] Therefore, the wedding banquet cooks employed in the Yi weddings will be the Bai people, and even the chef will be the Bai. In the Bai wedding, the Yi people will also participate in the wedding and go to a banquet.

3. HARMONIOUS DEVELOPMENT: THE INTERACTIVE MODEL OF XINHE VILLAGE AND ETHNIC RELATIONS

On the whole, the interaction between the Yi people in Xinhe Village and the Bai people in the surrounding village presents a healthy and orderly form of expression. In terms of economic exchanges, the economies of both sides promote and develop each other; in terms of festival interaction, the cultures of both sides can be exchanged; in terms of food mutual learning, the human exchanges between the two sides have been deepened. the inter ethnic interaction between the two sides reflects the harmony of ethnic relations between Bai and Yi in all aspects, and it is also a practical action to continuously forge the consciousness of Chinese national community. As the Yi villagers say, “relocation is a good policy and the state is to make us live a good life. After we move out, although we have no land, we can work to make money, get to know more people and make more friends. I think our 56 nationalities are a family, supporting and helping each other. “

4. HARMONY AND GREAT UNITY: THE MOTIVATION FOR THE FORMATION OF THE ETHNIC INTERACTION MODEL IN XINHE VILLAGE

The cultural and social ecology produced by the benign interaction mode is conducive to the harmony of national relations. the healthy and orderly interaction mode between the Bai and Yi in Xinhe village can be formed with its internal cultural logic and motivation.

One is the change of living environment. “A side water and soil raises a side people”, which means that one soil and water creates the livelihood mode of one person. According to the production conditions of crops and the living pattern of the Yi and Bai nationalities, the living environment of Xinhe village in Jianchuan can be divided into two steps. the first ladder terrain is 3, 200m - 3, 700m above sea level. Except for corns and potatoes, the output of other crops is very limited. the ladder is mainly inhabited by the scattered Yi people, whose livelihood is mainly herding sheep and cattle and collecting medicinal materials, and they are highly dependent on the forest resources of Laojunshan Mountain. the second ladder terrain is 2, 400-2, 600m above sea level, which is suitable for planting wheat, potatoes, buckwheat, grain, walnuts, broad beans and other crops. the ladder mainly lives in the gregarious Bai nationality. When they are unable to be self-sufficient; the Yi and Bai will go to the market on a fixed date to purchase items needed for their daily life, such as the medicinal materials, pigs, cattle and sheep of the Yi, and the buckwheat and rice of the Bai.

The correlation between livelihood mode and market-going determines that the Bai and Yi in Xinhe Village will interact. the interaction in this process is slow and unstable, and is affected by many external factors, such as traffic, weather, etc. the process of ethnic interaction between the Bai and Yi began with individual consciousness, and produced the mentality of mutual trust for a long time. In the long historical dynamic process, it gradually expanded to the mutual trust of groups, and built a cultural and social mentality of mutual trust in Xinhe Village, a multi-ethnic region. It is the beginning and development of ethnic interaction that has laid the harmony and unity of ethnic relations in Xinhe Village.

The second is for personal needs. Since the birth of human beings, the needs have become the biggest motivation for human survival and development. the needs of human beings in different regions, different nationalities and different periods show diverse characteristics. There are no more than three kinds of human essential needs: material needs, ecological needs and spiritual needs. [3] the internal motivation for the emergence and increasingly frequent ethnic interaction between Xinhe Village is inseparable from the needs of individuals. Both the Bai nationality living in the world and the Bai nationality relocated from other places have the pursuit of material and spiritual needs.

5. CONCLUSION

The interactive content between nationalities reflects the national relations and social ecology. the Bai nationality in Xinhe Village and the Yi nationality after relocation have had a lot of content interaction in three years. This interaction is reflected in the complementary relationship that has begun to take shape economically. the interaction on festivals is orderly, and the mutual learning of food styles has become an effective display of culture. Many ethnic interaction contents reflect the harmony and unity

of ethnic relations. However, it is undeniable that there is a phenomenon of communication and blending between the national cultures of the Yi and Bai, but it has not changed the spiritual and cultural core of their respective nationalities. To sum up, the ethnic interaction of "harmony in diversity" in Xinhe Village of Jianchuan is a reflection of the "harmonious development" of ethnic relations between the Bai and Yi, because both sides have a beautiful vision of "harmony and great unity".

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Research and Exploration on the Construction of College Art Students' Party Branches

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Abstract: Under the good opportunity of selecting the visual communication design specialty as the national first-class undergraduate specialty construction unit, the Party branch of the graduate school of art of Tiangong University has made great efforts to firmly root the core concept of "first-class visual communication and forge ahead with me" in the hearts of every Party member, and strive to form a good style of "five first-class". New progress, breakthroughs and achievements have been made in the construction of Party branches. By studying the construction path of the Party branch, this paper hopes to put forward theoretical methods and practical paths for the establishment of art students' Party branches in other colleges and universities.

Keywords: Colleges and Universities; Arts; Student Party Branch; Construction; First-Class

1. BASIC INFORMATION OF THE PARTY BRANCH

The Party branch of the graduate visual communication direction of the Academy of Arts was established in September 2018. It is a student Party branch vertically established based on the graduate visual communication design major. the branch has 36 Party members, including 1 Teacher Party member and 35 student party members (including 8 probationary Party members). the secretary of the branch shall be a teacher, with one deputy secretary of the Party branch and one organization member, one publicity member and one discipline inspection member respectively. [1]

2. PROGRESS OF PARTY BRANCH WORK

2.1 first-class party branches; "discipline and rules" should be set up.

The Party branch should improve the system and mechanism, and draft the rules and regulations such as the Measures for the Construction of Party Branches for Postgraduates of the School of Art of Tiangong University. the university also should formulate the rectification list, integrate the statistical table and schedule of system construction, and sort out, continuously update and improve the completed system in time, according to the problems.

The Party branch should strictly formulate procedures for the development of Party members, establish the learning files of probationary Party members and activists in batches, times and levels, set different learning objectives and tasks for different stages, and sort out the time nodes and quantitative indicators of "applicant - activist - probationary Party member - regular Party member". It aims to truly control the total amount, optimize the structure, improve the quality and play a role.

The Party branch should set up disciplines ahead. In addition to organizing theoretical study, the branch also timely reported cases of violation of discipline and regulations, watched warning education films, etc. Since the establishment of the branch, no one has violated Party discipline and national law, school discipline and school rules, and truly achieved strict discipline in mind and action.

Self criticism is always new. the branch set up discipline inspection committee to explore the "unity - re unity" heart-to-heart talk mode of the Party branch. [2] Extensive criticism and self-criticism should be carried out to help branch members grow better without evasion, concealment and delay.

2.2 first-class branch committee; "red vanguard" bring it up.

The Party branch should select, optimize and strengthen the team of the branch committee. the secretary of the Party branch is a teacher with more than 10 years of experience in grass-roots Party construction, with one deputy secretary of the Party branch and one organization member, one publicity member and one discipline inspection member respectively. the team members of the branch committee have won awards in various evaluations and competitions at all levels for many times, and have a strong mass base.

In order to effectively strengthen the construction of Party branches and continuously promote the extension of strict party governance to the grass-roots level, Party branches are required to complete the general election on schedule according to the regulations of higher authorities and the general election. [3]

The branch fully mobilized the vanguard and exemplary role of Party members, strengthened Party members' identity, paid attention to the key work and key areas of the school, and actively planned to serve the overall situation. the branch shall hang a warm-hearted sign of "finding Party members in difficulty" outside the dormitory of each Party member, and post the basic information, contact information and service commitment of Party members.

2.3 first-class "three meetings and one class" and "red thought"

The Party branch should pay close attention to theoretical study. Taking ideal and belief education as the primary task, the university works hard on "learning", truly realizes the hierarchical classification of Party member education, and strengthens Party member learning, improve quality and efficiency by carrying out "immersive" Party history learning and education.

The university should carry out theme Party day activities every month strictly on schedule, make full use of the Party construction resources of the college and the school, deepen the achievements of theme education practice

activities, and forge a good Party member consciousness of being loyal to the party.

2.4 first-class party day activities; "red atmosphere" lit up.

The Party branch should solidly carry out "I do practical things for the masses", adhere to extensive needs and accurate implementation, do more practical and good things for the grass-roots people, and do them well. Seven special student symposiums including grade symposium, student association backbone symposium and employment symposium, and more than 40 students' opinions and suggestions were collected, involving academic, curriculum, employment and other aspects. [4] All departments and offices of the college carefully sorted out the problems reflected by students, actively negotiated and solved them, and timely fed back to students.

The Party branch should continue to promote “one branch with one feature”. According to the professional advantages, the branch taps the characteristics of the branch, integrate the ideological and political education and aesthetic education resources contained in the college into practical activities, truly cultivate morality and promote beauty with morality, cultivate the soul, enlighten wisdom and moisten the heart. the branch designed hand-painted manuscripts for the kindergarten, organized visits to the fire brigade and took them to oil painting exhibitions.

Online Party building stimulates learning enthusiasm. All members of the branch install and register the "Learning Power" app, compete for points of learning power every week, and make the "learning power" app become a daily attendance of every branch member. Now, comparing results and "posting" accumulate points every day has become a new trend for the majority of Party members. [5]

The branch carries out the “Red Reader” activity of "young heart to the Party, deep love from letters", organizes Party members of the branch to read "red letters", guides student Party members to revisit the history of the red revolution from the red family letters, looks back on the original intention of the founding of the Party, strengthened their ideals and beliefs, and remembered the mission of the times.

Through Party building, the branch integrates the new media form loved by the audience, excavate the typical deeds of branch members and publicize them. Now we have launched the column of volunteer service for branch members to publicize and report the deeds of branch members participating in volunteers, give full play to the demonstration and driving role of "peer tutors" by organizing lectures, symposiums and other forms, and form a good atmosphere for students to strive for excellence.

2.5 first-class young party members and "red successors" have been brought up.

Since its establishment, the branch has carried out theme practice activities, visited nearly 10 red scenic spots, deeply studied red culture and excavated spiritual connotation.

The members of the branch initiates the "intangible cultural heritage youth theory" public welfare voluntary service, uses professional advantages to design cultural and creative products for intangible cultural heritage culture, helps upgrade product packaging for agricultural products, injects cultural charm into rural revitalization, and creatively proposes that intangible cultural heritage help agriculture and expand the quality of intangible cultural heritage culture. It aims to contribute to rural revitalization.

The branch selects "stars" volunteer service talents and carried out after-school trusteeship services in primary and secondary schools based on the ideological and political integration working mechanism and focusing on the aesthetic education integration working mechanism of primary and secondary schools. At present, the guidance and training has been carried out in theoretical propaganda, art painting and physical etiquette. With the deepening of later work, the sections of calligraphy writing, photography and green design will also be expanded.

The branch should pay attention to listening to opinions and suggestions, understand students' difficult demands, improve service awareness and service level, and establish and improve the inner-Party incentive, care and assistance mechanism. Party members must visit when they finish school, have difficulties, recruit new members, and leave school, so as to fully mobilize the initiative and mutual assistance of Party branch members and better stimulate the cohesion of the Party branch. [6]

In the face of the severe and complex situation of epidemic prevention and control, the branch holds a poster design competition with the theme of "fighting the epidemic with one heart and overcoming difficulties" in order to further guide students to strengthen their confidence, stimulate their fighting spirit and contribute to the fight against the epidemic. Student Party members designs artistic works with their own professional skills, fight the epidemic with "art" and make concerted efforts, to pay tribute to the broad working people who have overcome difficulties.

The branch devotes itself to creating sharing and exchange activities such as "art · sharing" and "video communication Salon". [7] in combination with their respective research directions, the members of the branch shares their views and experiences on the current status of scientific research, research topics, paper publication and other issues, further defines the research direction of the members of the branch, so as to jointly promote discipline construction and promote the development of professional connotation, and play a good leading role.

3. CONSTRUCTION IDEAS FOR THE NEXT STAGE

On the basis of the original work, the Party branch should carry out concise summary, combine the professional characteristics of Party members of the branch, carry out model innovation, and establish a new working method of “one core drive, two links and multi-dimensional innovation”. It should focus on the two links of theoretical learning and practical training, take the college specialty as the characteristic, and integrate the aesthetic education education. Under the background of "double reduction", the rural revitalization of "starting with intangible cultural heritage" and the coordinated development of Beijing, Tianjin and Hebei, the Party branch should carry out the exploration of "party construction plus", to give full play to the role of the fighting fortress of the Party branch and

the vanguard model of Party members. Relying on professional characteristics to create "five first-class" has a good practical reference significance for promoting the integration of art party building business in colleges and universities.

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Research on the Cultivation of Students' Professional Quality in Higher Vocational Colleges Under the Background of Industry-Education Integration

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Abstract: With the increase of social competition pressure, professional quality has become one of the important soft power of students in the employment competition. This paper briefly analyzes the deficiencies in the cultivation of vocational quality of students in higher vocational colleges, and puts forward the application strategies of strengthening campus culture construction, perfecting teaching system, deepening the integration of industry and education, and organizing practical activities, in order to provide reference for improving the comprehensive quality of students in higher vocational colleges under the background of integration of industry and education.

Keywords: Industry-Education Integration; Higher Vocational Colleges; Professional Quality

1. INTRODUCTION

Higher vocational colleges usually focus on improving students' professional skills, but lack of attention to the cultivation of students' professional quality. Therefore, higher vocational colleges should be good at finding the shortcomings in the process of training students' professional quality, and formulate effective improvement strategies to effectively train students' professional quality.

2. DEFICIENCIES IN THE CULTIVATION OF STUDENTS' PROFESSIONAL QUALITY IN HIGHER VOCATIONAL COLLEGES

Professional quality education as one of the important quality education of students should accept, is the students' ability in knowledge, ideas, and other aspects of comprehensive education, higher vocational colleges need education worker pay a lot of time and energy, and education effect in a short period of time is difficult to highlight, based on this, the cultivation of the professional quality of students in higher vocational colleges teachers lack of initiative and enthusiasm, It is difficult to effectively play its role in cultivating students' professional quality [1]. In addition, some students in higher vocational colleges do not have high cognition level of professional quality, weak vocational awareness, lack of reasonable planning for professional learning and career development, and have a great negative impact on campus atmosphere. Due to the limitation of the higher vocational college students' cognitive level, and students in higher vocational colleges lack of practical and effective education guidance, lead to some higher vocational college students have serious deviation are greatly, in the process of choosing profession, employment, pay more attention to the enterprise wages and working environment requirement, and the lack of the measure of the their professional ability and professional quality, As a result, the overall vocational quality of students in higher vocational colleges is low, which hinders the effective promotion of "school-enterprise cooperation and industry-education integration" in higher vocational colleges.

3. THE APPLICATION STRATEGY OF CULTIVATING STUDENTS' PROFESSIONAL QUALITY IN HIGHER VOCATIONAL COLLEGES UNDER THE BACKGROUND OF INDUSTRY-EDUCATION INTEGRATION

3.1 Strengthen the construction of campus culture and promote students to establish a good sense of occupation

Therefore, higher vocational colleges should strengthen the construction of campus culture to shape a good campus atmosphere for students. Higher vocational colleges should set up typical characters with good professional accomplishment to drive students to set up good professional consciousness. Higher vocational colleges can deepen students' understanding of professional qualities by setting up typical characters with good professional qualities and promoting advanced deeds of typical characters, so as to set up good professional consciousness spontaneously under the influence of typical characters. At the same time, students through the understanding of the typical career situation, can further enhance their awareness of employment, to let the students can be better combined with their own situation, establishing reasonable career planning, set up professional learning and career development goals, and under the direction of the target, ordered to carry out the study and practice, to better enhance their own professional quality. In addition, higher vocational colleges can use the online campus public and weibo, professional quality education related news cases and outstanding enterprises, professional quality requirement to the worker, in to let the students understand the importance of professional quality at the same time, also help to shape the good campus culture atmosphere for students, promote students establish good professional consciousness.

3.2 Improve the teaching system and integrate

professional quality education into professional classes

Under the background of the integration of industry and education, higher vocational colleges should improve their own teaching system, integrate vocational quality education into the teaching activities to cultivate students' professional skills, promote students to fully reflect their professional quality in the future career development process, and achieve better self-growth. Because the teacher is the key to cultivating students' professional quality, therefore, higher vocational colleges should pay attention to the updating of teachers' ideas, make teachers fully grasp the current social employment situation and the degree of enterprise to the attention of the students' professional quality, make teachers realize the professional quality education to the students the importance of professional development, and actively to professional quality education into the classroom in actual teaching activities, Give full play to teachers' moral education ability. At the same time, higher vocational colleges should encourage teachers to actively learn vocational literacy education methods, improve the quality of teachers' vocational literacy education, and promote the all-round development of students in higher vocational colleges. In addition, vocational colleges should improve the content of vocational quality education. Vocational colleges should integrate the relevant content of vocational literacy education with the content of professional courses, and improve the quality of vocational literacy education through the improvement and optimization of teaching content. For example, vocational colleges can integrate career goals into the teaching content of professional courses. Under the fusion form production and education, higher vocational colleges of higher vocational education specialization, and has strong employment guidance, teachers can according to the professional development of the students learn professional, reasonable to guide students to develop career goals and career planning, promote the students in the future work has the good professional attitude and professionalism.

3.3 Deepen the integration of industry and education, and cooperate with schools and enterprises to cultivate students' professional quality

Higher vocational colleges should deepen the concept of the integration of industry and education, establish a good cooperative relationship with excellent enterprises, cooperate with enterprises to cultivate students' professional quality, and effectively promote the improvement of students' professional quality. Excellent enterprise culture can reflect the good professional quality of enterprise employees and the overall spiritual outlook of the enterprise. Therefore, the enterprise culture in higher vocational colleges as the material to cultivate students' professional quality can help students better understand and feel the importance of professional quality for their own career development. At the same time, good staff evaluation standard is not only promote the important condition of enterprise staff to better play its value, also can penetrate the enterprise on the basic requirement of the employees' professional quality, lets the student understand the staff of enterprises evaluation standard, helps the student to the career development formed a preliminary understanding, and then to improve their own professional quality give corresponding attention. In addition, higher vocational colleges can regularly invite enterprise managers to organize special lectures for teachers and students to improve students' cognition of employment. Because teachers in higher vocational colleges generally lack practical experience in enterprises, there are many deficiencies in the cultivation of students' professional literacy. Therefore, higher vocational colleges can invite excellent management personnel of enterprises to organize special lectures related to professional literacy for teachers and students, so that teachers and students can improve their cognitive level of enterprise employment.

3.4 Organize practical activities to strengthen students' professional quality education in practice

Higher vocational colleges should actively organize practical activities, so that students can strengthen their understanding of professional quality in practice, and reflect their professional quality well in the future work, and promote the career development of students. For example, vocational skills competition, vocational knowledge competition and other activities organized by higher vocational colleges are not only conducive to improving students' ability to master vocational skills, but also conducive to cultivating students' vocational interest, laying a solid foundation for students to have sufficient study and work motivation in the future work. At the same time, vocational colleges should also organize the implementation of campus second class, through talent competition, short video production competition, office software practice competition, etc., to mobilize the enthusiasm of students, so that students can improve their interpersonal skills and communication and coordination ability in practical activities [2]. In addition, higher vocational colleges can strengthen cooperation with enterprises, communicate with enterprises to open more internship positions for students, so that students can deepen their understanding of the work content and working environment of enterprises during internship, fully realize the importance of professional quality in career development, and then constantly improve their professional quality in practice.

4. CONCLUSION

Under the background of integration education, higher vocational colleges should pay more attention to the cultivation of student's professional quality, at the same time, higher vocational colleges should also be reasonable use of enterprise resources to carry out teaching activities, let students improve the level of cognition to the problem of employment and strengthen the students' professional skills, promote the all-round development of students, in order to better improve the students' professional quality.

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A Study of Computer Software Application Techniques in Python

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Abstract: The technical features of Python as a computer programming language have been widely promoted in the context of the information age, becoming a popular technology and frequently used in various areas of the Internet. This paper will therefore explore the technical features of Python in terms of three computer applications of the Python language in data analysis, information crawling and artificial intelligence.

Keywords: Python; Computer Software; Software Application Technology

1. INTRODUCTION

Python is the fastest growing and most popular programming language in the world. Because of its technical nature, which is very beginner-friendly, people from different fields can learn and use Python to do things. the technical features of Python are explained and the different applications of its technology in the Internet are analysed, which can effectively improve the efficiency of people's offices.

2 TECHNICAL FEATURES AND ADVANTAGES OF PYTHON

Python has many features: 1. simplicity, Python is a simple and minimalist programming language, and good Python program code allows you to focus on solutions to problems. 2. ease of learning, Python has fewer keywords than other programming languages, a simple structure and a well-defined syntax, making it an easier learning process. 3. rich libraries. One of Python's greatest strengths is that it has a rich library that is cross-platform. 4. Interactive mode, an interactive mode allows a language to execute code from terminal input and get results. 5. Cross-platform, the open source nature of Python allows it to work on many platforms. 6. Extensible, if you want to run a fast piece of critical code or write a piece of code that you don't want to open up, you can use another programming language. Python is a powerful language that combines performance and functionality in a way that makes writing Python programs easy and fun. Python is simpler than Java, which is a weakly typed language, whereas Java is a strongly linguistic language; Python has a full library of classes and is simpler to use than C, which is more complex.

3. PYTHON'S SOFTWARE APPLICATION TECHNOLOGY RESEARCH

Python provides efficient high-level data structures, and its syntax and dynamic typing, as well as the nature of an interpreted language, make it a programming language used for scripting and rapid application development on most platforms. As its versions are constantly updated and new language features are added, it is increasingly being used for stand-alone, large-scale project development.

3.1 Data Analysis

In general, the basic process of data analysis consists of the following steps: 1. Asking questions, which are the metrics we want to know (e. g. customer age distribution, turnover trends, etc.) 2. Importing data, importing raw data sources into web crawlers, data reading, etc. 3. Data cleansing, which is the process of finding and correcting identifiable errors in data files (checking data consistency, dealing with invalid values and 4. model building (advanced model building will use machine learning algorithms). 5. data visualisation. WeChat user "Little F" wrote an article on Python's data analysis results, published in the public number "Farnast", entitled "How scary is cyber violence", using a Weibo comment as the object of data analysis. the first step was to obtain the nickname, gender and region of the user in the comment from the mobile terminal, then create a database, create a table and set up the field information, and use the code to obtain the data and see that there were 140, 000 comments on the tweet over three days. Next, the data was cleaned and the code was used to output the data, with ten randomly outputted comments to show the style of language used in the comments. the first aspect was the gender distribution of the users in the comments. By de-weighting the data from the user IDs, over 100, 000 users were left, and the proportion of male and female users in the comments was divided. the second aspect is the regional distribution of comment users, reflecting the largest proportion of comment users in Guangdong, followed by Beijing, Shandong and other regions. the third aspect is the distribution of the number of followers of commenters, which shows that the largest proportion of users are in the "200-500 followers" category. the fourth aspect is the distribution of the number of followers of comment users, which shows that "50-100 followers" accounts for the largest number of users. the fifth aspect is the distribution of commenting time, which shows that "the number of comments at 18:00 on the day the tweet was posted" accounts for the largest proportion. the sixth aspect is the most common words used in the comments, which shows that the overall rhetoric is relatively calm and not too radical. Finally, the 10 users with the highest number of comments on this tweet were observed, with male users commenting more negatively and female users commenting more positively [1].

3.2 Information crawling

The Python language is very good at writing crawlers that crawl web pages through Python libraries (Beautiful Soup is a Python library that can crawl information from Beautiful Soup is a Python library that can crawl information from web pages), parse web pages and organise the data in a clear way so that it can be retrieved

quickly and accurately. For example, when learning about another company's website, it is impossible to copy and paste data over and over again, which is not only time consuming but can also lead to huge errors because a number or data is missing during the copying process. However, you can use web crawlers to crawl data in bulk and analyse it, not only to understand other companies' web data, but also to understand your own customers' interests through crawling data, which allows you to make better improvements. the famous global Chinese IT technology exchange platform "CSDN" has a user named "Piggy 66" published an article on "Python crawling Taobao product information". the article uses the Taobao PC search interface to crawl data, extracts the returned data, and then saves it as an Excel file. the first step is to crawl a single page of data, which requires finding the URL to load the data and requesting the use of the web interface, and the second step is to extract the product attributes by extracting the JSON data of the product from the web page, obtaining the price of the product and other information, and saving it as an Excel, thus completing a web crawl [2]. After obtaining data in bulk and using Excel to present the data, you can clearly see the results of the data you want to get, which is very beneficial to business competition.

3.3 Artificial intelligence

Python is a scripting language with several advantages that make it more suitable for use in the field of artificial intelligence: firstly, the syntax is simple and programming is less complicated, compared to other languages, Python does not require strict code formatting, making it more comfortable for users to write code, and non-computer professionals can easily learn it. Computer professionals can also learn Python programs easily. Thanks to the simplicity and ease of use of Python itself, the language is also very extensible, which is the reason why developers in the AI field prefer to use the Python language today. Secondly, it contains almost all the AI project libraries. Because of the extensive Python database, it is possible to call complex code directly when writing programs, and also contains libraries for almost all types of AI projects, such as Simple AI. Thirdly, the open source language feature, Python, as an open source programming language, has a wide range of programming task features, which is one of the reasons why Python is suitable for AI projects.

4. CONCLUSION

Python, a very popular programming language in this day and age, contains unique technical features and has its own unique advantages compared to other popular programming languages. Using Python's own technical features and advantages can be used in a variety of Internet applications such as data analysis, information crawling, and artificial intelligence, and the effective use of python's technical features can bring about improvements in work efficiency.

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The Positive Significance of the Reform of Teaching Examinations in Colleges and the Choice of Practical Approaches

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Abstract: In recent years, colleges and universities have continuously expanded their enrollment, the number of college students has been increasing, and the society has paid more and more attention to education and student quality. In order to improve the quality of teaching, the reform of teaching examinations in colleges and universities is an inevitable trend. This article will start from the phenomenon of college exam clearance, discuss the positive significance of college teaching examination reform, analyze the influence of the choice of practical approaches for college teaching examination reform on the phenomenon of college exam clearance, and provide some suggestions for the reform of college teaching examinations.

Keywords: College Teaching Examination Reform; Practical Approach; Clear Examination Phenomenon

1. INTRODUCTION

With the increasing popularity of higher education, the number of college students has increased sharply, and the phenomenon that the supply of talents in universities exceeds social demand has gradually appeared. However, in the actual social talent market, the gap of high-quality talents is still large, and the demand for talents in social development Not completely improved.

2. OVERVIEW OF THE PHENOMENON OF COLLEGE CLEARING EXAMINATIONS

2.1 The beginning and end of the clearing examination system

The clearing exam system refers to the graduates who still fail to pass the make-up or retake exams. the school will organize the school before graduation to give students the last chance to take the exam. the original intention of the clearing exam system is to meet the needs of social development for talents and give students the last straw before graduation. From a school perspective, the clearing examination system can also effectively increase the school's graduation rate and employment rate, thereby enhancing the school's reputation and bringing in more students. the clearing examination system can enable the school and students to achieve a win-win situation. After the reform, the society has developed rapidly, and the demand for talents has greatly increased. Colleges and governments have reformed the education model at this stage, and elite education has turned to popular education. Under such circumstances, the clearing examination system was born, which greatly increased the graduation rate of colleges and universities and eased the society. Demand for talents brought about by development. However, with the further development of society and colleges and universities, some drawbacks have arisen from the clearing examination system. Many students themselves will rely on the clearing examination system for their graduation. In order to ensure the graduation rate, schools will often "release water", which leads to an increase in the graduation rate. Under circumstances, the quality of graduates is difficult to guarantee. Therefore, in 2018, the Ministry of Education issued the "Notice on Paying Close Attention to the Implementation of the Spirit of the National Undergraduate Education Work Conference in the New Era"., in order to meet the development needs of society and universities.

2.2 The causes of the clearing examination system

The clearing examination system itself is less restrictive, and it is biased towards the humanized examination system. the goal of the clearing examination system is understandable. However, in the process of rapid social development, the humanized system will also expose problems that will be affected by human nature. the students reached an agreement on graduation requirements, and the two facilitated the use of the clearance examination system to meet their own needs, which naturally violated the original intention of the establishment of the clearance examination system. the long-term existence of the clearing examination system mainly comes from two aspects. on the one hand, the "Regulations on the Management of Students in Ordinary Colleges and Universities" restricts school expulsion. Except for violations of laws and disciplines, student performance is less involved, with grade repetition and expulsion mainly. For students, graduation is their core interest and demand. Schools naturally need to be cautious in dealing with graduation issues to avoid unstable factors. For this reason, it is the most important thing to reduce graduation standards through the clearing examination system and send unstable factors away from the campus. Good solution [1].

3. THE POSITIVE SIGNIFICANCE OF THE REFORM OF TEACHING EXAMINATIONS IN COLLEGES AND UNIVERSITIES

3.1 Promote the continued development of higher education

In the past, teaching examinations tended to be utilitarian. It was not only traditional educational concepts, but also included traditional teaching examination systems. Examination scores were taken as an important part of the school's evaluation mechanism. the above tends to be utilitarian, and the learning content is focused on the test

objectives, rather than comprehensively improving one's own ability level. In addition, the student's performance is also related to the teacher's evaluation and bonuses, resulting in the extension of teaching to utilitarianism. the reform of teaching examinations in colleges and universities is an inevitable trend in the development of higher education. the Ministry of Education has also issued "Several Opinions on Improving the Quality of Higher Education in an All-round Way", suggesting that colleges and universities should innovate teaching methods, reform traditional examination systems, and actively cultivate students' practical and pioneering abilities. Cultivate high-quality talents for the society. From the perspective of clearing examinations, the reform of college teaching examinations will abandon the traditional examination-based evaluation method, and the significance of the last examination will decrease. the evaluation system and new evaluation methods will be used to reduce the impact of the examination on students and schools.

3.2 The positioning of social talent needs has changed

In the traditional education model, the assessment content is mainly based on textbooks and outlines, mainly to evaluate the learning ability of all students and cultivate applied talents. Most of the assessments are aimed at students' thinking and understanding of knowledge. Fewer inspections lead to poor improvement of students' quality and abilities, and the problem of high scores and low energy. the reform of teaching examinations in colleges and universities is also to meet the requirements of society for talents. the current demand for talents in society not only tends to be high-quality and high-quality, but also has more needs for practice and innovation. Human resources have become the foundation of social construction and development. Only high-level talents can promote social development. the reform of teaching examinations in colleges and universities will pay more attention to the assessment of students' comprehensive quality and practical innovation ability, with the goal of cultivating applied and compound talents. the clear examination itself is still the traditional assessment content. As the last hurdle for students to graduate, it naturally needs to meet the needs of talents. Examination systems that cannot meet the needs of talents will inevitably be eliminated.

3.3 Comprehensively enhance the quality of education and teaching in colleges and universities

In the past, the test operation was mainly based on teachers. the students' scores were entered into the system through questioning, scoring, and scoring. However, the overall performance of the students in the learning process was less evaluated. the information behind the results is not fully excavated and analyzed, resulting in little change and progress in college teaching examinations year after year. In the context of rapid social development, teaching examinations are not only the task of teachers, but also the basis for students' overall development. Teaching examinations not only need to evaluate students' ability to master knowledge, but also need to provide help for teaching quality and make teaching examinations more standardized. Nature and standardization can form certain restrictions and restrictions on students and teachers' teaching activities in colleges and universities. As a form that emphasizes humanization, the clearing examination system is easy to be altered and transformed by humans, which is not conducive to standardizing and restricting teaching examinations, and it is naturally difficult to promote the teaching level. Through the reform of college teaching examinations, the teaching content is reasonably standardized, the assessment content is more scientific, the deficiencies in teaching and examination methods are improved, and the quality of college education and teaching examinations is comprehensively enhanced [2].

4. THE INFLUENCE OF THE CHOICE OF PRACTICAL APPROACHES FOR TEACHING EXAMINATION REFORM IN COLLEGES AND UNIVERSITIES ON THE PHENOMENON OF CLEARING EXAMINATIONS

4.1 Restructure the teaching examination structure

The practical approach to reform of teaching examinations in colleges and universities needs to restructure the teaching examination structure so that it can form an effective connection with the teaching examination based on the comprehensive quality and abilities of students, and give full play to the role of teaching examination evaluation, feedback, and motivation. Colleges and universities should rebuild their management system based on their own conditions and the orientation of talent training. After the abolition of the examination system, the last straw for students to graduate and the final examination of colleges and universities have disappeared. It can be said that the top of the reform structure of college teaching examinations has disappeared, but the foundation of higher education has always existed. Colleges and universities need to formulate goals, directions, principles, and plans for the reform of teaching examinations to provide a clear direction for the teaching team and students. Teachers can formulate specific teaching examination reform plans based on professional conditions and student abilities. the proportion and weight of the traditional examination mode should be greatly reduced, and the examination format and evaluation standards should be re-established. Colleges and universities can link the reform of teaching examinations with the evaluation of teachers, promote the enthusiasm of teachers to participate in the reform of teaching examinations, and eliminate the impact of the disappearance of the examination system.

4.2 Constructing a diversified examination model

The existence of the clearing examination system has also reduced the difficulty of teaching for teachers and the burden of school education to a certain extent. Lowering the threshold for graduation of students also means that the importance of studying for examinations is reduced. After the cancellation of the examination system, the pressure on colleges, teachers and students will return to the normal teaching level, and there will be no slack and relaxation due to the phenomenon of examinations. Correspondingly, the abolition of the clearing examination system does not mean that the pressure of

students to study and graduate is increased. If teachers and schools do not actively respond to the reform of teaching examinations, it will naturally affect the school's graduation rate. To this end, colleges and universities should build a diversified assessment model, disperse the core pressure originally based on examinations to all aspects of teaching and examinations, and relieve the pressure on students, teachers, and schools from many aspects. For example, the traditional performance-based assessment form is refined to students' skipping classes, learning attitude, activity participation, etc., and the performance-based test mode is transferred to the student's learning situation, at least to a certain extent. the comprehensive quality of college students is in line with social needs, and their innovative and practical capabilities will be further refined and optimized in the follow-up.

4.3 Improve the assessment system of students' ability

Before the abolition of the examination system, students' attitude towards examinations was mainly to cope. There were two main reasons for this. One is the utilitarian trend of traditional examinations, and the other is the students' attitude towards learning. In order to cope with these two problems, it is necessary to further improve the system for evaluating student abilities. It is not after the clearing examination system that the quality of students will be significantly improved, and the graduation rate of the school will be significantly reduced. the predominant examination format still exists. Teaching examination reform should cover curriculum knowledge points and quality training related content, and the examination content should be more open, increase the test questions related to students' practical ability and innovation ability, and also eliminate the standard answer evaluation method as much as possible, and encourage students to diversify and innovate thinking. the place for evaluating students' abilities should also be changed in accordance with the test format. Any place can be used as a place for examinations. For example, random random checks on campus can be used to evaluate students' moral qualities and improve the examination system.

4.4 Teaching examination reform and employment rate

In the past, there was a large demand for talents in society, followed by quality requirements. the phenomenon of clearing examinations is also a manifestation of colleges and universities meeting the society's demand for talents. In the development of modern society, the society's requirements for talent quality occupy the first place, and the demand for human resources is somewhat Decrease, which leads to the clearing examination system to provide help for the employment rate, which will naturally be eliminated by education and teaching. However, it is also necessary to recognize that only when the quality of teaching is guaranteed can the essence of the clearing examination phenomenon be completely eliminated. From the first abandonment of the clearing examination system by some famous universities, it can be seen that the clearing examination system is still used by ordinary universities to maintain the employment rate. the key point is that the reform of teaching examinations in colleges and universities needs to improve the quality and level of education in ordinary colleges and universities. Otherwise, this phenomenon of clearing exams will disappear, and the next "clearing of exams" will still appear, hindering the progress and development of higher education, and fundamentally doing a good job in higher education. the reform of teaching and examination can effectively meet the needs of society and guarantee the employment rate [3].

5. CONCLUSION

To a certain extent, the reform of teaching examinations in colleges and universities has provided sufficient conditions for the abolition of the clearing examination system. the clearing examination system is no longer suitable for the needs of higher education development and will naturally be eliminated in the reform of teaching examinations. However, it is necessary to pay attention to the selection of the practice path of the higher education examination reform. the disappearance of the examination phenomenon is only a superficial feedback. It is necessary to explore the development direction of the teaching examination reform in a deeper level to avoid the occurrence of the examination phenomenon in the development of higher education.

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Application of Distributed Optical Fiber Temperature Measurement System in Extreme Environment

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Abstract: As an index closely related to people's lives, temperature is directly related to the operation of normal life. In the research process, many physical and chemical reactions have requirements on temperature, and the reaction can only occur at a certain temperature. Therefore, it is of great significance to carry out accurate temperature measurement and effective detection. In extreme environments such as high temperature, high humidity, and strong vibration, the traditional temperature measurement system will be greatly affected, resulting in inaccurate temperature measurement data. Compared with the distributed optical fiber temperature measurement system, it has better Applicable value.

Keywords: Distributed Optical Fiber Temperature Measurement System; Extreme Environment; Software Development

1. INTRODUCTION

The distributed optical fiber temperature measurement system is abbreviated as DTS, which is mainly an optical fiber sensing system based on optical time domain reflection technology and Raman scattering effect. Compared with the traditional electronic sensing system, it has many advantages such as insulation, anti-electromagnetic interference, small size, simple application program, etc. It is currently used in many aspects such as urban rail transit power detection and tunnel temperature detection. This article aims to discuss the application of distributed optical fiber temperature measurement system in extreme environments.

2. CONSTRUCTION OF DISTRIBUTED OPTICAL FIBER TEMPERATURE MEASUREMENT SYSTEM

The distributed optical fiber temperature measurement system includes light source, photoelectric detector, wavelength division multiplexer, acquisition card, multi-mode optical fiber, electronic temperature sensor, upper computer position and other structures. In the actual application process, photoelectric signal transmission, photoelectricity Conversion, signal acquisition and processing technology for the realization of the temperature measurement system [1].

The use of the distributed optical fiber temperature measurement system is to use a pulsed laser to emit pulsed light with a center wavelength of 1550nm, and then enter the reference fiber after passing through the wavelength division multiplexer. the temperature of the fiber will change after being impacted by the pulsed light. the electronic temperature sensor in the temperature system senses the temperature change of the reference fiber and records it, and then transmits the acquired temperature data to the upper computer, and finally talks about the sensing fiber. During the transmission of pulsed light in the optical fiber, due to the inhomogeneous characteristics of its own optical fiber medium, Rayleigh scattered light and Raman scattered light will be generated in random directions during the scattering process, and the backscattered light in these scattered light It will return along the fiber and reach the wavelength division multiplexer again. the wavelength division multiplexer will filter itself to 1550nm Rayleigh scattered light according to the wavelength, leaving only the Stokes light with a wavelength of 1650nm and the anti-Stokes light at 1450nm. These two kinds of light will enter Dual-channel photodetector. However, due to the weak light intensity of the full scattered light, the original optical signal will be enlarged when passing through the photodetector and converted into the corresponding analog electrical signal. the dual-channel high-speed acquisition card collects the analog output from the photodetector. the electrical signal is converted into a digital signal and sent to the upper computer. the upper computer uses a dual-channel temperature demodulation algorithm to calculate the temperature value of each point on the sensing fiber.

3. SOFTWARE REALIZATION OF DISTRIBUTED OPTICAL FIBER TEMPERATURE MEASUREMENT SYSTEM IN EXTREME ENVIRONMENTS

Based on the working principle of the distributed optical fiber temperature measurement system, taking into account the various problems that may occur in extreme environments, the distributed pipeline temperature measurement system software is designed. the software will involve the realization of various functions, which are mainly divided into the following point:

3.1 Self-check encryption function

During the operation of the software, the first thing to ensure is the safe operation of the software. Therefore, the login section of the software is encrypted, and only accounts that are allowed to log in can log in to the software. the software uses the MD5 encryption algorithm. First, during the user's login process, the account information entered by the user is obtained, and the entered information is retrieved in the database. If it exists, it is allowed to enter, otherwise it cannot be entered into the software system. Secondly, in the process of entering the account that is allowed to enter, the account password will be automatically encrypted, and it will be checked whether it is consistent with the corresponding account in the database. After checking the consistency, it will show

that the login is successful. During the login process of the software, there will be two database searches, which greatly improves the security of the account.

After the software login is successful, the self-check encryption module will obtain the status information of the capture card and the electronic temperature sensor through function calls. Once any abnormal situation occurs, it will be displayed in the interface before the user uses it, which effectively prevents the program from being abnormal. Under the circumstances, the system may crash and other situations that may be caused by operation, which is conducive to the good operation of the system. Secondly, the self-check encryption module can also obtain the serial port number used by calling the API function, and determine whether the serial port number matches the VID and PID of the device in the form of polling, so as to realize the automatic identification of the serial port number of the acquisition card and the electronic temperature sensor..

3.2 Monitoring map display function

Using a distributed optical fiber temperature measurement system in extreme environments, it is difficult to record temperature changes anytime and anywhere. Therefore, the software developer should match the temperature information tested by the system with the spatial position to realize the monitoring and display of the map. on the basis of using the rich graphical display controls and graphical drawing controls of the Winform framework, it facilitates the development of monitoring map display functions. Taking into account that the actual map is a scalar map, the image will be obviously blurred after zooming in, which is not conducive to observation and modification. Therefore, the monitoring map in the software uses CAD vector graphics for monitoring, and the green line represents the laid optical cable. When the actual situation changes, it is convenient to make timely amendments. According to the different functions of the lines in the vector diagram, in order to facilitate the software to recognize them, different lines are encoded in different forms and stored in the file in the form of key-value pairs. When the software is running, it can realize the identification of different lines through the retrieval of key-value pairs, thereby helping the realization of its various functions. When the software is started, you can open the monitoring map interface, and the real-time temperature data will be loaded on top of the green line in the CAD. When you move the mouse to a certain point on the green line, the temperature data about that point in the section It will be displayed in real time, so as to realize the correspondence between temperature data and spatial location, and achieve the function of monitoring and displaying the map.

3.3 Realization of temperature dynamic display function

In extreme environments, the temperature will show dynamic development characteristics, so it is necessary to develop a dynamic temperature display function in the distributed optical fiber temperature measurement software. the realization of the temperature dynamic display function mainly uses the iplot drawing space of C#. the data display thread always reads data from the bottom layer, and is called by the data display thread in a four-dimensional form, including digital signals corresponding to Stokes light and anti-Stokes light, as well as anti-Stokes light and Stokes Light ratio data, demodulated temperature data, you can choose to display one group of data or multiple groups of data according to actual needs. the software can use the IPOT control to redraw the graph every certain time through the timer, so as to detect the temperature It can realize real-time update and promote the realization of temperature dynamic display function [2].

When studying the software implementation of the distributed optical fiber temperature measurement system in extreme environments, we must also pay attention to the development of the software parameter setting function and the realization of the data storage query function, so as to promote the development and application of the distributed optical fiber temperature measurement system software.

4. CONCLUSION

To sum up, this article mainly discusses the construction of distributed optical fiber temperature measurement system and the software realization of distributed optical fiber temperature measurement system in extreme environments. Through the current demand analysis of software, the software design ideas are explained, and the software the gradual division of modules and the realization of functions are introduced in detail, hoping to promote the application of distributed optical fiber temperature measurement systems in extreme environments.

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Research on the Integral Optimization of Higher Vocational Accounting Course System

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Abstract: Due to the emergence of the intelligent accounting system and the corporate financial information sharing center, it has had a great impact on the development of the accounting profession of higher vocational education in my country. As a talent training organization, higher vocational schools need to be based on the perspective of student and social development. Accounting education system, and to innovate and optimize the existing professional curriculum education system, the purpose is to send more accounting professionals needed by our country, and also lay a good foundation for the future development of students. At the same time, strengthen cross-over and integration to enhance the professionalism and standardization level of the training of higher professional accounting professionals in all aspects.

Keywords: Higher Vocational Education; Accounting; Curriculum System; Teaching

1. ANALYSIS OF THE CURRENT SITUATION OF THE ESTABLISHMENT OF THE ACCOUNTING PROFESSIONAL CURRICULUM SYSTEM IN HIGHER VOCATIONAL COLLEGES

First of all, many accounting professional courses set by higher vocational schools have been using traditional teaching materials and education systems, which are seriously lacking in flexibility and dynamics, resulting in a serious misalignment between the training goals of accounting talents cultivated by higher vocational schools and the needs of enterprises. To this end, higher vocational schools will optimize the overall curriculum system based on the accountant career, through a comprehensive analysis of the company's professional requirements for accounting students in the artificial intelligence period, and in-depth analysis of the basic professional qualities, basic knowledge and expertise that accountants should have Competence, formulate basic professional competence norms for the accounting profession, and integrate and optimize the current training system.

Secondly, most vocational schools continue to follow the undergraduate curriculum system, but there are too many categories of courses, each subject is self-contained, and the teaching materials of each subject overlap. For example, the taxation textbook in the textbook "Financial Law and Basic Professional Ethics of Accountants" crosses the textbooks of "National Economic Law" and "Tax Practice"; the textbook "Financial Report" crosses the textbooks of "Cost Accounting", "Financial Management" the textbook and "Management Accounting" textbooks overlap the value of capital time utilization, accounting, investment, control and other textbooks, the cost accounting behavior analysis, activity-based costing, and cost management in the "Cost Accounting" textbook and "Management Accounting" textbook Wait for textbooks to cross. As a result, accounting students in higher vocational colleges have repeatedly mastered basic knowledge in limited classrooms, but they lack the ability to transfer and transform knowledge when they are in actual work [1].

Finally, accounting professional courses in higher vocational schools are mostly based on basic theory teaching, and the teaching content often focuses too much on the basic laws and methods of accounting, while ignoring the comprehensive training of accounting professional judgment and business solving ability. Therefore, subject theory and industry practice are often divided, and basic theories are taught, and then intensive training will be carried out separately for practical training weeks. Without a comprehensive grasp of the basic knowledge, students are at a loss for tasks in the training process, have no clear ideas for homework, and have no clear understanding of the actual work of each professional post. In the training process, the teacher often directly announces the answers to the questions in order to complete the training process in time, and the students often copy or copy things, failing to achieve the purpose of professional job operation skills training, resulting in students not having an accounting major after graduation the skills of the position are also incompetent for the actual work of accounting professional positions [2].

2. THE OPTIMIZATION STRATEGY OF ACCOUNTING PROFESSIONAL CURRICULUM SYSTEM IN HIGHER VOCATIONAL COLLEGES

2.1 According to industry development trends and requirements, set up a modular curriculum system

The development of the accounting industry in the era of artificial intelligence requires accountants to master the skills of intelligence, mobile terminal technology and big data to fulfill the responsibilities of corporate value creators, thereby improving corporate financial benefits, while reducing operational and management risks. the financial management process of the enterprise will also be reshaped. the highly complex manual operations in the traditional financial management process will be replaced by accounting robots, which will automatically form business list vouchers, and realize automatic monthly settlement, automatic reporting, automatic declaration and other operations., the accounting function of traditional accounting will gradually weaken and dilute. the development direction of the accounting profession and vocational education require artificial intelligence. the cost accounting and supervision responsibilities of traditional accounting will gradually be replaced by the management responsibilities of corporate financial

management accounting. the future development direction of accounting positions will be financial management responsibilities such as financial management planning, resource allocation, risk analysis and warnings. At the same time, some emerging professional fields will be formed, such as accounting data processing, financial analysis, financial risk assessment, information system protection, and security. Information processing and other work. Higher vocational schools will also dynamically adjust teaching content for future career development directions, such as cashier financial management to strengthen the use of electronic payment tools such as Alipay, WeChat, and online banking, and related teaching content such as capital warnings. Project auditing and financial computerization should also include relevant teaching content such as project management information system and financial risk early warning system information management. Tax auditing should strengthen tax planning, tax-related cost management, and tax risk early warning., Financial reports strengthened bank customer credit management, process control, and specific content of financial services for small, medium and micro enterprises.

2.2 Integrate professional theory into job practice training

The accounting profession has been around for a long time. It is relatively complete to analyze the professional theoretical framework from the overall accounting professional courses set by various vocational schools. Many professional teachers usually explain the basic theoretical knowledge first, and then arrange the tasks of the practical training process. Just like studying "Basic Accounting", although students have mastered the basic theoretical methods of specific financial processing procedures, they often do not understand the specific business process when they go to the accounting post for internship. Therefore, as a practical accounting discipline, when setting up the curriculum system, it is necessary to integrate professional theoretical basic knowledge into the practical teaching of the post. In the process of students carrying out practical tasks, teachers explain the specific financial processing process. Students can understand and master the basic theoretical knowledge more deeply, and can also reduce the overlapping problem of the teaching content of various theories. Design a modular teaching structure based on the principles of basic knowledge and professional skills application, and strengthen the training of accounting professional abilities, and organically integrate professional basic knowledge and job abilities, so that students can gradually absorb basic knowledge in the process of professional tasks. [3].

2.3 Increase cross-industry integration courses

The traditional curriculum system overemphasizes the training of subject innovation ability, and the cultivated accounting professionals are often unable to meet the needs of the society. Students will be helpless when facing special business and lack the ability to work independently. In the era of artificial intelligence, the management cost accounting and supervision responsibilities of traditional accounting will gradually be replaced by the management responsibilities of modern management accounting, because only accountants with comprehensive application skills can meet the needs of career development, so higher vocational schools should also nurture students the comprehensive application of professional development ability, including professional quality, thinking ability, learning level, communication and cooperation ability, innovation ability, etc. For this reason, in order to optimize the accounting professional curriculum system, higher vocational schools should add cross-border financing courses, such as data mining technology and application, international economic law, corporate finance, internal company management, investment and financial management, innovation and entrepreneurship courses, etc. [4].

3. CONCLUSION

At present, the relationship between the supply and demand of accounting talent training between the accounting school of vocational colleges and corporate personnel is seriously imbalanced, and it has been unable to meet the development needs of the socialist market economy. Therefore, the adjustment and optimization of the accounting curriculum system of vocational colleges urgently need to be further carried out. the development of market economy is of great significance. Higher vocational schools should take the initiative to respond to the impact of artificial intelligence on the traditional accounting industry, and restructure the accounting school curriculum system based on career development to meet the new needs of social development for the training of accounting professionals.

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On the Influence of Computer Application Technology on Enterprise Informatization

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Abstract: With the rapid development of social economy, the level of information technology in China is also improving. Now computer information technology has been widely used in various industries and fields. the rapid development of information technology has provided great convenience for people's life. Computer technology has been applied in enterprises and promoted the development of enterprises. Now computer technology has been widely used in enterprises, ushering in new changes for enterprises, and enterprises have begun to develop in the direction of informatization.

Keywords: Computer Application Technology; Enterprise Informatization; Influence

1. INTRODUCTION

The development of information technology not only affects people's daily life, but also affects the development of enterprises. At present, the market competitiveness is becoming more and more fierce. If enterprises want to achieve a foothold in the market, they need to integrate computer technology into enterprise development and speed up the pace of enterprise information construction. In the current market environment, the development of enterprises is closely related to the construction of enterprise information. Therefore, we should pay attention to computer application technology to promote the development of enterprises. This paper analyzes the influence of computer application technology on enterprise informatization, and discusses the measures of computer application technology to realize enterprise informatization.

2. THE IMPACT OF COMPUTER APPLICATION TECHNOLOGY ON ENTERPRISE INFORMATIZATION

2.1 promote efficient access to information

Under the background of the information age, if enterprises get rapid development, they need to enrich enterprise information resources, strengthen the research on the integration and utilization of information resources in enterprises, and promote the development of enterprises. the application of computer technology in enterprises improves the integration efficiency of diversified information in enterprises, improves the speed of information analysis, and ensures the accuracy of data information. Computer application technology can also obtain business information in enterprises, financial information and information of competitors in the market. the application of computer technology can also ensure the accuracy and comprehensiveness of the obtained information. In the operation and development of enterprises, while ensuring the accuracy of data information, it can improve the accuracy of enterprise decision-making. the application of computer information technology in enterprises promotes enterprises to realize information construction, ensures the accuracy and integrity of information acquisition, and provides relevant basis for enterprise decision-making.

2.2 improved work efficiency

In the context of the information age, there are more and more information data in enterprises, more and more sources of information, and the construction of its information system is becoming more and more complex [1]. In the current context, how to deal with the huge data information is a problem that needs to be paid attention to in the development of enterprises. the complex data information in the enterprise increases the work difficulty of managers, and the staff have no way to start in information management. However, the application of computer application technology in information management has greatly alleviated the work pressure of information managers and improved the efficiency of enterprise information management. the application of computer application technology in enterprises can speed up the pace of enterprise information construction. Enterprises can realize automation, paperless and information. Enterprises can strengthen the application of computer application technology in the development of business work. the application of its technology in enterprises can effectively reduce the cost of enterprise management and reduce the errors caused by manual operation. Computer application technology can effectively improve the work quality of information management and accelerate the improvement of enterprise work efficiency. With the application of computer application technology in enterprise management, the resource integration of shudie enterprise is more reasonable. Now the management of all kinds of resources is more chaotic. Through computer technology, its resources can be managed separately, reduce the waste of resources and promote the improvement of comprehensive benefits of the enterprise.

2.3 enhance the competitiveness of enterprises

The market economy is constantly changing, and the competitiveness of enterprises in the market is becoming more and more fierce. If enterprises want to achieve a foothold in the market, they need to strengthen the improvement of their comprehensive strength. In the operation and development of enterprises, their comprehensive level determines whether they can get better development. In the information age, enterprises can achieve a foothold in the market only by accelerating the information construction. In the operation of enterprises, strengthen the application of computer application technology, so that their enterprises can keep

up with the development pace of the times and speed up the development pace of enterprises. the integration of computer application technology can effectively sort out the information in enterprises, promote the sharing and efficient circulation of information, and reasonably allocate resources in enterprises. Integrate the computer application technology into the development of the enterprise, clarify the work functions of the staff, cultivate the staff's sense of responsibility and mobilize the staff's enthusiasm. the integration of computer application technology can reasonably allocate employees, analyze and integrate employees' technical level and work experience, provide more accurate information for managers in the enterprise, and help managers in the enterprise better manage employees.

3. MEASURES FOR COMPUTER APPLICATION TECHNOLOGY TO REALIZE ENTERPRISE INFORMATIZATION

3.1 build communication platform to promote efficient information flow

In the operation and development of enterprises, the integration of computer application technology promotes the pace of enterprise information construction, ensures the accuracy of information acquisition in enterprises, and can also help enterprises realize information resource sharing [2]. Computer application technology cannot only ensure the timeliness of data information, but also realize the flow of information in enterprises, and provide effective help for the information construction of enterprises. Computer application technology not only improves the collection and integration of resource information, but also ensures the accuracy of information, reasonably allocates resources, and improves the accuracy and speed of manual operation.

With the development of the information age, enterprises have begun to develop towards paperless office mode, and have gradually taken the mode of manual paper operation. Computer application technology has changed the traditional office mode of enterprises, improved the information processing efficiency of enterprises and simplified the traditional office process while reducing the management cost of enterprises, At the same time, it can also control the investment of resources, which are the advantages brought by the application of computer application technology in enterprises. Under the enterprise information construction, the use of computer application technology cannot only reasonably regulate the data information in the enterprise, but also clarify the responsibilities and obligations of employees in the enterprise, and improve the work efficiency and quality of employees in the enterprise, so as to promote the long-term and sustainable development of the enterprise.

3.2 improve enterprise management level and comprehensive strength

In the process of business development, in order to speed up the information construction, enterprises need to increase the investment of existing resources and technology. Leaders in enterprises should also make reasonable planning for the strategic objectives of enterprise development. In the development of enterprises, ensure the scientific rationality of enterprise information construction. Through the application of computer application technology, we can speed up the construction of enterprise information, optimize the network infrastructure in enterprises, and make it clear the information of enterprise future data. In the development of the enterprise, managers should clarify the development priorities of the enterprise, strengthen the integration of computer application technology and improve data processing technology. the enterprise should also organize an internal team to collect data and information in the operation and development of the enterprise and analyze the existing organizational structure. the application of computer application technology in enterprises promotes the communication ability in enterprise operation and management, realizes the construction of information platform, strengthens the internal communication of enterprises, improves the existing work plan, and speeds up the pace of enterprise information construction.

4. CONCLUSION

To sum up, under the background of the information age, if enterprises want to achieve a foothold in the market, they need to speed up the pace of enterprise information construction. Integrating computer application technology into the development of enterprises and improving the management level and management efficiency of enterprises cannot only improve the information level of enterprises, but also promote the stable development of enterprises.

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