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CONTENTS

The Application of Red Cultural Resources in Ideological and Political Teaching in Colleges and Universities

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Abstract: According to the actual situation, the emphasis on ideological and political course teaching has been strengthened in the development of college education, among which the red cultural resources have been applied in the teaching of ideological and political courses in colleges and universities, optimize the material in the teaching of ideological and political courses, improve the teaching atmosphere of ideological and political courses, in this process can also realize the reform of teaching mode, improve the level of college education. the application of red cultural resources can reflect the educational concept of "big ideological and political course" in ideological and political course teaching and reform the original teaching mode. Based on this, this paper discusses the application of red cultural resources in ideological and political teaching in colleges and universities.
Keywords: Red cultural resources; Colleges and universities; Ideological and political teaching

1. INTRODUCTION

When carrying out ideological and political course teaching in colleges and universities, in order to improve the teaching effect, teachers need to reform and innovate the original teaching methods, so that the effectiveness of course teaching can be significantly improved. However, based on the analysis of the current situation of ideological and political course teaching, it can be seen that college teachers are not aware of the role of ideological and political course teaching, and mainly preach to students in the teaching process. In this teaching mode, students tend to have reverse psychology and do not want to participate in the ideological and political course teaching, resulting in the teaching effect cannot be effectively played. Therefore, in order to improve the teaching effect of ideological and political courses, teachers need to increase the integration of red cultural resources, so that students can have a deep understanding of ideological and political knowledge, on this basis, improve the comprehensive quality of students, and ensure that the teaching effect of ideological and political courses in colleges and universities can be significantly improved.

2. THE CONNECTION BETWEEN RED CULTURAL RESOURCES AND IDEOLOGICAL AND POLITICAL COURSES IN COLLEGES AND UNIVERSITIES

2.1 Unity of goals

Under the background of China's rapid development, red cultural resources are the cultural history of the development of the Communist Party of China. Red cultural resources have the characteristics of culture and education. Therefore, the application of red cultural resources in the teaching of ideological and political courses in colleges and universities can reflect the characteristics of education of red resources, on this basis, it can also promote the comprehensive development of college students. At present, when carrying out ideological and political course teaching, colleges and universities need to pay attention to the cultivation of students' cultural connotation and moral accomplishment, so that they can realize the integration of red cultural resources, pay attention to the guidance of students' ideas, so that college students can establish correct ideas, and ensure that students can achieve comprehensive and personalized development. In addition, when carrying out ideological and political course teaching, teachers should also reflect the purpose of "seeking truth from facts" in the textbooks. Teachers need to increase the integration of red cultural resources, so that they can achieve a deep integration with ideological and political course teaching, and ensure that the teaching effect of ideological and political course can be significantly optimized.

2.2 The content is compatible

Red cultural resources contain more revolutionary spirits and thoughts, and the application of these contents in ideological and political courses in colleges and universities can stimulate the revolutionary spirit of students. Red culture played an encouraging role in the revolutionary period of the Chinese people, realizing the unity of the Chinese people, and promoting the victory of the revolution in this environment. It can be seen from the current ideological and political teaching work in colleges and universities that the content of ideological and political textbooks is consistent with the Party's educational policy [1]. It can be seen that there is a strong compatibility between red cultural resources and ideological and political courses. Therefore, more efforts should be made to integrate red culture into the teaching of ideological and political courses, and on this basis, the teaching effect of ideological and political courses in colleges and universities should be improved.

3. THE APPLICATION OF RED CULTURAL RESOURCES IN IDEOLOGICAL AND POLITICAL COURSES IN COLLEGES AND UNIVERSITIES

In order to further improve the application effect of red cultural resources in ideological and political courses in colleges and universities, and to promote the orderly development of teaching activities of ideological and political courses in colleges and universities, colleges and universities need to clarify the relationship between red cultural resources and ideological and political courses, while focusing on the implementation of the following work.

3.1 Establish the educational concept of "Major ideological and political courses"

In combination with the actual situation, the current ideological and political teaching in colleges and universities has begun to increase the use of red cultural resources, based on which the original teaching model is innovated, so that the traditional teaching of ideological and political courses can be significantly optimized. Under the innovative teaching mode, teachers should also reform the teaching concept to ensure that the teaching mode can be effectively innovated. When teachers use red cultural resources in ideological and political teaching, they need to choose the content of cultural education reasonably according to the actual situation of students' learning. For example, when carrying out ideological and political course teaching in colleges and universities, teachers need to clarify the importance of cultural education, increase the integration of red cultural resources, and reflect the educational nature between them before teaching, so that students can optimize the learning effect in ideological and political course teaching, promote students to achieve comprehensive and healthy development, and help students to establish good ideas. At present, red cultural resources contain a lot of literature information and article information, etc., which are displayed in museums around the country. Therefore, if conditions permit, college teachers can organize students to visit museums or revolutionary former residences, so that students can have a deeper understanding of red cultural resources. At the same time, students can also put forward personal views according to the content of red culture during the visit process, and carry out in-depth exploration of red cultural content. During this period, the effective mobilization of students' subjective initiative can be realized, so that students have a deep understanding of red culture and play a certain role in helping students' ideological and cultural construction.

3.2 Reform and innovate the teaching model of ideological and political courses

An in-depth analysis of the current situation of ideological and political teaching in colleges and universities shows that, under the traditional education mode, teachers usually pay too much attention to the explanation of the content of professional theoretical knowledge, ignoring the actual learning needs of students and whether students understand the professional theoretical knowledge of the course, which directly affects the enthusiasm of students to carry out learning activities. the organic integration of red culture

in the teaching of ideological and political courses in colleges and universities can help to carry out effective innovation of their own teaching mode, further improve the diversity of teaching methods of ideological and political courses in colleges and universities, and thus effectively mobilize students' interest in ideological and political course learning activities. In this process, teachers should first do a good job in the creation of ideological and political teaching situation. Therefore, under the guidance of red culture, teachers should create rich classroom teaching situations for students in combination with the teaching content of ideological and political courses, so as to help students personally feel red culture in the process of in-depth teaching situation [2]. Secondly, teachers should have a correct understanding of the application value of modern teaching technology system such as micro class and reasonably apply it to the teaching of ideological and political courses in colleges and universities. In specific teaching links, teachers can present red culture to students in the form of audio and video through the application of modern teaching technology system. While effectively improving the intuitiveness of red culture in ideological and political teaching, teachers can effectively improve students' ideological and moral quality and ensure that the teaching objectives of ideological and political courses in colleges and universities can be truly realized. Finally, with the help of modern teaching technology system, teachers should build a perfect learning system of network red culture for students, and on this basis, innovate the teaching mode of ideological and political courses, so as to provide sufficient guarantee for the improvement of the overall development efficiency of college students in the process of comprehensively strengthening the application of red cultural resources in ideological and political courses.

4. CONCLUSION

To sum up, under the background of the current new era, the education work of colleges and universities has also changed, and the traditional teaching model has been unable to promote the comprehensive and healthy development of college students. In this case, colleges and universities need to innovate the original teaching concept, so as to achieve the optimization of teaching effect. At present, it is necessary to strengthen the teaching of ideological and political courses in college education. Ideological and political courses can guide students to establish correct ideas and concepts. At the same time, red cultural resources should be applied in ideological and political courses to help students establish correct cultural and historical views, so as to promote students to achieve all-round development.

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Privacy Protection Under Big Data Analysis Technology

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Abstract: In view of the actual situation, the development of big data technology makes the social and economic benefits in the process of data application more and more obvious. However, with the improvement of the application value of big data, the privacy issues involved in the process of big data analysis become more and more diversified. As a result, how to effectively carry out privacy protection work under the big data analysis technology has gradually become one of the issues that need to be focused on in the process of data analysis. Based on this, this paper carries out in-depth research on privacy protection under big data analysis technology, hoping to play a certain role in the development of relevant work.

Keywords: Big data; Analytical techniques; Privacy protection

1. INTRODUCTION

The in-depth analysis of big data analysis technology can be learned that it essentially refers to the rational use of relevant tools and means for effective analysis of a large amount of data information groups. Combined with the actual situation, with the development of society, the application value of big data analysis technology becomes more and more obvious. It can effectively improve the application value of data information and lay a solid foundation for the development of various industries. However, with the development of big data analysis technology, the privacy issues involved are becoming more and more obvious. As a result, how to do a good job of privacy protection in the application of big data analysis technology has gradually become one of the main factors affecting the effectiveness of technology application.

2. CAUSES OF PRIVACY ISSUES IN THE ERA OF BIG DATA

At present, the causes of privacy issues in the era of big data are mainly reflected in the following aspects: 1. Security awareness. Combined with the actual situation, in the current society, security awareness is the main cause of privacy issues under the big data analysis technology, which mainly involves the personal security awareness and service provider security awareness two major components. the lack of personal security awareness makes it easy for users to randomly fill in personal information and provide personal data and other negative problems when using big data analysis technology, which greatly increases the probability of privacy disclosure. However, the application service providers are usually in order to effectively obtain users'

personal information used as data analysis activities. In some non-necessary cases, it will still obtain users' personal data information, which will also improve the probability of privacy problems to a certain extent. With our country laws and regulations in this respect being improved constantly. Some merchants will still obtain user information for their own interests; 2. Management problems. the lack of data security and privacy protection mechanism makes it easy for data leakage to occur in enterprises. In addition, in order to maintain their own market image, some enterprises usually choose to conceal privacy disclosure or security attacks, which ultimately leads to users being unable to effectively deal with the disclosure of their personal privacy, thus causing serious information privacy disclosure problems that cannot be remedied. 3. Technical problems. External attacks on data through technical means are one of the main causes of privacy disclosure, such as de-anonymization of privacy violation [1].

3. PRIVACY PROTECTION SOLUTIONS FOR ALL LINKS IN THE BIG DATA ANALYSIS PROCESS

3.1 Management means plan

Combined with the actual situation, management activities are essentially the main factors affecting the implementation of various organizations and work. Therefore, when implementing the privacy protection work under the big data analysis technology, the first thing to do is to make clear the application process of big data analysis technology and select scientific management means on the basis of the organization size, data status and working ability of personnel. In this way, the privacy protection problems existing in the process of big data analysis can be comprehensively addressed through clear technology application process and scientific management means. Secondly, we should do a good job in training all staff, so that they can correctly understand the privacy protection system of the country, industry and organization, and strengthen the awareness of individual privacy protection, so as to ensure that the probability of privacy protection problems can be reduced from the source. In addition, enterprises also need to rely on the reasonable use of audit, job rotation and other work measures to avoid the privacy disclosure and security risks caused by a worker in the same post for a long time.

3.2 Plans for technical means

An in-depth analysis of the technical means and schemes shows that it mainly involves the following contents: 1. Data collection. Data collection should be

based on the actual demand of data to avoid excessive collection, unnecessary collection and other negative problems, so as to comprehensively avoid the privacy leakage caused by the lack of standardization of information collection. In the case of data transmission, emphasis should be placed on the construction of encryption channel for information transmission, and necessary encryption processing should be carried out for data to be transmitted, so as to ensure more security of information in the transmission process. 2. Data storage. In order to effectively store data information and avoid information leakage in the storage link, it is necessary to firstly process private files with the help of traditional information encryption technology. If conditions permit, data can also be stored on and off the chain through the application of blockchain technology. Secondly, the authority of the database should be clarified, and the processing of data reading, import and export should be done well, so that the audit and security management of data information can be done well on the basis of scientific division of functions and roles, so as to effectively avoid information privacy disclosure [2]. If the security requirements are relatively high, the comprehensive use of hardware and software facilities should be used together to ensure the improvement of data information security, and finally comprehensively deal with the privacy leakage problems in the process of big data analysis. 3. Data preprocessing. According to the actual situation, data preprocessing can be divided into two parts: processing and use. In the process of data preprocessing, some data information with quality problems should be removed from the database by security processing such as deleting and archiving. Secondly, in the data preprocessing stage, for part of the data information that is not involved in the preprocessing, it is necessary to do the safe storage and processing work together with the data information that is involved in the preprocessing. Finally, for data information with high privacy, effective fuzzy processing can be carried out according to its privacy characteristics by means of data desensitization and other processing methods, so as to further improve the security of private information. 4. Data analysis and mining modeling. the development of data analysis activities should focus on the statistical characteristics of data. In this process, the rational use of differential privacy technology can be used to deal with the external attacks on data information. If the source of data to be analyzed is relatively complex, and there is clear independence of database and network environment, then the overall security of private data and information can be fully ensured through the establishment of cloud encryption area by the unit. In general, in the aspect of data analysis and mining modeling, it is necessary to conduct in-depth analysis on data application efficiency and data security requirements, so as to effectively deal with privacy protection problems in each link of the analysis process on the basis of fully ensuring the scientific scheme.

4. CONCLUSION

To sum up, in the current society, with the continuous development of modern information technology means, data forms have more and more obvious characteristics of diversification, which leads to the traditional unitary privacy protection technology gradually unable to meet the needs of privacy protection under the big data analysis technology. To this end, relevant enterprises and departments need to conduct in-depth research on the causes of privacy protection problems under big data analysis technology on the basis of clarifying the value of privacy protection, so as to continuously improve the diversity and comprehensiveness of privacy protection technical means, and achieve good privacy protection objectives through the comprehensive application of management and technical means.

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Film Sound Language Creation Under New Media

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Abstract: Under the rapid development of information technology ushered in the era of new media, the current new media has been widely used in People's Daily life, the application of new media technology not only brings convenience for People's Daily life communication, but also promotes the innovation and development in the field of communication. In the era of new media, the development of film has also ushered in new opportunities and space for development. the creation of film sound language has improved the overall effect and quality of film, while the communication efficiency and technical means of film have also changed. Based on this, this paper discusses the film sound language creation under the new media.

Keywords: New media; Film; Vocal language

1. INTRODUCTION

Under the background of the new media era, the application of Internet technology provides people with better entertainment services. Compared with traditional media, new media can realize the dual transmission of sound and image. In this case, new media has the effect of wide audience and fast transmission, so the application of new media technology is increasingly extensive. New media has promoted the development of film. Under the new media, film sound language creation can be more life-like and can directly express the emotion in the film. Nowadays, in the creation of film sound language, the language expression ability of the expresser is required more and more high, which can strengthen the quality of the film.

2. THE DEVELOPMENT OF FILM SOUND LANGUAGE UNDER NEW MEDIA

2.1 Restore the original ecological description of life

Combined with the actual situation, the improvement of the level of information technology promotes the innovation of new media means. In this case, the sound and visual effects in the film are constantly improved and optimized, and the aesthetic demands of the audience are also constantly improved. In this case, the film production also needs continuous innovation and optimization to ensure the film quality can be significantly improved. At present, the artistic expression of film mainly focuses on the restoration of life. In the current era of new media, film has begun to form a continuum with daily life, expressing the status quo of public life through the form of film. Micro films are one of the important components of film production. Nowadays micro films of various themes have been promoted. Micro films can amplify the small things in daily life through the way of films, and the audience can

reflect on them after watching. Therefore, it is necessary to pay attention to language expression in the film sound language creation, so that the content expressed in the film can reflect the popular language pattern, so that it can realize the restoration of the original ecology of life.

2.2 Film narration that is infinitely close to the reality

At present, in the era of new media, the artistic expression of film needs to reflect the authenticity and coherence of the plot. Compared with traditional films, the films in the era of new media have begun to pay attention to the narrative itself. In the process of film expression, the details of life can be reflected, and some of the small details are easier to move the audience. In the process of film creation, film creators need to pay more attention to individual living conditions and habits, so that their films can fully reflect the details and attract the audience's attention and viewing needs [1]. Therefore, in the process of film sound language creation, it is necessary to ensure that the film conforms to the law of things and the plot is reasonable, so as to express the true emotion in the film. the appearance of sound language in film can directly reflect its emotion, and express everything in the world through the way of film, but also improve the overall appeal of the film.

3. NEW MEDIA TECHNOLOGY IS A SOLID FOUNDATION FOR FILM SOUND LANGUAGE CREATION

3.1 Enriching film sound language creation and expression techniques

At present, the application of new media technology to film works in the new media era can improve the overall effect of the film. In recent years, digital art has become more and more perfect, promoting the common development of traditional films and micro films. the application of digital art in traditional films has effectively improved the audiovisual effects of the audience. Meanwhile, the dimensions to be expressed in film production are also more extensive, and the audience can feel the connotation of the film more lifelike and true. the application of digital art technology provides more possibilities for film creation. When expressing virtual characters in film creation, the application of technology can reflect the authenticity of virtual characters. In this process, the authenticity of characters can be improved through the creation of sound language. In the creation process, imagination should also be incorporated to provide more creative possibilities for films. With the rapid development of technology, three-dimensional image content can be realized in film creation, breaking the barrier between film and audience, and audience can experience face-to-

face communication during film watching. This creation method can improve the authenticity and freshness of films. For example, a large number of digital technologies have been applied in the creation process of the film Avatar, which has completed the depiction of foreign planets and aliens. Through the application of these technologies, the environment and characters can be depicted, and the shapes and expressions of the characters can be expressed, so as to improve the sense of reality in film creation and optimize the movie-watching experience of the audience. When new media technology is applied in film sound language creation, sound language can be processed through editing, and the emotion to be expressed in the film can be reflected in this process. In the process of film creation, expressers should also pay attention to the coherence and cohesion of sound language in the process of expression, to ensure that the film effect can be best reflected. In the application process of synthesis technology, creators need to reflect the atmosphere of sound language, in this case, the overall rendering power of the language can be improved [2].

3.2 Improve the film sound language creation space

With the continuous improvement of new media technology, new media technology provides greater creative space for creators. In recent years, the film industry has also developed rapidly. A large amount of expenses are needed during film creation and shooting, and some film creators are shelved for lack of funds. However, with the application of new media technology, film production costs and remuneration are also decreasing, providing a broader film creation platform for some filmmakers with poor economic foundation. For example, some micro films can be shot through mobile phones, DV and other shooting tools, which effectively reduces the capital cost of film shooting, so that some filmmakers can realize their dreams. For the creators of sound language, the editing and splicing of some film clips provides a new platform for the creators

of sound language, in this case, it can also improve the existing level of sound language creation. At present, the new media film also gets new development, and this film mode also provides new opportunities for film sound language creators. Thus, in the era of new media, film sound language creation is no longer exclusive to film groups. Nowadays, there are more and more popular creators, and these people also begin to participate in the creation of films, which effectively promotes the development of the film industry, and at the same time, the film effect has been significantly improved.

4. CONCLUSION

To sum up, in the era of new media, the level of information technology and other technologies has been significantly improved, and the application of technology has also been intensified in film creation. the application of technology has brought new development prospects for the creation and marketing of traditional films, but the development of new technology also poses new challenges for film creation. For the development of film sound language creation work, creators need to adhere to the original language, should pay attention to the enhancement of language aesthetic, ensure that the film creation can be done from the actual life, give full play to the vitality of language, so as to improve the overall quality of the film, promote the long-term development of the film industry.

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A Practical Inquiry into the Integration of Curriculum Ideology and Politics into Higher Vocational English Teaching

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Abstract: With the continuous development of the current curriculum reform, higher requirements have been put forward for teaching. In the current teaching, more and more attention is paid to the construction of ideological and political ideas in the curriculum, guiding students' ideological and political ideas in teaching, integrating ideological and political education into the subject, so as to achieve the teaching purpose of "three-in-one education". For English teaching in higher vocational colleges, there are some difficulties in integrating curriculum ideology and politics into English curriculum. There is a lack of materials for carrying out curriculum ideology and politics teaching in higher vocational English, teachers' own ideological and political teaching ability is insufficient, and the English curriculum assessment mechanism needs to be improved, which leads to obstacles in integrating curriculum ideology and politics into English teaching in higher vocational colleges. Therefore, this paper will explore the effective way of integrating curriculum ideology and politics into vocational English teaching practice.

Keywords: Curriculum thought and politics; Vocational English; Teaching practice

1. PROBLEMS IN INTEGRATING CURRICULUM IDEOLOGY AND POLITICS INTO HIGHER VOCATIONAL ENGLISH TEACHING UNDER THE BACKGROUND OF THE NEW ERA

1.1 The English teaching concept of higher vocational colleges is backward

At present, the English teaching concept in higher vocational colleges is backward and lacks the content related to curriculum ideology and politics, which is closely related to the characteristics of English curriculum. English is an application tool. In English teaching in higher vocational colleges, the teaching content is to master English theoretical knowledge and the application of English language, so as to improve students' comprehensive English application ability and facilitate their future development and communication. In the concept of English teaching, the core is the learning and utilization of knowledge, lack of curriculum ideological and political integration, unable to play the English curriculum education function, according to the current advanced teaching perspective, this teaching concept is lack of comprehensiveness. Based on the current teaching requirements of "cultivating virtues and cultivating talents", the development of English courses in higher vocational colleges should be integrated into the content of educating students, cultivating students' professional quality and moral quality, and giving play to the function of educating students, which is not only the internal requirements of English curriculum optimization, but also the requirements of the current new teaching concept.

1.2 Higher vocational English textbooks lack ideological and political education elements

In higher vocational English textbooks, there is no ideological and political education element, which causes some obstacles to the integration of ideological and political education in the curriculum. In the current English textbooks for higher vocational colleges, the main contents are basic English knowledge and English application practice, and the emphasis is on cultivating students' comprehensive language application ability. Therefore, there are few elements of ideological and political education in English textbooks. At the same time, in higher vocational English courses, a small part of ideological and political education is based on students' professional environment, the lack of comprehensive ideological and political training of students, including the lack of traditional Chinese culture and socialist core values, there are certain limitations to the ideological and political education of students.

1.3 There are deficiencies in ideological and political education ability of English teachers in higher vocational colleges

In order to integrate ideological and political education into higher vocational English curriculum, teachers are the key, and teachers are the guides of teaching activities and decide the teaching content. However, at present, English teachers in higher vocational colleges are usually graduated from English majors, and have not received systematic training in ideological and political education. Their ideological and political education ability is relatively low, resulting in that the curriculum ideological and political education can not be effectively integrated into the English curriculum. At the same time, some teachers have insufficient cognition of curriculum ideological and political thinking, do not understand the importance of curriculum ideological and political thinking, and ignore the integration of curriculum ideological and political thinking [1].

1.4 The teaching assessment mechanism needs to be improved

Assessment mechanism is an auxiliary tool for teaching and plays an important role in promoting curriculum reform. Curriculum assessment is an evaluation of teachers' teaching and students' learning. In the current curriculum assessment, the focus of the assessment is students' academic achievement after a semester's study, which is insufficient in terms of teaching help and lack of optimization effect on the teaching process. At the same time, the current evaluation of English teaching has not been integrated into the evaluation of ideological and political aspects of the curriculum, which cannot promote the integration of ideological and political aspects of the curriculum in English curriculum, and the results-oriented evaluation method may also cause certain obstacles to the integration of ideological and political aspects of the curriculum into English teaching.

2. IDEOLOGICAL AND POLITICAL EDUCATION INTO HIGHER VOCATIONAL ENGLISH TEACHING PATH

2.1 Update the teaching concept

In order to integrate curriculum ideology and politics into English teaching effectively, the first thing to do is to update the teaching concept. Due to the backward teaching concept, English curriculum does not pay attention to ideological and political teaching in the curriculum. Therefore, it is necessary to change this traditional concept, so that teachers can realize the great help of ideological and political education in the curriculum to the growth of students. To update the teaching concept, it is necessary to train teachers and let them know the importance of ideological and political education in the curriculum. At the same time, it is also necessary to optimize the teaching materials of English teaching. Currently, there is a lack of ideological and political education content in English teaching materials, and even if there is a small part of ideological and political teaching content, it lacks of comprehensiveness and integration of Chinese culture and socialist core values. Therefore, it is necessary to reorganize the English textbook and add more ideological and political teaching materials into the English textbook. In addition, schools should strengthen the integration of curriculum ideology and politics into English teaching in higher vocational colleges, play their own driving role, put forward new requirements for English teaching in schools, require teachers to integrate curriculum ideology and politics into the process of teaching, formulate relevant teaching systems, standardize teachers' teaching behavior, so that teachers can improve students' comprehensive English language application ability at the same time, Develop correct ideological and political concepts [2].

2.2 Strengthen the educational atmosphere of English classroom in higher vocational colleges

Teachers should actively construct the educational atmosphere of English courses in higher vocational colleges and constantly infiltrate ideological and political education in English teaching. First of all,

teaching resources should be collected and mined, ideological and political education elements in textbooks should be mined, and more ideological and political teaching materials should be collected through the Internet to integrate ideological and political teaching materials with English teaching content, so as to promote the combination of English teaching and ideological and political teaching. Secondly, teachers should integrate ideological and political teaching elements into English courses, and guide students' political thoughts to develop in the right direction by combining red resources, such as Marxist theory content, Jinggangshan spirit content, twenty report content, etc., and let students participate in ideological and political education through English compositions, English movies and other forms.

2.3 Strengthen the ideological and political ability training of English teachers in higher vocational colleges

Teachers are the key to promoting the integration of ideological and political education into English teaching. If teachers do not have the ability of ideological and political teaching, they will not be able to effectively carry out ideological and political education in English teaching. Therefore, it is necessary to cultivate teachers' ideological and political ability. Schools should actively organize teachers to learn ideological and political courses and provide systematic ideological and political education for teachers to deepen their study of ideological and political theories. At the same time, they should regularly organize teachers to learn advanced political thoughts, such as the contents of the twenty major reports, so that teachers can have advanced political thoughts and high ideological and political ability to carry out ideological and political education for students.

2.4 Improving the assessment system

The improvement of the assessment system is the key to promote the integration of curriculum ideology and politics into higher vocational English teaching. Based on the current requirements on curriculum ideology and politics, the assessment of the development of curriculum ideology and politics should be added to the assessment system, and teachers' teaching objectives, teaching process and teaching results should be comprehensively evaluated and analyzed, so as to provide help for teachers' integration of curriculum ideology and politics. Promote curriculum ideology and politics into English teaching process.

3. CONCLUSION

In general, there are many problems in the integration of curriculum ideology and politics into English teaching, such as the backward teaching concept of teachers, the lack of curriculum ideological and political teaching content in textbooks, the lack of teachers' own ideological and political teaching ability, and the backward teaching evaluation methods. Therefore, in order to promote the integration of ideological and political education into English teaching, it is necessary to update the teaching concept, attach importance to

ideological and political teaching, construct the teaching atmosphere of ideological and political education, enrich the teaching content, improve the teachers' ideological and political literacy, enhance the teaching ability, improve the curriculum evaluation system, promote the integration of ideological and political education, and realize the teaching purpose of "cultivating moral and political talents" in English curriculum.

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The Important Role of Music Auditory Perception in Piano Performance and Teaching

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Abstract: The education department in our country attaches more and more importance to students' quality education. In music discipline, piano playing is relatively difficult. Strumming players need not only master professional strumming skills, but also have rich emotional expression ability. However, music auditory perception can greatly reduce the difficulty of piano playing. In view of this phenomenon, this paper simply analyzes and expounds the important value of music auditory perception in piano playing and teaching.
Keywords: Music auditory perception; Piano performance; Teaching; Function

1. INTRODUCTION

For the present, teachers' pay too much attention to the transmission of students' playing skills and do not pay much attention to the level of students' auditory perception, which leads to the lack of emotion and soul in students' playing works. Therefore, teachers should pay attention to let students feel the music, so that students can correctly understand and master the emotion and culture that they want to express in the music repertoire, only in this way, can arouse the audience's emotion, so as to present excellent music works.

2. MUSIC AUDITORY PERCEPTION IS THE GUIDE OF PIANO PERFORMANCE

In the piano performance, students have a good auditory perception of music is a major part of the process. Through the analysis of the piano performance process, it is found that in the concrete piano performance, teachers mainly judge the students' grasp of the performance through the body. On the one hand, teachers can provide timely guidance to students on the parts that need to be adjusted. If students want to adjust their performance level, they need to train their auditory perception skills of music and guide them to find out their own problems in the performance process and make adjustments. In this way, students can better show their own performance strength. In addition, students should communicate and contact with other students to discuss their own thoughts and feelings about this piece of music together during the steps of playing practice. In this way, students can not only help each other, increase students' emotions, but also promote students' different understandings of the piece, so as to perform it effectively. On the other hand, through the study of students' piano technique, it can be concluded that the technique can well provide a good basic premise for auditory perception, but also allow students to better integrate their own emotions in the process of playing.

In the process of teaching, teachers should not only train students' playing ability, but also let students have full cognition and perception of the pieces they play, and then show their own perception in the form of playing, so that the audience can further feel the charm of playing. Because even if the music is pleasing to the ear, but if the music lacks good emotion, it is not perfect work, really perfect work is able to show the effect of rich soul. Therefore, in the teaching process, teachers should transmit auditory perception thinking to students, so that students should not only pay attention to enhancing their own technique playing practice, but also add their own ideas and feelings of music in the process of playing. Only in this way, students can be promoted to better show their own emotions in playing, and the music played is also a perfect work rich in soul power [1].

3. TRAIN THE ACCOMPANIST'S PLAYING SKILLS

For piano performance, if you want to present the perfect performance effect, the most important thing is to see the level and ability of the player. Therefore, in order to enhance students' piano performance level, it is necessary to cultivate students' auditory perception ability and thinking, and this kind of thinking and ability is not congenital existence, but the result of students' continuous training and learning. For teachers, in the process of piano playing teaching, it is necessary to train students' auditory perception and thinking ability through diversified forms and paths. In the actual class, some music is played to guide students to listen carefully. After the music is played, students can freely talk about their thoughts and perceptions of this music. Then the teacher will explain the music according to the students' perception, so that the students can understand the value and significance conveyed by this music. According to the continuous training of teachers, students can gradually enhance their auditory perception level, and naturally the piano playing level will continue to improve. Thus, it can be seen that auditory perception thinking is indispensable for piano players in the process of playing music pieces, which not only relates to the level of piano players, but also brings a certain impact on the overall playing effect.

For example, in the process of stimulating and cultivating students' auditory perception of music, teachers can teach in the form of piano accompaniment. Through the analysis of piano accompaniment, it is found that in the piano accompaniment needs singing personnel, which requires singing personnel and playing personnel to match each other and cooperate to complete the piano accompaniment. In this actual

process, the player should not only make good match and emotional communication with the singer, but also make use of auditory perception to perform well. Only in this way can better works be presented [2].

4. STRENGTHEN STUDENTS' COMPREHENSIVE LITERACY

In terms of auditory perception of music, different students have certain differences. In the process of playing and feeling, some students show a flat state of mind, while some students integrate into it and move their hearts. This phenomenon shows that auditory perception can directly affect people's body, mind and emotions. Through the understanding of the music repertoire, it is found that most of the music repertoire has a good culture and inheritance of the Times, and can reflect the author's self-restraint and life experience. Therefore, when conducting piano playing training, students should mobilize their own auditory perception level to carry out training, so as to fully understand the culture and emotion expressed by music pieces. In this way, students can not only deeply feel the emotion of playing pieces, but also strengthen their personal quality and emotional quality, and better understand the charm of music. In the process of piano playing, accurately grasp the skills and emotions of playing, showing the value and charm of music to people.

5. MOBILIZE STUDENTS' IMAGINATIVE THINKING

In the process of teaching, if teachers want to effectively cultivate students' auditory perception ability, they should not only pay attention to students' talent level, but also mobilize students' imaginative thinking. They should not only rely on the content of textbooks for teaching. If they only explain theoretical knowledge to students, it will limit students' own musical thinking to a large extent, so that students' musical ability cannot be effectively displayed. In the actual cultivation of students, teachers can first use the form of keyboard to train students, so as to arouse students' hearing level,

and establish students' feelings of music, and then deepen their understanding of music according to the relevant background of music, and set up relevant scenes. Secondly, the basic premise of cultivating students' auditory perception level comes from internal hearing and external hearing. For example, the imagination of music is achieved according to internal hearing. Silent playing can promote students to have better and richer musical experience in the future. At the same time, my imagination and thinking of music will be improved. Finally, under such a precondition, students can fully understand and understand the music repertoire, and then optimize and improve the music repertoire, so as to strengthen their own creative level in music [3].

6. CONCLUSION

A qualified piano player should not only have professional skills, but also have sensitive music auditory perception level. Therefore, in the actual teaching process, teachers should constantly cultivate students' auditory perception level, only in this way, students can have good musical imagination and emotional expression ability, and promote students to shine in this field in the future.

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The Cultivation Of "Global Competence" Of Vocational College Students Under the Background Of "Globalization 3.0"

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Abstract: This paper explores the role of educational institutions and educators in improving students' global competency by studying the strategies of global competency cultivation in higher vocational colleges under the background of Globalization 3.0. It is found that higher vocational colleges can cultivate students' global vision and cross-cultural communication ability by offering globalization courses and international exchange opportunities.
Keywords: Globalization 3.0; Higher vocational colleges; Global competency; Ability cultivation

1. INTRODUCTION

Preface: In the era of globalization 3.0, a single professional knowledge is no longer enough to meet the challenges of globalization. Students need to have global competence, including global awareness, cross-cultural communication ability, innovative thinking and the ability to adapt to changes.

2. STRENGTHEN LANGUAGE ABILITY TRAINING

Good language skills can help students better understand and use cross-cultural communication skills to enhance consensus and cooperation in different contexts. By mastering one or more foreign languages, vocational college students can communicate with international partners without barriers, participate in global projects and work for multinational enterprises, and enhance their global competitiveness. In addition, students with solid language ability are more likely to find ideal job opportunities in the job market. By cultivating language ability, students in higher vocational colleges can lay a solid foundation for their career development, expand employment channels, and enhance vocational competitiveness. At the same time, through exchanges with international counterparts, students can obtain more learning opportunities and academic resources to improve their learning ability and research level.

In order to strengthen the language ability training of students in higher vocational colleges, schools can strengthen foreign language education, provide comprehensive and systematic foreign language training courses, and pay attention to the cultivation of students' listening, speaking, reading, writing and other language skills. Secondly, students can be encouraged to participate in language exchange activities, such as organizing international cultural exchange festivals, foreign language speech competitions, etc., to provide opportunities for students to show their language abilities. In addition, schools can establish exchange programs with international partners to provide students with opportunities to go abroad and experience cross-cultural exchanges firsthand.

3. PROMOTE INTERNATIONAL CURRICULUM

Promoting international curriculum is an effective way to improve students' global competence. the international curriculum is designed to help students understand and adapt to the global environment, and to develop the ability of students to compete and cooperate in the international arena.

In the context of globalization, international courses can provide students with the opportunity to learn about other countries and cultures, so that students can understand and respect different values, customs and traditions, which will help develop students' ability to communicate and cooperate with people from different cultural backgrounds, so as to be more successful in a global working environment. By studying international courses, students will be exposed to the political, economic, social and cultural knowledge of different countries and regions. Students will gain a better understanding of the impact and challenges of globalization and a deeper understanding of global affairs, which will enable students to think from a global perspective, develop global awareness and transnational thinking, and prepare for future career development [1].

4. ENCOURAGE STUDY ABROAD AND INTERNSHIP EXPERIENCE

Through studying abroad, students are exposed to different cultures, values and ways of thinking, and have a deeper understanding of global diversity, which helps to develop students' cross-cultural communication and adaptability, and improve students' working and living skills in a globalized context.

In addition, studying abroad can enhance students' language skills and improve students' ability to communicate with people from different backgrounds around the world. Internship is an important opportunity for students to combine the theoretical knowledge learned in class with practical work. Through internship, students can understand the actual working environment and industry needs, and adapt to the career in advance. Especially in international internships, students can not only learn the working methods and management modes of other countries or regions, but also cooperate with colleagues from different backgrounds to develop teamwork and problem-solving skills.

Students can also get to know classmates and professors from all over the world and build up a global network of people, which is very important for students' future career development and can provide opportunities to work in multinational companies, international organizations or overseas. Similarly, through internship, students can get in touch with professionals in the industry, gain practical work experience and career guidance, and increase their competitiveness in employment.

5. CULTIVATE CROSS-CULTURAL COOPERATION AND TEAMWORK ABILITY

In the era of Globalization 3.0, the economic, cultural and social systems of each country have become intertwined and influenced, and the ability of cross-cultural cooperation enables individuals to better understand the differences between different cultures and how to coordinate and cooperate in these differences. Students in higher vocational colleges need to have good teamwork ability, including leadership, coordination, communication, cooperation and problem solving skills. They also need to master basic skills in cross-cultural communication, such as inclusive, open and flexible way of thinking, which can enable students to better adapt to and integrate into multinational enterprises, international organizations and international projects [2].

6. PROVIDE A PLATFORM FOR INTERNATIONAL COMMUNICATION

By providing an international exchange platform for students, students will have the opportunity to interact with students from different countries and regions, and learn about the social, economic and educational systems of different countries. Such cross-cultural communication will help cultivate students' global awareness and cross-cultural communication ability, and make students more open and adapt to the diversified global environment. In addition, by participating in international internships, project collaborations or research, students can apply their theoretical knowledge to real-world situations and face real international business challenges. Such practical experience helps students develop problem-solving skills, teamwork skills and innovative thinking, and enhances their competitiveness in the global workplace. In the era of globalization, many companies and organizations value talents with global background and experience more. By participating in international exchange programs, students can demonstrate their global competence and cross-cultural communication skills to improve their competitiveness in the job market [3].

7. STRENGTHEN GLOBAL AWARENESS AND SOCIAL RESPONSIBILITY

In the era of globalization 3.0, students in higher vocational colleges should have a certain global awareness, including the understanding of globalization, cross-cultural communication, and the understanding of opportunities and challenges brought by globalization. In terms of cultivating students' global awareness, vocational colleges should strengthen interdisciplinary teaching and integrate knowledge from different disciplines to help students better understand the nature and trend of globalization. At the same time, higher vocational colleges can also organize students to participate in some international activities, such as overseas exchanges, international conferences, etc., to enhance students' global awareness and cross-cultural communication ability.

In addition, vocational colleges should strengthen the integration of social responsibility education into the curriculum, such as social welfare, environmental protection and sustainable development, and guide students to understand social problems and think about solutions through classroom explanation and case analysis. Secondly, vocational colleges should strengthen practical teaching, through participating in voluntary services, social practice and other activities, so that students can physically feel social problems, and practice students' sense of social responsibility.

8. CONCLUSION

Under the background of Globalization 3.0, educational institutions should actively offer globalization courses, provide international exchange opportunities, and provide students with a global vision and cross-cultural communication ability. In teaching, educators should focus on cultivating students' global awareness, cross-cultural communication skills and ability to adapt to changes, and improve students' global competence through diversified teaching methods and activities. Through the cultivation of students' global competence, vocational colleges can provide strong support for students' career development and global competition, so that students can succeed in the era of globalization.

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New Mode of Integration of Party Building and Employment in Higher Vocational Colleges Under the Background Of "Three Complete Education"

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Abstract: With the development of education, curriculum reform continues to advance, teaching methods toward the direction of diversification, to provide students with better teaching services, to promote the comprehensive development of students. For the current students in higher vocational colleges, employment service is an important part of higher vocational teaching. Based on the teaching mode of "three whole education", the students are provided with employment guidance and career planning, and the employment service is constructed in the student branch. Through the development of the party construction work, the students are provided with employment service to promote the employment of students and solve their employment problems. Therefore, this paper will explore the integration mode of Party construction and employment of students in higher vocational colleges under the background of "three complete education".

Keywords: Three full education; Vocational college students; Party construction, Employment

1. INTRODUCTION

At present, higher vocational education attaches great importance to, and higher requirements are put forward for the teaching quality of higher vocational schools. In the process of development, higher vocational schools are in increasing demand for talents. As our important training bases for skilled talents, higher vocational schools should undertake their own responsibilities to provide better teaching services for students and cultivate more talents. the teaching concept of "Sanquan Education" is full education, whole process education and all-round education, which is to carry out comprehensive training of talents, promote the all-round development of students and improve the quality of education in higher vocational colleges. In the process of student work, Party construction and employment service is an important part of student management, but also plays an important role in the training of students. Therefore, to coordinate the relationship between the three is the key to promote the improvement of teaching quality and teaching efficiency. However, there are some problems in the integration of party construction and employment in higher vocational college education.

This paper will analyze the existing problems and explore effective ways of integration.

2. THE INTEGRATION OF PARTY CONSTRUCTION AND EMPLOYMENT PROBLEMS

2.1 The team structure of the main body of work is single and unstable

At present, there are some problems in the integration of Party construction and employment in higher vocational colleges based on the background of "three complete education". the first is the single and unstable structure of the working body team. At present, the main body of party building and employment services for students are generally student counselors, but the student counselors are faced with tedious affairs and cannot fully and effectively carry out Party building and employment services. Therefore, to promote the integration of Party building and employment, it is necessary to set up a professional team, coordinate the internal resources of the school and give full play to the combined role of all staff. To realize the coordinated development of Party building and employment service. However, in the main body of the work team, some teachers do not have enough awareness of the importance of work, lack of responsibility, do not care about the party building work and employment service work, think that the party building work and employment service is only auxiliary education tools, attach importance to the development of educational activities, ignore the internal needs of students. At the same time, when participating in the integration of party construction and employment, some teachers themselves undertake more student work. In the process of participating in the coordination of employment and party construction, there is a phenomenon of lagging behind and coping with the work, resulting in a mere formality [1].

2.2 The integration of the lack of top-level design and operation mechanism

In order to promote the integration of party building work and employment work in higher vocational colleges, it is necessary to coordinate multiple internal departments, because the party building work and employment service work involve multiple departments in higher vocational colleges. Therefore, in order to coordinate the party building work and employment service work, it is necessary to actively carry out the

integration work, construct a complete implementation plan, and carry out the top-level design scientifically. Develop a reasonable operating mechanism. However, the lack of top-level design and operation mechanism of content integration in higher vocational colleges has resulted in the inability of effective coordination among various departments, and the integration of Party building work and employment service work is difficult to promote.

2.3 The service function and work vitality of students in Party construction and employment work need to be enhanced

At present, the service function of students is low and the work vitality needs to be enhanced in the work of Party construction and employment service, which results in the low efficiency of the work and the quality can not meet the expected requirements. the Party building work and employment service work should be carried out with students as the main body and give full play to the service nature of the work. However, in higher vocational colleges, the work is a mere formality, unable to provide effective services for students, and the work is not close to students. At present, there are career guidance courses in higher vocational colleges, but in the process of carrying out career guidance courses, teachers only want to complete efficient teaching tasks, without carefully designing the content of teaching, teaching has no substantive effect, students can not mention the importance of career courses, teaching can not achieve the expected effect. At the same time, when providing employment services for students, there is no comprehensive analysis of the needs of students, but the work is carried out according to the experience of previous years, and students get less help in employment services.

3. IMPLEMENTATION MEASURES OF THE NEW MODE OF INTEGRATION OF PARTY BUILDING AND EMPLOYMENT FOR STUDENTS IN HIGHER VOCATIONAL COLLEGES UNDER THE BACKGROUND OF "THREE WHOLE EDUCATION"

3.1 Improve ideological cognition

In order to realize the integration of Party construction and employment in higher vocational colleges under the background of "three-in-one education", the ideological cognition of counselors, teachers and student workers should first be improved to realize the importance of the integration of party construction and employment services, so as to provide help for students, promote their all-round development and meet the needs of students. While recognizing the importance of Party building work and employment service, we should strengthen the sense of cooperation between the main body of work, make joint efforts to integrate Party building work and employment service, and promote the effective development of integration work. In terms of top-level design, higher vocational colleges should pay attention to the construction of professional culture and professional characteristics, provide high-quality employment services for students, implement the

education work to departments or even individuals, coordinate the resources of various departments, and efficiently complete the education task. At the same time, teachers in higher vocational colleges should give full play to their role in employment service, guide students' employment view, and promote students to develop correct employment view. With the assistance of Party construction, they should set up employment help groups to help students to complete employment and realize the organic combination of party construction and employment service [2].

3.2 Building a three-dimensional platform

To realize the integration of Party building work and employment service, we should build a three-dimensional platform to promote the efficient development of employment service and Party building work as well as the coordinated development between them. For example, higher vocational colleges can cooperate with multiple class homeroom teachers to set up student party building and employment studio, so that the homeroom teachers involved can learn relevant theories regularly, provide high-quality employment services for students, focus on the needs of students, and find the difficulties in students' employment, so as to help students in employment.

3.3 Innovate working methods

To realize the integration of Party building work and employment service, we need to innovate working methods. Teachers and student workers should change their ideas and innovate student work. Vocational colleges should integrate the concept of employment education into the training of the Party school, thoroughly implement the concept of employment education, and at the same time integrate the content of employment into the ideological and political classes of students, so as to promote the ideological cognition and employment ability of students at the same time. Party branches in colleges and universities should give full play to the leading role of Party members, organize members of Party building departments to set up vanguard service posts for Party members, provide students with services such as resume optimization, and at the same time investigate enterprises to expand the available jobs for students.

4. CONCLUSION

To sum up, the integration of Party construction and employment in higher vocational colleges based on the concept of "three-in-one education" should improve ideological cognition, attach importance to student service work, build a three-dimensional platform, promote integrated development, innovate working methods, give play to the role of the role model of Party members, and provide high quality employment services for students.

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On the Highlight of Vocational Education in Korean Teaching in Higher Vocational Colleges

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Abstract: The development of economic globalization has led to cultural exchanges and integration in different countries in the world. Under this background, higher vocational education has followed the trend of social development and set up professional teaching of small foreign language. Japanese, Korean and other courses are very popular. Higher vocational education, as a main field of personnel training in our country, should take adapting to social development as the core of education, in order to cultivate professional, technical and complex talents in line with social needs. Based on this, Korean teaching in higher vocational colleges has gradually formed a talent training mode focusing on the characteristics of "vocational education", hoping to help students form professional knowledge, scientific culture, professional ethics and technical skills needed for career development, so as to solve the problem of lack of Korean professionals in China. This paper makes a detailed analysis and exploration on how to highlight the characteristics of "vocational education" in Korean teaching in higher vocational colleges, with a view to sharing and communicating with people in the industry.
Keywords: Higher vocational education; Korean language teaching; Vocational education features; Reform strategy

1. INTRODUCTION

Under the background of integration and globalization, China's economy has entered a stage of rapid development, and a large number of Korean enterprises seek development in mainland China, which, to some extent, increases the demand for Korean professionals. Some enterprises even explicitly stipulate the recruitment of Korean speaking employees. Therefore, Korean majors in higher vocational colleges should seize this opportunity of reform and development. In order to meet the current social demand for Korean professionals, targeted and systematic talent training strategies should be implemented in teaching. the application of the thought of "vocational education" in the teaching of Korean major in higher vocational education optimizes the system of training applied talents in higher vocational education and realizes the goal of adapting higher vocational education to the trend of social development. the author believes that in order to highlight the characteristics of "vocational education" in Korean teaching in higher vocational colleges, we should look for the path of teaching reform in Korean teaching from the dimensions of educational concept,

teaching environment, teaching mode and teaching staff, so as to guarantee the comprehensive efficiency of training professional, skilled and applied talents.

2. THE IMPORTANCE OF "VOCATIONAL EDUCATION" IN KOREAN TEACHING IN HIGHER VOCATIONAL COLLEGES

Higher vocational education is an important base for conveying outstanding talents to the society, and the focus of education should be implemented in the aspects of professional talents, specialized talents and skilled talents, so as to ensure the scientificity and adaptability of talent training [1]. the prominent features of "vocational education" in the teaching of Korean majors in higher vocational colleges can point out the right direction for the training of Korean talents and play a fundamental role in the career development of Korean majors. the specific analysis is as follows: "Vocational education" requires to help students form a good professional attitude, concept, skills, style, spirit and thinking. Korean students who meet the above requirements can meet the needs of modern Korean enterprises for talents, which is conducive to providing strong support for the career development of Korean students.

3. KOREAN TEACHING IN HIGHER VOCATIONAL COLLEGES HIGHLIGHTS THE PROBLEMS OF "VOCATIONAL EDUCATION" CHARACTERISTICS

3.1 There are limitations in teaching objectives

Teaching objectives play a guiding role in carrying out teaching activities, which can always ensure that teaching is on the right track. Considering the current teaching situation of Korean major in higher vocational colleges, teaching objectives have limitations, which are mainly reflected in the following aspects: Teachers only pay attention to the development of students' Korean skills, but do not pay attention to the development of students' professional quality, especially professional spirit, professional attitude and professional concept, so in the process of setting teaching objectives, teachers only require students to master Korean knowledge and skills. Such teaching objectives result in the situation that the training of Korean talents in higher vocational colleges is inconsistent with the current social demand for Korean talents, and it is difficult for such talents to obtain favorable conditions for career development [2]. It can be seen that the teaching objectives of Korean major in higher vocational colleges do not highlight the characteristics of "vocational education", which

requires the implementation of effective teaching reform strategies in order to lay a solid foundation for training vocational talents to meet the needs of society.

3.2 The content of the textbook lacks pertinence

Teaching content can better achieve teaching objectives and guarantee the comprehensive quality and effectiveness of teaching activities. At present, there is a lack of pertinence in the field of teaching content setting and design of Korean language major in higher vocational colleges. First of all, there is a lack of professional textbooks suitable for higher vocational students, and even some colleges borrow textbooks for lower undergraduate grades, and the teaching content of these textbooks, a large part of the emphasis on knowledge teaching, and there are boring disadvantages. Secondly, it is difficult for the teaching contents of Korean major in higher vocational colleges to match with students. Some teaching contents are too simple and some are too complex, which to some extent affects the teaching effect of Korean major and makes it unable to highlight the characteristics of "vocational education".

3.3 There is a lag in the teaching model

Teaching model is the basic framework for carrying out complete teaching activities. Scientific and reasonable teaching model is conducive to guaranteeing the quality and efficiency of teaching. At the present stage, the teaching mode of Korean major in higher vocational colleges is lagging behind, which leads to the difficulty of "vocational education" characteristics playing a role in teaching, and to some extent hinders the development of Korean major students' professional quality. For example, many teachers are keen on instilling theoretical knowledge and asking students to practice Korean pronunciation and interpretation repeatedly, while ignoring whether students can complete practical communication in Korean. Such "armchair" teaching mode is difficult to help students form good Korean skills and cannot create favorable conditions for students' career development.

4. THE "VOCATIONAL EDUCATION" ORIENTED KOREAN TEACHING REFORM STRATEGY IN HIGHER VOCATIONAL COLLEGES

4.1 Promoting the concept of vocational education in an all-round way

In order to highlight the characteristics of "vocational education" in Korean teaching in higher vocational colleges and cultivate talents with good professional quality for social development, it is necessary to carry out the concept of vocational education comprehensively and truly form an education system with the training of professional talents as the core. First, the teaching objectives of Korean major in higher vocational colleges should be adjusted timely, and the training direction of Korean talents should be replanned, and the training methods should be innovated based on the economic and market background, so as to form a Korean major teaching system that combines Korean knowledge, skills and professional quality. Secondly, teachers of specialized courses should clarify the

characteristics of vocational education and form teaching thinking that is different from that of Korean teaching in colleges and universities. They should focus on training professional talents rather than Korean research talents.

4.2 Building a scientific and professional Korean teaching model

The teaching mode should be innovative around the characteristics of "vocational education", mainly forming a scientific teaching mode combining theory with practice, so as to help students master the ability to apply Korean, and help students form a good Korean professional quality. For example, the characteristics of "vocational education" highlight the comprehensive requirements for the development of students' professional spirit, attitude, concept and skills. In this regard, the teaching of Korean language in higher vocational colleges can carry out the school-enterprise cooperative education model, and make use of the educational strength and talent training advantages of social enterprises to create a favorable environment for students' career development.

4.3 Building a high level of Korean teaching teachers

The teaching staff is the key condition that affects the teaching quality. In order to highlight the characteristics of "vocational education", the Korean major in higher vocational colleges needs to be committed to building a high-level teaching staff to ensure that professional teachers can effectively integrate their professional development into the teaching of Korean major. For example, vocational colleges should regularly provide reasonable and scientific training and education to in-service Korean teachers, mainly to convey advanced teaching ideas or concepts, and to improve teachers' professional ability and teaching level, so as to ensure that teachers can truly integrate "vocational education" into the whole Korean teaching.

5. CONCLUSION

To sum up, the teaching of Korean in higher vocational colleges highlights the characteristics of "vocational education", which plays a very important role and value in cultivating professional, vocational and plain Korean talents. the above three dimensions, namely, the construction of high-level teaching staff, the comprehensive implementation of vocational education concept and the construction of professional Korean teaching model, put forward relatively feasible teaching reform strategies, hoping to be helpful to the development of Korean teaching in higher vocational colleges.

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The Innovation of Micro Film Communication Channel

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Abstract: With the advent of the micro era, the way people receive information has changed significantly. At the present stage of the rapid development of network technology, the use of micro film information has become an important part of the cultural industry. However, at the present stage, the way of micro film communication is not optimistic. If it is not timely adjusted, innovated and improved, it will be very unfavorable to the development of micro film. Under this trend, it has become urgent to innovate and improve the way of micro-film communication. Combined with the analysis of the significance of micro film communication, this paper discusses what channels to innovate and improve the communication channels of micro film, so as to promote the development of micro film and make micro film occupy a place in the network.
Keywords: Micro film; Communication channel; Innovation; Improvement

1. INTRODUCTION

In the process of rapid development and innovation of media, micro film mode stands out and becomes the key entertainment content that people pay attention to in the modern fast pace of life. Under the guidance of micro film mode, thematic and episodic content can be combined with videos to make short video clips for people's entertainment, knowledge and so on. Micro-film has many advantages because it requires a small recording team and does not require much time to make it. Besides, it can bring people a strong visual sense and arouse people's thinking.

2. THE NECESSITY OF MICRO-FILM COMMUNICATION CHANNEL MICRO FILMS NEED THE SCREENWRITER TO COMBINE THE INTEGRITY OF THE EVENT, PLOT AND OTHER FACTORS, AND ADOPT A RELATIVELY PROFESSIONAL SHOOTING TEAM, WHICH CAN BE FORMED AFTER POST-PRODUCTION BY TECHNICAL PERSONNEL.

2.1 Micro films contain "small words and great meaning"

At the present stage of the rapid development of the Internet era, it is difficult for us to control the operation mode and operation situation of the whole network. In order to ensure the dissemination of micro films, it is necessary to pay attention to the process of micro film production, make high-quality micro films, and understand its communication channels.

2.2 The transmission path of micro film determines its coverage

At this stage, people receive information in various ways. Information can be spread no matter through paper reading books, newspapers, or through network channels, short video platforms, mobile phones, moments of friends and so on. By receiving information and thinking with your brain, it can help people change their traditional thinking mode, guide information recipients to pay attention to the problems in their thinking, and correct them according to the actual situation. Therefore, transforming the coverage of micro-video by means of transmission channels of micro-video has a very important impact on the transmission of micro-video.

2.3 Micro film communication needs people to change their thinking mode

Micro film is generally combined with the pattern of story development, through the short story to convey some meaningful truth to people. In order to broaden the transmission channels of micro films and strengthen people's understanding of micro films, in the process of creation, it is necessary to pay attention to people's way of thinking, put people's visual reaction in the first place, and explore the content of micro films to attract viewers' eyes.

3. INNOVATION AND IMPROVEMENT OF MICRO FILM COMMUNICATION CHANNELS

3.1 Combined with the idea of diversification, to promote the diversification of micro video communication channels

In the process of communication, people's thoughts and communication modes have a very important influence on the communication of micro-video. Because different people have different understandings of different transmission channels, if only one way of micro film is used in the process of communication, the content of micro film communication will be greatly reduced and the effect of communication will be affected. Throughout the current form of communication, it can be found that the scope of TV communication is relatively wide, which is one of the ways to help viewers think.

In practice, it is found that combining different modes can broaden the scope of viewers and make a guiding mode to promote the smooth progress of micro film management. First, the broadcast and content of micro films can be infiltrated through newspapers and magazines to guide readers to watch actively. Second, it can use the radio to spread and make guidance. Third, in the bus station, large bus station and the waiting hall of the railway station, you can also warm up the micro film. Through the guidance of interesting plots, people's

desire to watch the micro film. Fourth, combined with the content of the TV, play incomplete part of the video, with the help of the words "to be continued" guidance, hanging the audience appetite, and pointed out the broadcast platform, so that people who want to watch the video to watch.

3.2 There is a very close relationship between the emergence of micro films and new media.

Therefore, how to use new media to communicate is also an important issue to be paid attention to in the development and innovation of micro-film communication channels. In reality, how to do it can use wechat, QQ, short video, network broadcast and other platforms to spread micro film is related to the effect of micro film communication. First of all, you can use the model of the public account, and use novel titles and people are interested in the title for publicity. Secondly, with the help of the circle of friends or QQ space promotion. Third, with the help of TikTok, Kuaishou and other platforms to spread.

3.3 Integrated mobile phones and other APP development software, and encourage people to apply

At the present stage of the 5G era, mobile phones have gradually become an important way for people to experience visual and auditory experience. In this process, the expansion of mobile micro film APP can not only spread text, but also spread video in time, and ensure that micro film can be delivered to the audience in the first time. Finally, in the process of mobile phone update, micro film APP also needs to be developed in time and keep up with the trend of mobile phone update to ensure that this channel can exist for a long time.

3.4 Develop the channels of micro-film experience and increase the possibility of viewing

In the development of movie-watching experience, it is necessary to regard micro-film as an art, and integrate the development analysis of this industry to introduce some products to increase the experience effect of moviegoers. For example, after watching micro films, the interests of micro films can be improved and the development of micro films can be promoted through the penetration of dolls, mobile phone cases, commemorative MEDALS, decorations and other products. When the audience accepts the problems advocated in micro films in many physical, psychological and other aspects, it can deepen the

watching experience, and be satisfied in the future, and then form a virtuous circle. Therefore, it is necessary to develop the channels of micro film experience and increase the publicity channels of micro film.

4. CONCLUSION

To sum up, at the present stage of the continuous development of science and technology and information technology, through the analysis of the trend of comprehensive development and the development of the media industry, we should pay attention to the development of micro film, and fully develop the channels of micro film communication. By making the help of media coverage and innovating the traditional communication mode, the development of micro films should avoid a flash in the pan and promote the sustainable development of micro films. In practice, it is necessary to look at the problem from the perspective of development, analyze and discuss different ways, make scientific analysis, and innovate different communication channels, so as to realize the effect of diversified communication of micro films.

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A Study on the Innovative Strategy of Incorporating Theme Movies into College Students' Ideological and Political Education

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Abstract: Combining with the actual situation, in the current society, the theme film essentially refers to the art work that can reflect the mainstream ideology and values of our society, which has important value in ideological and political education can not be ignored. the art of film is vivid and interesting in nature, so it has a high appeal among young students. Based on this, this paper carries out an in-depth exploration on the innovative strategies of incorporating the theme film into the ideological and political education of college students, hoping to play a certain role in the development of related work.
Keywords: Main melody; Film; College students; Ideological and political education

1. INTRODUCTION

At present, how to effectively implement the ideological and political education is one of the main problems in the stage of higher education. Combined with the actual situation, college students usually have high curiosity and action ability, which makes the traditional mode of ideological and political education gradually unable to meet the needs of the growth and development of college students, students are therefore unable to accept the ideological and political education activities from the heart, and thus it is difficult to give full play to the function of ideological and political education of college students. the theme film itself is a kind of audio-visual carrier in the ideological and political education of college students. By reasonably applying it to the ideological and political education of college students, it can bring students a unique audio-visual feeling, so that students can effectively accept the ideological and political education activities while avoiding the boring feeling brought by the traditional education mode. Finally, it lays a solid foundation for the realization of the goal of moral education in colleges and universities.

2. THE UNIQUE FUNCTION OF THEME FILM IN IDEOLOGICAL AND POLITICAL EDUCATION

2.1 Forming value guidance

In the current society, the law of the development of the Times is essentially an important basis for the effective development of the theme film, no matter what the theme of the film, its primary task is to convey social mainstream consciousness and values. Combining with the actual situation, most of the theme films can effectively convey the warmth of the society while helping people feel the positive energy in the society, and with the help of some specific plots will fully reflect the core values of socialism in our society. Generally, movies with various themes contain rich marks of the Times, and their overall trend can help audiences deeply feel the trend of mainstream values of the Times [1]. For example, the film the Message implies a large number of ideals, beliefs and revolutionary spirits of Communist Party members. By playing such films for college students, the construction of their correct values can be fully guaranteed.

2.2 Produce a powerful demonstration

The film itself has a relatively good appeal, and the theme film is certainly no exception. the ideological values contained in it can help the audience to feel the changes of the Times and the spirit of the characters, and at the same time prompt the audience to reach a resonance in their thoughts and actions. Combined with the actual situation, in the process of social development, the role model can point out the direction for individual development, while the theme film can give the power of the role model to the hero in the film, and through the form of film, the power of the role model can be effectively transmitted to college students, so as to provide the direction for their development and further improve their overall development efficiency. For example, the film Huang Danian mainly tells the life story of Huang Danian and shows the correct appearance of the hero to students, thus providing students with a better example to learn from. Finally, it encourages college students to constantly improve their own norms of behavior under the power of example, so as to achieve good goals of individual development.

3. THE THEME FILM INNOVATION INTO THE IDEOLOGICAL AND POLITICAL EDUCATION OF COLLEGE STUDENTS STRATEGY

3.1 Improve the frequency of college students' exposure to theme movies

In order to effectively increase the frequency of college students' exposure to theme films and ensure that the value of theme films in the ideological and political education of college students is fully given play to, the media and colleges and universities need to focus on the following work: 1. Through "stimulating" publicity, enhance students' desire to watch movies. In the stage of university education, college students themselves are relatively active, which makes them usually have a good ability to acquire information, but they are also easy to ignore some information that they lack interest in. Therefore, in the theme film publicity, the media need

to do a good job in college publicity. In this process, the media should firstly carry out necessary publicity work for college students who pay little attention to the theme movies, so as to improve the opportunities for college students to get in touch with the theme movies. Secondly, for some college students who pay much attention to the theme movies but have no interest in watching movies, the media should publicize by entering universities. Give full play to the "stimulus effect" so that it can actively carry out the theme movie watching activities, so that the distance between it and the theme movie can be effectively shortened; 2. Expand the channels for theme films to enter universities. In combination with the actual situation, when universities need to integrate the theme film with the ideological and political education of college students, they can also organize the theme micro film competition to provide a guarantee for the improvement of the integration efficiency of the theme film with the ideological and political education of college students. In this process, students can feel the thoughts and emotions expressed in the content of the film in the process of planning and shooting the micro film, and arouse the resonance of students at the ideological level, and finally further highlight the application value of the theme film in the ideological and political education of college students. In general, the closer relationship between college students and theme movies can provide more opportunities for college students to get in touch with theme movies, and ensure that theme movies can really enter the study and life of college students, so as to achieve a good ideological and political education goal for college students.

3.2 Improve the use of theme movies in class

In the ideological and political education work in colleges and universities, in order to further improve the application of theme films in the ideological and political education of college students, teachers need to give full play to their own guidance ability, and thus lay a solid foundation for the enhancement of the integration of theme films. Therefore, after the introduction of theme movies, teachers need to dig deeply for the content containing ideological and political education value in the theme movies, so as to ensure that students can personally feel the healthy ideological values in the movie content during the process of watching the theme movies. Secondly, teachers should organically integrate the explanation of ideological and political theories with the content of the theme film, and guide students to fully express their own movie-watching feelings, so as to give full play to the ideological and political education value of the theme film by leading students to carry out in-depth discussion on the connotation of the movie content [2]. In addition, teachers also need to provide timely answers to students' questions when they watch theme movies, and provide effective guidance to students, so as to comprehensively improve the depth of students' understanding of theme movies' ideas, values and other content, while ensuring the integration effect of theme movies.

4. CONCLUSION

To sum up, in the current society, theme films contain rich social mainstream ideological values, so they have obvious application value in the ideological and political education of college students. In the process of integrating it into the ideological and political education of college students, colleges and teachers should first make clear the relationship between the theme film and the ideological and political education of college students, and do a good job in exploring the strategy of integrating the theme film, so as to fully ensure the effectiveness of the ideological and political education of college students, to help college students firm their ideals and beliefs. Finally achieve good ideological and political education goal of college students.

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Current Situation and Countermeasures of On-The-Job Practice for Students Majoring in Automobile in Higher Vocational Colleges

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Abstract: Higher vocational colleges can provide professional talents for various industries. Automotive majors can provide talents for automobile sales, automobile maintenance, automobile research and development and other fields. With the development of the Times, higher vocational colleges pay more attention to school-enterprise cooperation, and even establish strategic cooperative relations with enterprises, which can promote students to improve their vocational skills. However, as far as the actual situation is concerned, many problems have been exposed during the internship of students majoring in automobile, which is not conducive to the continuous improvement of students' professional quality. In view of this problem, this paper analyzes the current situation and improvement countermeasures of students majoring in automobile in higher vocational colleges.

Keywords: Higher vocational colleges; Automotive major; Post practice; Countermeasure

1. INTRODUCTION

Vocational education is an important part of the field of education in China. With the development of the Times, higher vocational education pays much attention to school-enterprise cooperation, through which students' professional ability and professional quality can be trained. Automotive major itself is a strong practical major, such as automobile breakdown maintenance, automobile marketing services, etc., which require students to invest more energy. Based on this, on-the-job practice is very necessary, but from the actual situation, there are still some difficulties in the on-the-job practice of automotive major in higher vocational colleges, which has adversely affected the development of this major.

2. THE SIGNIFICANCE OF POST PRACTICE

Under the background of Xinshida, the competitive pressure in various industries is very great, and the demand for high-quality talents is gradually increasing. In the automobile industry, with the addition of the Internet, new energy and other technologies, the demand for talents has reached a new height, and the requirements for the quality of talents are also very high. In school-enterprise cooperation, students can be sent to enterprises for on-the-job internship. This process can prompt students to "practice" the theoretical knowledge they have learned as soon as possible, which is helpful to improve their professional and technical level and understand the actual working situation of automobile

major in advance, which is of great help to their accumulation of career experience and employment after graduation. It can be said that internship is an important transition stage for students from "students" to "society".

3. THE CURRENT SITUATION OF VOCATIONAL AUTOMOTIVE STUDENTS' ON-THE-JOB PRACTICE

3.1 Lack of ability to bear hardships

After graduating from automobile majors, students need to enter jobs according to their major. Compared with urban white-collar workers, quite a few automobile professions require practitioners to have strong ability to bear hardships. However, according to the actual situation, nowadays many students do not have strong endurance and willpower, so it is easy to have a sense of burnout and a sense of retreat when they practice high-load work, which makes many students unable to go further on the career road of automobile [1].

3.2 The vocational practice does not fit the professional curriculum system

The automobile industry develops rapidly and its technology changes with each passing day. Many higher vocational automobile majors are relatively backward in the curriculum system and fail to match with the reality. For example, students majoring in automobile maintenance often find that the knowledge they have learned is not fit enough with the practical position during the internship, which will form a sense of burnout over time. In addition, with the development of the Times, the automotive field pays more and more attention to the development of electric, but many vocational college automotive major textbooks are still dominated by traditional automotive technology, lack of rapid update, so that students need to re-learn professional knowledge during the internship.

3.3 High requirements for students' comprehensive quality

The development scale of the automobile industry is relatively large, and students need a long growth cycle if they want to be promoted from junior employees to high-quality talents. At the present stage, many students lack hard-working spirit in ideology, so they may give up for a long growth cycle [2]. In general, there are some deficiencies in the current internship of automotive majors in higher vocational colleges, and the students' competence is poor.

4. PROBLEMS AND COUNTERMEASURES OF ON-THE-JOB PRACTICE FOR STUDENTS

MAJORING IN AUTOMOBILE IN HIGHER VOCATIONAL COLLEGES

4.1 Strengthening publicity of professional education

At present, many students of automobile major in higher vocational colleges are prone to the problem of poor ability to bear hardships during the internship, which is not conducive to the improvement of students' comprehensive quality. Under the background of the current era, enterprises have higher requirements for talents, who not only need to have excellent professional skills, but also need to have good moral quality. Based on this, higher vocational colleges should regularly organize students to carry out educational lectures around "professional planning", so as to encourage students to make changes in ideology and realize the importance of professional planning and its relevance to their future development planning. At the same time, outstanding graduates can be invited back to campus for experience exchange, so as to communicate with students more closely.

4.2 Strengthening home-school cooperation

Family education is the first education that students come into contact with in their life, and students' personal situation is closely related to their family education. Under the background of the current era, higher vocational colleges should pay attention to strengthen the "home-school communication", so that more parents realize the drawbacks of students in ideology, the problems in the internship. In addition, parents are also organized to visit the on-site internship site from time to time, to understand the relevant contents of automobile maintenance, automobile maintenance, automobile marketing and other majors, and to give students encouragement [3]. In addition, interest is the best "teacher", it is reported that many students lack of interest in learning, greatly affect the development of teaching work, at present in the vocational education of automobile major, should pay attention to keep pace with the Times, especially to quickly update the content of textbooks, innovation teaching model, improve the new curriculum system; At the same time, more attention should be paid to the combination of theory and practice, to improve students' hands-on ability, so that they can experience professional fun from the process of doing things by themselves, so as to improve their learning enthusiasm and cultivate hard-working spirit.

4.3 Strengthen exchanges between schools and enterprises

School-enterprise cooperation is currently the key development direction of many higher vocational colleges. Under this strategic mode, the distance between schools and enterprises can be narrowed to achieve a "win-win situation". It is reported that many colleges and universities in the school-enterprise cooperation there is a lack of attention, blindly follow the problem, not really fit their own actual situation to carry out school-enterprise cooperation, which is also the main influencing factor causing the internship problem. Based on this, we should focus on this problem at present. When seeking cooperation with enterprises, we should pay attention to reasonable selection according to the actual situation of students, and not only students can be sent to the enterprise for internship, the enterprise should also send professional and technical personnel to the school, optimize professional teaching courses, form the integration of industry and education, and promote win-win situation.

4.4 Pay attention to the daily management of students

In addition to the above measures, we should strengthen the daily management of students. In recent years, many higher vocational colleges have changed the mode of talent training, adhere to the employment oriented, this automotive professional can also learn from experience, join the application of corporate culture when the internship, through the corporate culture of the students' internship stage of cultural influence, imperceptible change its "immature" concept, so that it can be "seamless" when graduation employment; In addition, should also set an example, can invite outstanding performance during the internship internship to teach experience, guide students to improve professional planning and life planning.

5. CONCLUSION

There are many deficiencies in vocational auto internship, mainly manifested as the relative lack of comprehensive literacy of students. Based on this, this paper simply analyzes the problems of vocational auto internship. Under the background of the new era, the problem of on-the-job internship of students majoring in automobile in higher vocational colleges is more and more prominent, which is not conducive to the sustainable development of the profession, but also has an adverse impact on students' personal development. In this paper, several countermeasures are summarized, such as strengthening professional education publicity, strengthening home-school cooperation, strengthening school-enterprise communication and strengthening daily management of students, hoping to help solve the problem of in-post practice and improve students' comprehensive quality.

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Vocational Foreign Trade English Translation Teaching Countermeasures Based on Post Skill Requirements

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Abstract: With the development of education, higher vocational foreign trade English translation teaching has been paid attention to and higher teaching requirements have been put forward. Through the investigation, it can be found that there are many problems in the teaching of foreign trade English translation in higher vocational schools, and feasible suggestions should be put forward according to the existing problems to improve the status quo of classroom teaching. In the following part, an in-depth study will be conducted on the teaching of foreign trade English translation in higher vocational colleges based on the requirements of post skills, so as to provide teaching reference.
Keywords: Post skill demand; Higher vocational colleges; Foreign trade English translation teaching; Countermeasure

1. INTRODUCTION

Since the reform and opening up, the cause of China's import and export trade has developed rapidly, and the reform of foreign trade English translation teaching has become the focus of higher vocational colleges. the arrangement of curriculum design activities on the basis of job requirements can enable students to improve their skills and expand their knowledge on the basis of job requirements, and lay a good foundation for students to successfully find jobs in the future.

2. RESEARCH ON TEACHING COUNTERMEASURES FOR SOCIAL POST CHANGES

2.1 Teachers need to grasp the clear and explicit principle of moderation

In the development of posts in modern society, the post demand changes obviously. the development of Internet technology makes the post requirements of foreign trade translation change. Higher vocational colleges should adjust the course content in combination with social development, keep pace with the Times, improve the course design, and ensure that students' ability can adapt to the current social situation. Combined with the current social situation and the future development trend of curriculum design, based on the status quo and continuous progress, at present, in the development of modern society, there are many teachers still in use of traditional educational thinking, leading to foreign trade teaching content can not be in line with the Times. In this context, teachers should assume their own responsibilities, maintain a good working attitude, analyze students' future career development needs, and

strengthen the training of students' basic skills while grasping the principle of moderation, so that students can cope with emergencies and make handling behaviors in work. In imparting knowledge, teachers must conform to the reality and accurately grasp the teaching direction [1].

2.2 The ability that teachers should have in vocational foreign trade translation

In addition to the grasp of basic concepts, teachers must also have a solid foundation of knowledge and professional skills. Vocational colleges are mainly aimed at cultivating application-oriented and skilled talents. Teachers must have a correct understanding of it, help students adapt to the new social changes based on their development needs, and encourage students to carry out English translation in a variety of different learning ways. At present, in the development of the Internet, language training has received much attention. There are a large number of learning videos in many video websites, and there are various applications on the Internet, which are convenient for students to learn and consolidate knowledge at any time in their spare time, and make reasonable use of spare time to supplement the knowledge not learned in class. In this process, teachers should play their own guiding role, remind students to continue learning, provide students with different learning software, communicate with students more, and understand the real needs of students. Teachers can also combine the teaching content with the current hot topics, for example: during the Sino-US trade war, summarize the knowledge points and English vocabulary, ask students to use professional vocabulary to express their opinions, think about which translation method should be adopted for this part of the content, compare with the actual translation content, and study how to continue improving. Foreign trade English translation emphasizes on types and experiences, and basic language features should be expressed based on the field of trade, requiring students to master professional terms and form a set of standard language system [2].

2.3 Teachers should guide students to find their own interests and direction

Foreign trade English translation is to translate according to the fields used in the actual work, select specific translation methods in specific industries, take the import professional terms of computer students as an example, so that students can contact the direction of computer hardware in their spare time, and explore the

potential interests of students. At this stage, if students lack a clear understanding of themselves and a clear development direction, it is difficult for them to adapt to the ever-changing position changes. In fact, contemporary college students have many practical opportunities, but they have not found the direction to move forward. If there is no teacher's facilitation, students will become more anxious. When teachers consult students' interests, they can start from students' hobbies, guide students to find their own abilities in daily practice, gain a sense of achievement and find the direction of efforts [3].

2.4 Innovate English translation teaching model

Through investigation, it can be found that many students do not recognize the current translation teaching model and have low satisfaction with classroom teaching. Because classroom teaching is boring, students are hard to get interested in it, which leads to students being too passive in learning and unable to keep up with the pace of class. In classroom teaching, although they can learn relevant English translation knowledge, they lack the willingness to actively learn, so teachers cannot directly give answers to questions. Instead, they should guide students to actively translate, gain a sense of accomplishment from it, and communicate with teachers when they encounter problems. Teachers should take students as the main body to carry out classroom teaching design and enhance teacher-student interaction.

2.5 Colleges and universities take the initiative to provide extracurricular training opportunities

From the analysis of relevant data, it can be seen that in English translation teaching, there is less interaction between teachers and students, and there is a phenomenon of emphasizing theory over practice. Extracurricular practice is that students apply the knowledge learned in real situations to solve practical problems. Teachers can strengthen students' practical training ability and give them guidance by assigning practical homework. English translation skills can only be mastered after repeated practice. After class, in addition to assigning translation tasks to students, it is also necessary to provide them with extracurricular training opportunities, so that they can take the initiative to practice, learn the second time in practice, and carry out cross-border language communication according to job requirements.

3. TEACHERS SHOULD BE CLEAR IN THE CLASSROOM DESIGN CONTENT

3.1 Have a correct understanding of the job requirements

When guiding students, teachers should have a comprehensive understanding of the reality of classroom teaching, develop teaching plans on the basis of the textbook content, combine the social development trend and their own cognitive understanding, and expand the teaching content of foreign trade English

translation. For example, in the field of e-commerce development, I will analyze the ways of language communication according to the future employment direction of students, enhance my understanding ability based on the translation methods I have mastered, and gradually form my own translation style. In the field of e-commerce, customer service is an important task, including product introduction, after-sales service and so on. Students are required to master communication skills, extract key content and information in communication, and identify language tendencies under different cultural backgrounds.

3.2 Job analysis and knowledge research combined with text and financial media application

In the teaching of foreign trade translation courses in higher vocational colleges, textbooks are taken as the basic form, focusing on cultivating students' written comprehension and translation ability, focusing on encoding and decoding methods, converting expression modes under certain language background, teaching based on English cultural background, studying Chinese expression modes, and forming habits under text comparison. Get richer feelings, and translate them into another language pattern. I will implement practical research into translation, analyze its characteristics and principles, realize my own shortcomings in the later stage, and carry out targeted learning based on the actual situation and exchange experience with teachers.

4. CONCLUSION

As can be seen from the above, job demand analysis in higher vocational foreign trade English translation is the basic principle of higher vocational education, and job demand should be defined on the basis of this concept. In the face of the development of the e-commerce logistics industry, it focuses on the analysis of the needs of foreign trade English translation, and gradually guides students to adapt to the characteristics of task-based translation work, find their own employment direction in employment-oriented learning, and transfer more outstanding talents for the social development.

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Analysis Of Superconductor Materials For Quantum Computing

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Abstract: Superconducting materials have been identified as promising candidates for quantum computing, owing to their unique electronic properties. This paper analyzes the suitability of superconducting materials for quantum computing, focusing on charge qubits, flux qubits, and phase qubits. Further exploration of the theoretical basis of superconducting materials for quantum computing, including particle hole symmetry and topological superconductivity. And explore the theoretical foundations of superconducting materials for quantum computing, including particle-hole symmetry and topological superconductivity. Finally, we discuss the integration of artificial intelligence algorithms with superconductor materials for quantum computing, such as using machine learning for predicting the electronic properties of superconducting materials and deep learning for material characterization. Finally, the integration of artificial intelligence algorithms with superconducting materials was discussed for quantum computing. Machine learning can effectively predict the electronic properties of superconducting materials, and deep learning can be used for material characterization.
Keywords: Qubit; Superposition; Quantum computing; Superconductor

1. INTRODUCTION

Quantum computing is a branch of computing that utilizes the principles of quantum mechanics to perform computations. Unlike classical computers that use bits to encode information as 0 or 1, quantum computers use quantum bits, commonly known as qubits, which can be in a superposition of states, enabling them to process information in a significantly more efficient manner than classical computers. Superconducting materials are materials that exhibit zero electrical resistance when cooled below a certain temperature. This phenomenon is known as superconductivity, and it occurs due to the formation of Cooper pairs, which are a pair of electrons that move together, and as a result, experience no resistance when moving through a superconductor.

Researchers have been exploring the properties of superconducting materials and how they can be used to build quantum computers. Superconducting qubits, which are qubits based on superconducting materials, have proven to be a promising platform for quantum computing due to their relatively long coherence time, scalability, and ease of manufacture and control. Superconducting materials is minimizing noise and decoherence, which are sources of error that can disrupt the fragile quantum states of qubits [1]. To accomplish this, researchers have been working on improving the architecture and design of superconducting qubits and integrating them with other quantum components such as cryogenic control systems, microwave resonators, and control electronics. Meanwhile, to perform more complex computations on a quantum computer, it requires the use of a large number of qubits. However, increasing the number of qubits [2] also increases the complexity of maintaining the system, reducing the stability and reliability of the computation.

2. THE THEORY OF QUANTUM COMPUTING

2.1 Qubit

A quantum bit (qubit) [3] is the basic unit of quantum computing and information. Unlike classical bits, which can exist in either a 0 or 1 state, qubits are quantum mechanical systems that exist in a superposition of both 0 and 1 states simultaneously, allowing for the potential for much more powerful and complex computations. the principle of a qubit is based on the principles of superposition and entanglement, which are central to quantum mechanics. Superposition refers to the ability of a qubit to exist in multiple states simultaneously, while entanglement refers to the ability of two qubits to be correlated in a way that is not possible in classical computing. By taking advantage of superposition and entanglement, qubits can perform computations and solve problems that are difficult or impossible for classical computers to solve.

Qubits are suitable for a wide range of applications, including cryptography, quantum simulation, and optimization problems. Quantum cryptography takes advantage of the ability of qubits to transmit information securely through an entangled channel. Quantum simulation uses qubits to simulate the behavior of complex systems, such as molecules or materials, which classical computers cannot perform efficiently. Quantum optimization uses qubits to optimize complex systems, such as transportation networks or financial portfolios, to find the best possible solution given a set of constraints.

The unique advantage of qubits over classical bits is their potential to perform complex computations and solve problems that are not possible or practical with classical computers. This is due to the ability of qubits to exist in superpositions, allowing for multiple computations to occur simultaneously, and their ability to be entangled, allowing for correlations between qubits that can be used to perform complex operations efficiently. Qubits also have the potential to solve certain types of problems, such as factoring large numbers, exponentially faster than classical computers.

Qubits are the building blocks of quantum computing [4] and information and offer unique advantages in their ability to exist in superpositions and be entangled. They have a wide range of potential applications, including cryptography, quantum simulation, and optimization problems. However, there remain significant challenges in developing and implementing qubits, including maintaining coherence and implementing reliable and accurate control. If these challenges can be overcome, quantum computing has the potential to revolutionize computing and solve some of the most complex problems facing science and technology today.
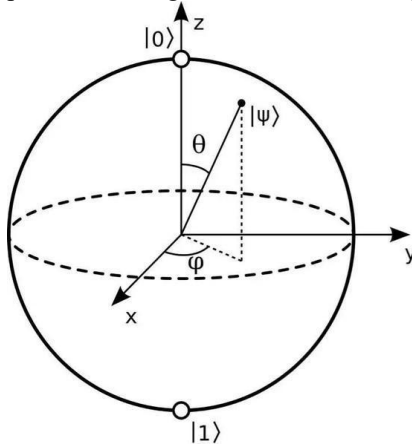

Figure 1 Qubits

2.2 Superposition

Superposition is a fundamental principle [5] in quantum mechanics that describes the ability of a quantum system to exist in multiple states simultaneously. This is in contrast to classical systems, where a particle or object can only exist in one state at a time. the principle of superposition is based on the concept of wave-particle duality, which states that particles can exhibit wave-like properties, such as interference and diffraction. In quantum mechanics, a particle is described not just by a single state, but by a wave function that gives the probability of finding the particle in any given state.

Superposition arises when a quantum system can exist in a linear combination of multiple states, each with its own probability amplitude. This means that if a measurement is made, the system can be found in any one of these states with a corresponding probability. For example, the spin of an electron can be in a superposition of up and down states, which means that it is neither purely up nor purely down, but has some probability of being in either state. One important property of superposition is interference, which occurs when two or more superposed states overlap, leading to constructive or destructive interference. This can result in complex patterns of probabilities that cannot be explained by classical physics. Another important property is entanglement, which occurs when two or more particles become correlated in a way that cannot be explained by classical physics. This means that changes to one particle can instantaneously affect the other, regardless of the distance between them.

Superposition is used to enable parallel computations and quantum algorithms. In quantum computers, qubits are placed in superpositions of different states, which means that they can perform multiple calculations simultaneously. This can make quantum computers much faster than classical computers for certain types of problems.

3. SUPERCONDUCTOR MATERIALS FOR QUANTUM COMPUTING

3.1 Superconductor

Superconductors are materials that have zero electrical resistance below a critical temperature, known as the critical temperature (Tc). This phenomenon is a consequence of electrons forming Cooper pairs, which are two electrons that bind together and move through the material without experiencing any resistance. the Josephson effect is a fundamental effect that describes the behavior of superconducting materials in the presence of a thin insulating layer of materials, known as a Josephson junction.
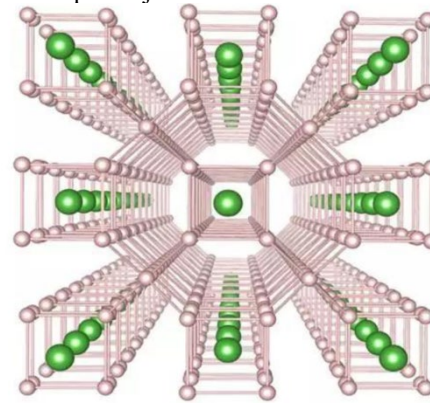

Figure 2 Superconductor material

In the context of quantum computing, Josephson junctions are used as the basic building blocks of superconducting qubits. To create a superconducting qubit based on a Josephson junction, a small circuit is constructed that consists of a superconducting loop, a Josephson junction, and an external magnetic field. the Josephson junction [6] is the weak spot in the circuit, and it allows a weak electrical current to flow between the two sides of the superconducting loop. At this point, the conditions that the current should meet are shown in Eq. (1). the current that flows through the Josephson junction is known as the Josephson current, and it is a quantum mechanical effect that arises due to the phenomenon of coherent tunnelling. To create a superconducting qubit based on a Josephson junction, the zero resistance of the superconductor is used to create a resonant circuit where the Josephson junction can act as a tunable element.

$$\nabla \times B = \mu_0 J + \mu_0 \varepsilon_0 \frac{\partial E}{\partial t} \qquad (1)$$

where, B is magnetic induction, J is current density, E is electric field strength, μ_0 is the

magnetic permeability of vacuum and $\dot{\epsilon}_0$ is the electric permittivity of vacuum.

These qubits work by manipulating the phase of the current that flows through the Josephson junction. the phases of the current can be controlled using microwave radiation, which can be used to drive transitions between the two states of the qubit. the qubit states are represented by the presence or absence of Cooper pairs in the superconducting loop. Superconducting qubits based on Josephson junctions have several advantages over other qubit implementations, such as high coherence times and low decoherence rates. These qubits are also relatively easy to manufacture, which makes them attractive for large-scale quantum computing applications.

In charge qubits, the qubit states are defined by the number of excess Cooper pairs in a small superconducting island, which is connected to the rest of the circuit via a Josephson junction, as shown with Eq. (2). the qubit states are defined as the presence or absence of an electron in the island, which can be controlled by applying an external gate voltage.

$$Qubit = \alpha|0> + \beta|1> \qquad (2)$$

where α and β a complex number.

Flux qubits rely [7] on the difference in magnetic flux between two superconducting loops, which are connected by a Josephson junction. the qubit states are defined as the direction of current flow in the loops, which can be controlled by applying an external magnetic field. Transmon qubits are a type of charge qubit that has a large capacitance between the two sides of the junction, allowing for larger separations between energy levels and reducing the sensitivity to charge noise. Fluxonium qubits are a type of flux qubit that uses a small inductance in its design, making it less sensitive to certain types of noise and improving coherence times.

3.2 Superconductor Theory for Quantum Computing

Superconductivity is a phenomenon that occurs in certain materials at low temperatures where electrons pair up and flow through the material without resistance. In the context of quantum computing, superconductivity is used as the basis for creating superconducting qubits, which are the building blocks of quantum computers. Understanding the physics of superconductivity is critical to developing better and more stable qubit architectures.

Superconductivity is particle-hole symmetry, which describes the relationship between the behavior of particles and their corresponding holes, as shown with Eq. (3). A multi body system composed of numerous electrons can be described by a Hamiltonian, as shown with Eq. (4). In superconductors, electrons pair up to form Cooper pairs, which behave like bosons and follow different statistical rules than fermions. However, Cooper pairs can also be thought of as "missing" electrons from the valence band, which leaves a hole in the electron distribution. This hole can be treated as a particle that behaves like an electron in reverse, with a charge opposite that of an electron. This concept is known as particle-hole symmetry, and it is a fundamental principle in understanding the behavior of superconducting materials. Superconducting materials is topological superconductivity. Topological superconductors are a special class of superconducting materials that possess a gapless surface state that is robust against the presence of impurities and other defects. These states are protected by the topology of the material, which means that they are insensitive to local perturbations that would normally destroy other types of superconductivity. Topological superconductors have potential applications in quantum computing due to their stability and potential for housing Majorana fermions.

$$a_j(p,s) \Leftrightarrow a_j^{\dagger}(-p,-s) \qquad (3)$$

where, $a_j(p,s)$ is the operator that creates a particle with four-momentum p and s, while $a_j^{\dagger}(-p,-s)$ is the operator that destroys a particle with opposite four-momentum $-p$ and opposite spin $-s$. This formula describes the symmetry between particles and antiparticles, where a particle can be replaced by an opposite hole or a hole can be replaced by an opposite particle.

$$H = \sum_{i=1}^{N} \frac{p_i^2}{2m_i} + \sum_{i<j} v(r_{ij}) + \sum_{i<j<k} u(r_{ij}, r_{ik}, r_{jk}) + \cdots \qquad (4)$$

where p_i^2 is the momentum of particle i, m_i is its mass, $v(r_{ij})$ and $u(r_{ij}, r_{ik}, r_{jk})$ are the potential energies of the interactions between two particles and three particles, respectively.
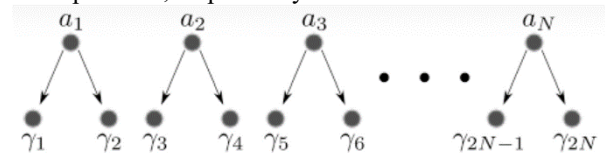

Figure 3 Majorana

Majorana fermions are an exotic type of particle that are predicted to exist in certain topologically protected phases of matter. These fermions possess unusual properties, such as the ability to be their own antiparticle, that make them potentially useful for quantum computing and information. In superconducting materials, Majorana fermions can be created at the interface between a superconductor and a topological insulator, or in certain types of topological superconductors. These are known as Majorana zero modes or Maroyana bound states. the emergence of Majorana fermions in topological superconductors has generated significant interest in recent years, as these particles have potential applications in topological quantum computing. Majorana zero modes are robust against many types of noise and perturbations, making them an attractive candidate as a basis for topological qubits. However, there are still significant challenges in creating and controlling Majorana fermions in

superconductors, and ongoing research is focused on improving the stability and scalability of Majorana-based qubits.

3.3 Neural Networks Based on Quantum Computing

With the potential to revolutionize the field of quantum computing, machine learning is a powerful tool that can accelerate the development of new superconducting materials. Using machine learning algorithms, researchers can identify potential superconducting compounds among thousands of candidate elements and compositions. Here, we discuss how machine learning is used to predict superconducting materials and its potential implications in the field of quantum computing. The use of machine learning algorithms to predict superconducting materials begins by generating a large database of training materials from experimental observations of existing superconductors. Machine learning algorithms then scan the database to discover patterns or trends that indicate the presence of superconductivity. the extracted features or variables characterize the physical properties of the materials, such as the bandgap, electron density, critical temperature, and crystal structure. These features can then be used to train the machine learning model to predict new superconductors. There are several types of machine learning models used for predicting superconducting materials, including artificial neural networks, decision trees, and support vector machines. Each model has its advantages and disadvantages, and the choice of algorithm depends on the training data and the problem's complexity.

The recent work of researchers at Lawrence Livermore National Laboratory is to use machine learning to predict superconducting materials. They employed machine learning models to predict the superconducting properties of hypothetical materials, achieving an accuracy rate of over 90%. This result demonstrates the effectiveness of machine learning algorithms for material discovery and opens the possibility of designing new superconductors with targeted properties. Deep learning has emerged as an effective tool for characterizing superconducting materials in quantum computing. By training deep neural networks on large datasets of material properties and molecular structures, researchers can quickly identify key features that affect materials' superconducting behavior. Here, we discuss how deep learning can be used to characterize superconducting materials in quantum computing and its implications in the field of materials science.

The first step in using deep learning for materials characterization is to develop a materials database containing information on chemical composition, electronic properties, and any known superconducting behavior. Next, deep neural networks are built to analyze high-dimensional data and identify correlations and patterns in the data. the neural network is trained on a set of inputs representing the molecular structure and properties of the material, and an output indicating whether the material exhibits superconductivity or non-superconductivity. the key advantage of deep learning in material characterization is its ability to discover complex relationships between features and superconducting behavior. For example, researchers can use deep neural networks to identify the role of specific chemical groups or lattice structures in determining the material's superconducting properties. By analyzing a large dataset of materials, deep learning algorithms can even reveal previously undiscovered relationships or provide insight into mechanisms underlying superconductivity. Researchers at MIT have developed a deep neural network to predict the critical temperature of high-temperature superconductors. the network uses spectroscopic techniques to analyze the electronic structure of materials, ultimately predicting the critical temperature based on that data.

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A Review of the Domestic Research on Marcuse's Critical Thought of Technological Rationality

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Abstract: Marcuse is a famous American philosopher, aesthetician and social theorist. He has made great contributions to the development of human civilization. In his life, he has compiled literary works such as "The Materialization of the Proletariat", "the subject of Dialectics", "Aesthetic Dimension" and "Reason and Revolution". This paper makes a comprehensive and in-depth study of Marcuse's critical thought of technological rationality, with a view to sharing and communicating with people in related fields.
Keywords: Marcuse; Criticism of technological rationality; Technological alienation

1. INTRODUCTION

Technology is a tool, can provide help for social production and life, now no matter in which industry, which field, technology has become an indispensable condition and element. Technical rationality was put forward by Habermas, a famous western scholar, who believed that technical rules were a kind of activity system of purpose rationality. Marcuse made a further study, and finally formed the modern theory of technical rationality. With the continuous development of science and technology, the research on the theory of technological rationality helps people more clearly understand the importance of technological innovation and development, and makes clear the important impact of technology on human society. This article mainly analyzes and expounds the content and significance of the critical thought of technological rationality from a domestic perspective.

2. THE MAIN CONTENT AND PRACTICAL SIGNIFICANCE OF MARCUSE'S CRITICAL THOUGHT OF TECHNOLOGICAL RATIONALITY

2.1 The duality of science and technology and technical rationality

Duality is the fundamental nature of technological development and also the starting point of Marcuse's technological rationality. In his opinion, in the course of social development, both science and technology and the technological rationality based on science and technology development show obvious characteristics of duality: First, science and technology is the primary productive force in the society, which can change the social production mode, change the social production relations, improve the quality and efficiency of social production, and achieve the goal of promoting the growth of capital and wealth [1]. Secondly, the development of science and technology can give birth to a new form of governance and lead to the emergence of new technical rules, which is the technical rationality mentioned in this paper. For example, a science and technology in the field of social production can form a market monopoly or industrial monopoly. At this time, the entrepreneurs and capitalists who own the technology have the ability to rule the market and the industry. It can be seen that science and technology in the modern social background is not neutral, but has become a kind of alienation of control and rule.

2.2 A new form of governance: techno rational governance

The duality of the existence of technological rationality can clearly express the influence of scientific and technological development on social form and structure, etc. In general, the development of science and technology has changed the material living conditions to some extent and fundamentally changed the original production operation mechanism and structural system of traditional society [2]. From Marcuse's perspective, technical rationality (technical rules) can evolve into a completely new form of governance when it extends to individual life and society in the name of freedom and abundance. In this case, technical rationality can integrate all opposing problems and thus achieve "assimilation of all alternatives". To some extent, technological rational rule has successfully transformed the power of human liberation into the shackles of human liberation.

2.3 A one-way person

Science and technology have the power to change the world. In this relatively rich consumer world, technological rationality under the background of science and technology development has already formed a brand new ruling mechanism and form, and derived a new way of living in alienation and materialization. the mention of alienated labor can be associated with the "self-torture" and "self-sacrifice" described by Marx, but from the perspective of Marcuse's thinking, the materialized living mode formed by technical rationality is more like the voluntary and hedonistic materialized activities of human beings. In other words, when workers are in superior and comfortable conditions, even if they need to devote energy, physical strength and time to work, they will not feel that they are in a depressed and not free situation. Instead, they enjoy the working state very much and feel full satisfaction and happiness in it.

Therefore, it can be believed that the new form of governance under technological rationality can make laborers become "one-dimensional people" without critical thinking, which will lead to the loss of the internal power of self-transcendence in the society.

2.4 Practical significance

The technical rationality thought put forward by Marcuse has played a very important role in promoting the development of modern productive forces and structural reform. Science and technology are the primary productive forces of society; they are a powerful tool for a country to change its backwardness and become rich and strong; they are the track for the operation and development of modern enterprises; and they are an effective way to improve people's living standards and quality. In recent years, China has invested huge strength and resources in the innovation and development of science and technology, and has obtained remarkable achievements. Under this kind of development situation, China will certainly encounter the same problems and challenges as Western countries. In order to better meet the challenges and overcome the difficulties, the study of Marcuse's technical rationality from the perspective of critical thinking can draw on the experience of Western countries in the development. It is the realistic significance of the domestic research on Marcuse's critical thought of technological rationality to find and explore the solution in line with China's actual situation.

3. THE EXPLATIVE STUDY OF MARCUSE'S CRITICAL THOUGHT OF TECHNOLOGICAL RATIONALITY

3.1 The explanation of the view of technological rational governance

There are several different understandings on the view that technological rationality can form new forms of governance. First, in the field of social governance, technology can be used as an important condition for the governance of capitalist society. Especially in some western developed countries, strong capital forces can have a huge impact on the current society. Secondly, technical rationality and instrumental rationality have the unity, which indicates that both are the backbone of social governance, and both are indispensable.

3.2 The elaboration of the generating process of technological alienation

To some extent, technological rationality makes people lose the "one-way person" that transcends dimensions. In this context, the generation of technological alienation gradually emerges, which is mainly manifested in the following two aspects: First, while creating the value of social development, science and technology has derived a new form of governance, that is, manipulating human needs by creating "false needs".

Secondly, the generation of technological alienation is the integration of technology. In this case, politics, economy, culture and ideology will show the characteristics of integration and lead to a one-dimensional society.

4. THE REALISTIC SIGNIFICANCE OF MARCUSE'S CRITICAL THOUGHT OF TECHNICAL RATIONALITY

4.1 Foster a reasonable view of science and technology

Our country has the characteristic of late start and fast development in modern science and technology development, and in recent years, it has also realized the level of science and technology to some western countries. On the basis of the idea proposed by the technical rationality, our country needs to treat with critical thinking rationality and persist in taking the road of science and technology rejuvenation which conforms to our basic national conditions, this requires to establish the reasonable concept of science and technology development. First of all, the idea that science and technology is the primary productive force of society should be vigorously advocated. Secondly, adhere to the humanistic spirit oriented thinking consciousness, and strive to balance the relationship between value rationality and technical rationality, so as to promote modern science and technology to have intrinsic humanistic tendency.

4.2 New thoughts on the liberation of man and nature

Marcuse's technological rationality pointed out that science and technology could form a new rule, and the liberation of human and nature should rely on science and technology. However, the abuse and alienation of science and technology should be prevented, and the damage to the existing social system should be avoided. At the same time, science and technology should be used to protect nature and rebuild the social system of living environment. Under this ideology, a path centered on the liberation of man and nature has been formed, providing strong support for the improvement of China's ecological environment.

5. CONCLUSION

To sum up, the study of Marcuse's critical thought of technical rationality provides a good help for exploring the path of China's social development, and can produce many valuable influences for China's social development.

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Study on Axial Thermal Stress Calculation Model of the Middle Column of Steel Frame with Thermo-mechanical Coupling Effects

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Abstract: Thermal stress is one of the most important effects of steel structure in fire, and its accurate calculation and evaluation is of great significance. On the basis of previous research results, this paper breaks through the thermal stress analysis of a single component, fully considers the impact of uneven expansion between components on the fire resistance evaluation target steel column when the structure is under fire. In this paper, the mechanism and essential factors of thermal stress are analyzed, the calculation model and calculation process of axial thermal stress of steel column under the actual thermal-mechanical coupling are established and whose advantages are analyzed. Those provide a new method and idea for the investigation of thermal stress in the evaluation of fire resistance stability of steel structures.
Keywords: Steel frame; Steel column; Thermo-mechanical coupling; Thermal stress

1. INTRODUCTION

The investigation or calculation of thermal stress is a complex process that requires consideration of the overall structure and its fire (heat) effects. Many scholars use nonlinear analysis methods to investigate the fire resistance response of steel structures [1-6], but most of them use material models obtained from steady state tests in analysis and calculation, which do not match the actual situation of temperature, stress, and strain constantly changing with time during the thermo-mechanical coupling process of steel structure components under fire [7]. Therefore, it is determined that there must be a certain gap between those calculated results and the actual situation.

A numerical calculation method for thermal stress based on real stress-temperature path has been established by the author of this paper in reference [8]. However, this calculation method is only applicable to the corresponding conditions. Under these conditions, only the target steel column is subjected to fire, and other structural components connected to it always maintain room temperature unchanged. This means that the temperature difference of the target column only considers the difference between its own temperature and room temperature, and fails to consider the temperature difference caused by uneven temperature rise with other components. This is not in line with the actual situation of the steel structure under fire, so further research based on the actual thermo-mechanical coupling process under fire is needed. In this paper,

based on previous research, a thermo-mechanical coupling model for calculating the axial thermal stress of steel frame columns has been established. This model fully considers the uneven temperature rise generated by the overall structure under fire, and is expected to provide a reliable analysis method for the fire resistance evaluation of steel structures.

2. ANALYSIS OF THE MECHANISM AND ELEMENTS OF THERMAL STRESS GENERATION

Taking the structure shown in Figure 1 as an example, when it is subjected to fire, different temperature rises may occur due to the different fire areas, fire protection, and other fire conditions of the target column and its adjacent components. This different temperature rise will cause varying degrees of expansion and deformation of each component. And because the expansion of each component is different and there are mutual constraints between the components, additional thermal internal forces will be generated between the target column and other components, and additional thermal stresses will be generated on its cross-section.
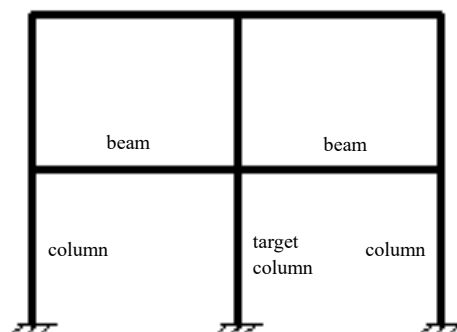

Figure 1. Schematic diagram of steel structure building

Taking the thermal stress of the target column as the research objective, it is necessary to investigate the column's expansion deformation under the action of fire; and it is also necessary to investigate the constraint effect of the other structural system on the target steel column at different times. Due to the generation of thermal internal forces and the continuous development of indoor fire temperature, the target steel column is subjected to continuous coupling effects of both fire and these forces, therefore, it is necessary to study the material model under this coupling effect. In addition, according to experimental research [9], the initial stress level of the target column is also an important factor in

calculating thermal stress. Based on the analysis of the above elements, combined with the thermal stress calculation method established in reference [8] for a single component under fire, a thermal stress calculation model for the thermo-mechanical coupling effect in the target steel column fire can be established under the condition of examining the overall fire action of the steel structure.

3. AXIAL THERMAL STRESS CALCULATION MODEL

Based on the mechanism and factor analysis of thermal stress generation mentioned in the previous section, for the convenience of model establishment, the following assumptions are made:

3.1 The section distortion of the component under temperature and load is not considered.

3.2 The initial defects and residual stress of the component are not considered.

3.3 Only the target steel column and its connected components are considered under fire.

3.4 The temperature of steel members has been calculated by other models.

Based on the piecewise superposition method, considering the overall fire effect of the structure, the following axial thermal stress calculation model of steel columns is established.

3.4.1 Determine the steel frame structure and the fire condition, analyze and calculate the section temperature of the component on the fire.

3.4.2 Divide the fire process of steel frame structures into n time periods using time increment Δt, and the average temperature of the target steel column in each time period is recorded as T_0, T_1, T_2, …, T_n.

3.4.3 Calculate the initial stress level k_0 of the target steel column using the computer method of structural analysis based on the ambient temperature load of the structure. Calculate the initial strain $-\varepsilon_0$ of the target steel column based on the elastic modulus of the steel (At room temperature, take the elastic modulus as 2.06×10^5 N/mm², and Figure 2 shows the curve of the elastic modulus reduction coefficient with temperature change) at the corresponding temperature. From the above, the initial state $t_0(-\varepsilon_0, k_0, T_0)$ of the target steel column can be obtained.
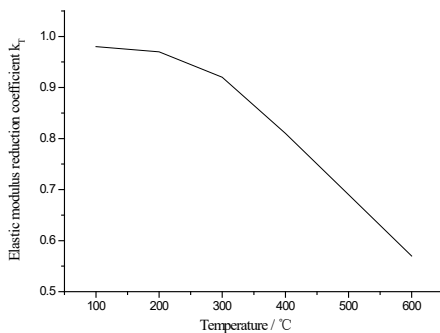
Figure 2. Variation curve of elastic modulus reduction coefficient

3.4.4 Enter the first time period and analyze the target steel column using the thermo-mechanical coupling method obtained by transient tests. According to the measured coefficient of linear expansion of steel at different temperatures given in Fig. 3(This paper takes Q345 steel as an example. the expansion coefficient of the corresponding type of steel should be selected in practical calculation.), interpolation calculate the strain $\Delta\varepsilon_T$ of the target steel column as the temperature increases from T_0 to T_1.
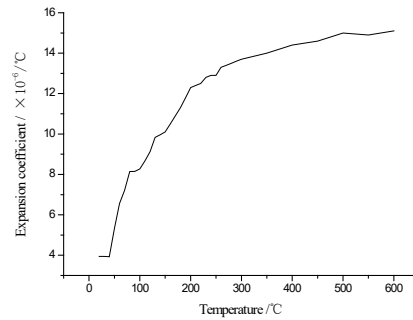
Figure 3. Expansion coefficient of steel at different temperatures

According to the calculated value of steel load strain obtained by transient test (Figure 4)[10], Calculate the load strain of the target steel column under the action of the initial stress level k_0 by interpolation method when its temperature increases from T_0 to T_1.

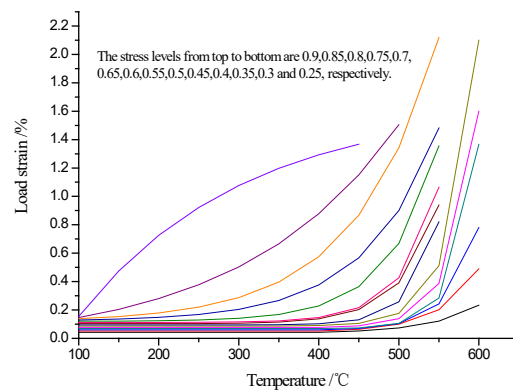**Figure 4. Load strain caused by temperature rise under different stress levels**

The sum of expansion strain $\Delta\varepsilon_T$ and load strain $-\varepsilon_p$, $\Delta\varepsilon_T - \varepsilon_p$, is the total strain of the target steel column during the first time period, when the stress level is constant and the temperature increases from T_0 to T_1.

3.4.5 Calculate using the model of thermo-mechanical coupling obtained by steady state tests.

1)Replace the target steel column with an upward unit force, as shown in Figure 5. Based on the calculation method of structural mechanics, calculate the

displacement $\Delta\varepsilon(T_1)$ at the top of the target steel column and the axial restraint stiffness $K(T) = 1 / \Delta\varepsilon(T_1)$ of the target steel column under the unit force of the structural system. It should be noted that when using structural mechanics to calculate displacement, mechanical parameters such as elastic modulus of structural members at different times and temperatures should be considered.
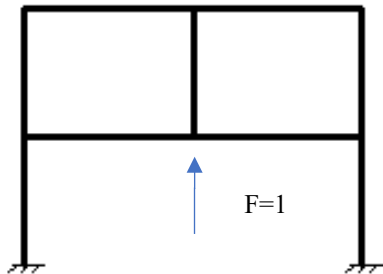

Figure 5. Schematic diagram of replacing target steel columns with unit force

2)After passing through the steady state tests stress-temperature path, the strain of the target steel column is $\Delta\varepsilon_T - \varepsilon_p$. If the load strain of the target steel column caused by thermal internal force is not considered at this time, the thermal internal force of the target steel column can be calculated by Equation(1), where l is the length of the target steel column.

$$N_T = (\Delta\varepsilon_T - \varepsilon_p) \cdot K(T) \cdot l \qquad (1)$$

In real cases, the target steel column cannot produce a strain value of $\Delta\varepsilon_T - \varepsilon_p$, because the system will generate a thermal internal force on the target steel column. This thermal internal force will cause compressive strain on the steel column, thereby reducing the original strain, and at the same time, the thermal internal force will also decrease. Therefore, in order to achieve deformation coordination and consistency, divide N_T into 100000 parts. According to the $\varepsilon - k - T$ material model obtained by steady state tests shown in Figure. 6[11], the strain difference $\Delta\varepsilon_{\Delta k}$ of the steel column at temperature T_1 can be calculated using the interpolation method, when the stress level increases from k_0 to $\Delta k = N_T \cdot i / 100000 / A / f_y$ (where A is the cross-sectional area of steel column and b is the strength of steel at room temperature). At this point, the corresponding strain of the target steel column is corrected to $\Delta\varepsilon_T - \varepsilon_p - \Delta\varepsilon_{\Delta k}$. And the temperature internal force is corrected to $N'_T = (\Delta\varepsilon_T - \varepsilon_p - \Delta\varepsilon_{\Delta k}) \cdot K(T) \cdot l$.
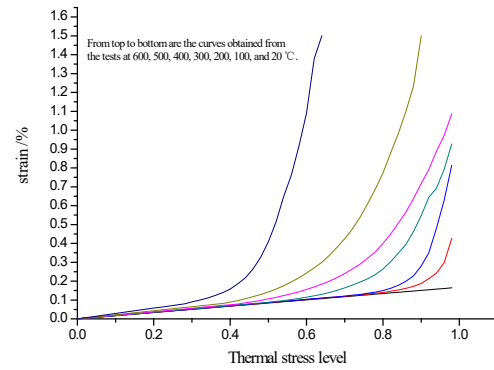

Figure. 6 $\varepsilon - k - T$ relationship curve obtained by steady state tests

Write a program to calculate Δk, where *i* ranges from 1 to 100000. And there will inevitably be an Δk, which equals to $N'_T / A / f_Y$, cause the steel column to achieve deformation coordination. Assuming *i=m* at this point, the temperature of the target steel column will be T_1, its strain will be $\varepsilon_1 = \Delta\varepsilon_T - \varepsilon_p - \Delta\varepsilon_{\Delta k} - \varepsilon_0$, and its stress level will be $k_1 = k_0 + \Delta k = k_0 + N_T \cdot m / 100000 / A / f_y$.

This Δk is the axial thermal stress level of the target steel column during this period.

At this point, the calculation of the axial thermal stress level of the target steel column in the first time period is completed.

3.4.6 Taking the steel column state calculated in (5) as the initial state, the final state $t_n(\varepsilon_n, k_n, T_n)$ of the target steel column under fire can be obtained by repeating (4) and (5) *n* times. the difference between the stress level k_n of the steel column and the initial stress level k_0 is the final axial thermal stress level.

4. CONCLUSION

In this paper, based on the overall structure and related comprehensive factors, the axial thermal stress calculation model of steel frame middle column under thermal-mechanical coupling is established. the outstanding advantage of this model is to discretize the fire process of the component, and to conjunctive use the two high-temperature mechanical material model obtained by transient tests and steady state tests, which can simulate the thermal-mechanical path of the component when the whole structure is subjected to fire. This model can be infinitely close to the actual situation in theory and provides a new method and idea for the investigation of thermal stress in the evaluation of fire resistance stability of steel structures. Further development and research can be done based on this model.

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Study On the Integration Of "Construction Technology" Course into Qilu Culture Road Strength

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Abstract: This paper explores the significance of cultural education concept in the development of specialized courses from three aspects: the significance of studying Qilu culture education, the integration of Qilu culture education elements, and exploring the integration of Qilu culture into specialized courses.
Keywords: Qilu culture; Road strength; Specialized courses; Educate people

1. INTRODUCTION

As one of the oldest cultures and an important part of traditional culture, Qilu culture has an irreplaceable influence on people's spiritual and material life [1]. This paper explores the path of integrating specialized courses into Qilu culture under the concept of cultural education from three aspects.

2. THE SIGNIFICANCE OF QILU CULTURE INTO THE TEACHING OF PROFESSIONAL COURSES

2.1 It is helpful to cultivate college students' healthy personality

Multiculturalism is spreading rapidly under the background of the information age, and it is penetrating into the group of college students with active thoughts in various ways. Some college students are mentally immature and easy to be affected by bad culture, thus forming personality deviation, and even causing personality defects. No matter the moral code or the requirements of personality cultivation, classic sentences can always be found in the extensive and profound Qilu culture. Excellent Qilu cultural resources are like a key to open the mind, and will certainly become an important means and weapon of cultural purification in the process of integration and infiltration. In the tide of confusing and mixed information, it helps college students to think about mainstream information and positive energy conducive to their own personality cultivation [2].

2.2 It is helpful to cultivate college students' cultural confidence

Qilu culture, with its special status as the cultural holy land of the Chinese nation and its unique regional image as a "land of rites", has played an incomparable cultural influence in promoting the development of Chinese civilization, enhancing national cohesion and maintaining national unity [3]. Qilu culture originated in Shandong Province, containing the humanism spirit with "benevolence" and "rites" as the core, the belief culture of peace and security of the country and the people, and the life attitude of "establishing others when one wants to establish oneself, achieving oneself and becoming a master". It is the typical representative of Chinese traditional culture, the spiritual pillar of China for five thousand years, and has been recognized by the ideological and cultural recognition of the country and even the world.

Such an excellent culture is integrated into the teaching of professional courses through a "moistening and silent" way, so that college students can bathe in the baptism of culture, feel the charm of culture, and burst out a strong cultural confidence in their hearts. Through the teaching mode before, during and after class, the whole process is integrated into Qilu culture, making it "externalized in form and internalized in mind" among college students, so as to achieve psychological resonance. In the face of multiculturalism, college students can take the initiative to accept excellent culture and improve their own cultural accomplishment.

2.3 It is helpful to cultivate the core socialist values of college students

In the course of China's historical evolution, there have been many patriotic stories, and revolutionary heroes emerge one after another. They laid the patriotic tradition of the Chinese nation with their blood and lives. Qilu culture, as the source of Chinese traditional culture, is full of warm and sincere patriotic passion and plays a very important role in shaping the patriotic character of the Chinese nation [4].

3. INTEGRATE QILU CULTURAL IDEOLOGICAL AND POLITICAL ELEMENTS

Qilu culture is extensive and profound. Teachers of specialized courses need to study and integrate the culture, do a good job in ideological and political elements library, and lay a good foundation for choosing the appropriate way to integrate. From here Mount Tai rose, Confucius was born and the Yellow River enters the sea. Qilu culture includes Taishan culture, Confucian culture, Yellow River culture, Qi culture, spring culture, ocean culture, red culture, canal culture and so on. There are countless cultural allusions, cultural celebrities, cultural heritages and cultural monuments in Qilu culture, which cover a wide range and have far-reaching significance. All of them are some ideological and political elements worth digging deeply. It is a very important task of this project to collect ideological and political elements that can be integrated into the course of "Building Construction Technology".

4. EXPLORE QILU CULTURE INTO THE COURSE STRENGTH

Professor Wang Qing of Tsinghua University said that the three levels of ideological and political construction of the curriculum are mixed, integrated and combined. Through the research of this subject, the course of "Building Construction Technology" and Qilu culture can reach the level of combined.

4.1 The integration of Qilu culture into the curriculum

Lu Jin insists on starting from the top-level design

To pay attention to the top-level design of curriculum ideological and political education, it is necessary to improve the understanding of all teachers on curriculum ideological and political education from the cognitive level, improve the teaching and research ability of teachers to integrate ideological and political education into various courses, clarify the educational objectives of each course, optimize the teaching structure, and improve the evaluation system of teaching quality []. To integrate Qilu culture into specialized courses, teachers should be confident in culture and recognize Confucian culture from the ideological level. Teachers learn and grind Qilu culture systematically, and "internalize Qilu culture in mind and externalize it in practice". "Being a teacher and having high morality as a model", teachers infect students with noble personality and infiltrate them with rich moral and cultural cultivation, thus inheriting Qilu culture imperceptibly.

Secondly, the overall layout of Qilu culture integration major should be constructed from the personnel training program, curriculum standards should be modified according to the layout, teaching plans should be formulated under the guidance of the standards, and the overall design of Qilu culture integration course should be done well.

4.2 Explore the way to integrate Qilu culture into the curriculum from the convergence point

The integration of ideological and political elements into the curriculum is not a simple adhesion and accumulation, but to find the meeting point and connecting line between ideological and political elements and teaching content, organically integrate them into the teaching process, and crack the phenomenon of "two pieces of skin". Ideological and political education can enlighten and infect students like salt into water. Based on the blended teaching model of curriculum, the whole process of before, during and after class is integrated into Qilu culture, combining with the specific content of the class to find a good meeting point, explore the way of integration.

Before class, we will set up a short story column of Qilu culture on the platform, such as Jiang Taigong fishing, Shikamadang, Taishan Grandma, three visits to the cottage, the Red Wife Story, Thirty stories of Confucius and so on. Qilu cultural stories are closely connected with the teaching content. Watching them before class, on the one hand, enrichis students' moral sentiments, on the other hand, lays a foundation for students to understand the teaching content in class, and plays an entertaining role.

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For example, the structure of red buildings in Qilu red culture is mainly masonry structure, which can be combined with red buildings when the course is carried out. the construction of red buildings is taken as a case to explain the knowledge of masonry, and the stories of red culture are integrated into it. It can also be integrated into the cultural buildings of Qi, such as the Great Wall of Qi. the explanation of its construction process enrichis the construction wisdom of the ancient people of Qi and stimulates the creative spirit of students. the ancient stone walls of Zhujiayu, the first ancient village in Qilu, are still very strong after hundreds of years. Even the craftsmen today cannot comprehend the wisdom of the ancients in construction. the learning is endless and students are encouraged to have a lifelong learning attitude and be willing to study and have the spirit of technological innovation.

After class, students are encouraged to actively participate in extracurricular practical activities. For example, students are encouraged to use their spare time to feel the true meaning of architecture in Zhu Jiayu, and to upload activity photos or videos to the teaching platform. the results of this project will be considered as part of students' value-added evaluation. Under the guidance of the platform tasks, students go out of the campus and integrate into the society. On the one hand, they broaden their horizon and accumulate cultural accomplishment, and on the other hand, they exercise their interpersonal communication and language expression skills.

In-depth exploration of professional courses into Qilu culture, let this ancient excellent cultural moisten silently into professional courses, can improve the effect of professional courses, is a promotion of the development of education.

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Discussion On the Feasibility of International Chinese Intercultural Interactive Teaching Mode In Higher Vocational Colleges

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Abstract: Higher vocational education has played a very important role in personnel training. With the change of the demand for talents in the development of modern society, higher vocational education has carried out reform and innovation on the original professional teaching model, including international Chinese courses. Based on the fact that language is a communicative and cultural communication tool, it is necessary to carry out interactive and practical professional teaching on the basis of cultural penetration and integration in international Chinese teaching in higher vocational colleges, so as to cultivate international Chinese professional talents who meet the needs of social development. This paper makes a detailed analysis and exploration of the international Chinese intercultural interactive teaching mode in higher vocational colleges, with a view to sharing and communicating with people in related industries.
Keywords: Higher vocational education; International Chinese; Cross-cultural; Interactive teaching

1. INTRODUCTION

In recent years, China's international status and comprehensive strength have been continuously improving. More and more foreigners come to study, live and develop in China, thus setting off a craze for learning Chinese all over the world. In order to better promote Chinese language and improve the quality and effectiveness of Chinese teaching, the International Chinese Major in higher Vocational colleges has launched a cross-cultural and interactive teaching model, which mainly takes Chinese traditional culture as a Chinese teaching platform to help learners to master Chinese knowledge and skills more deeply and systematically. At the same time, in order to improve the learning level of learners, interactive teaching mode is also adopted, that is, to guide students into the real life to find opportunities to use Chinese, so that learners can master the practical ability of Chinese in the interaction.

2. RESEARCH BACKGROUND

2.1 The social situation

The society has the ability to promote the development of education. In the field of higher vocational education, the society has played a scientific guiding role in personnel training, which can guarantee the scientific nature and adaptability of personnel training. the international Chinese intercultural interactive teaching mode in higher vocational colleges is affected by the current social situation. For example, with the

continuous improvement of China's international influence and the gradual increase of its power of discourse in the world, a boom in learning Chinese has been formed, and international Chinese teaching in higher vocational schools has become one of the main paths for foreigners to learn Chinese [1]. In addition, with the acceleration of China's economic development, China has become the world's second largest economy, attracting a large number of foreigners to seek development in China, so learning Chinese in the international community is no longer simply an interest orientation, but more is a prerequisite for employment and competition. Therefore, it can be seen that the implementation of the reform of intercultural and interactive teaching mode in the study of international Chinese in higher vocational colleges is not only a manifestation of social development, but also a way to meet the needs of the development of modern society.

2.2 Social demand

Each country has unique cultural deposits, and our country is the only country in the world without a cultural break, so our country is leading in terms of cultural depth and breadth. A large part of the reason for studying the international Chinese intercultural interactive teaching mode in higher vocational colleges is that language is the carrier of cultural transmission, through which we can better understand the culture of other countries, and through understanding national culture, we can strengthen our understanding of language [2]. Based on this, if people in other countries want to learn Chinese, they must cross over from their own culture to Chinese culture. Only in this way can they master the essence and connotation of Chinese communication on the basis of cultural understanding and integration, and truly learn Chinese language in essence. Of course, the implementation of international Chinese teaching with culture as the starting point is conducive to spreading the profound Chinese culture to the whole world. Therefore, the study of international Chinese cross-cultural interactive teaching mode in higher vocational colleges is very in line with the development needs of modern society, and can meet the requirements of international Chinese talent training in higher vocational colleges.

2.3 Current situation of regional teaching

International Chinese teaching is very similar to modern English teaching. Most of them teach basic knowledge first, such as phonetics, grammar, sentence patterns, paragraphs and overall reading comprehension. It is the

most commonly used language teaching system, especially in college education. Although the above international Chinese teaching system can play an effective role, it does not represent that it is suitable for all levels of international Chinese education. As far as international Chinese education in higher vocational colleges is concerned, the teaching system formed by colleges cannot play its due role. the main reason is that the goal of international Chinese teaching in higher vocational colleges is to cultivate professional talents who take Chinese as the prerequisite for their career development. They are not research-oriented talents aiming at the in-depth development of Chinese, so the international Chinese major in higher vocational colleges needs to innovate the teaching mode in line with its own educational situation. Therefore, it is necessary and important to study the interactive teaching mode of international Chinese in higher vocational colleges.

3. PROBLEMS IN INTERNATIONAL CHINESE TEACHING IN HIGHER VOCATIONAL COLLEGES

At the present stage, the problems of international Chinese teaching in higher vocational colleges are mainly reflected in the following aspects: first, the teaching objective is unclear. the goal of international Chinese teaching set by teachers is very simple. They only pay attention to students' mastery of Chinese knowledge and skills, but ignore the development of students' language literacy and even ignore their future career development. Under such teaching goal, international Chinese teaching in higher vocational colleges will be difficult to build a cross-cultural interactive teaching model. Second, it is difficult to achieve the purpose of cross-cultural and interactive teaching. For example, teachers are keen to adopt the theoretical infusing teaching method, only attach importance to the knowledge points in the textbooks in international Chinese teaching, and often require students to learn Chinese by rote. In this case, it is difficult for students to effectively integrate Chinese with culture, and it is impossible to form practical training for communication and interaction in learning, which ultimately results in students' Chinese learning only on the surface.

4. THE INNOVATION OF INTERNATIONAL CHINESE CROSS-CULTURAL INTERACTIVE TEACHING MODE IN HIGHER VOCATIONAL COLLEGES

4.1 Cross-cultural interactive international Chinese teaching mode needs to integrate professional characteristics into language teaching, which can provide pertinence and professionalism of Chinese teaching to a certain extent, and help students obtain favorable conditions in their career development. For example, the integration of tourism profession and international Chinese teaching requires students to introduce scenic spot features in Chinese with the perspective of Chinese culture. In this process, middle school students play the roles of "tour guide" and "tourist" respectively, which can not only realize the cross-cultural international Chinese teaching, but also realize the communication and interaction between students, so as to improve the quality and effectiveness of international Chinese teaching.

4.2 Integrate life elements into international Chinese teaching to provide students with abundant opportunities to practice Chinese, so as to build a cross-cultural interactive model of international Chinese teaching. For example, teachers organize students to participate in social practice activities, requiring students to understand the language knowledge of Chinese culture in practice. In this process, students can communicate and interact with a variety of individuals, so as to obtain different cultural understanding and language knowledge.

4.3 To build an international Chinese teaching system that integrates Chinese traditional culture with international culture, so as to ensure that students can master Chinese in a deeper, comprehensive and systematic way in cross-cultural interactive learning. For example, since ancient times, China has been advocating politeness to others, so China is known as a country of etiquette, and this cultural background has formed the introverted Chinese language. Teachers can guide students to compare Chinese culture with international culture (mainly the comparison of language usage situations), so as to help students understand Chinese knowledge with the help of culture and master the ability of practical application of Chinese.

5. CONCLUSION

To sum up, the application of intercultural interactive teaching model in international Chinese major in higher vocational colleges is not only conducive to improving the comprehensive quality and efficiency of international Chinese teaching, but also conducive to optimizing the efficiency of international Chinese talent training in higher vocational colleges. Therefore, it is of great significance and value to study this kind of teaching model. the above three dimensions are the integration of Chinese culture and international culture, the integration of life elements into international Chinese teaching and the integration of professional characteristics into international Chinese teaching, and the implementation strategies of intercultural interactive teaching mode are put forward.

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The Application and Improvement of Human Resource Development in Human Resource Management of Public Institutions

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Abstract: Public institutions have certain particularity in nature, with the development of the Times, public institutions in the future development and construction should introduce the concept of human resources management, improve the attention to human resources, attention degree, improve the human resources management level of public institutions, and gradually form a perfect human resources management system. At the same time, the application of human resource development can provide impetus for the rapid development of public institutions and promote their sustainable development. Based on this, this paper analyzes the application of human resource development in human resource management of public institutions.
Keywords: Public institution; Human resource development; Human resource management; Application; Improve

1. ANALYSIS OF THE IMPORTANCE OF HUMAN RESOURCES DEVELOPMENT IN THE HUMAN RESOURCES MANAGEMENT OF PUBLIC INSTITUTIONS

1.1 Promote the continuous improvement of the competitiveness of public institutions

Through the effective application of human resources development, it greatly improves the problems in the human resources management of public institutions, and stimulates the development potential and motivation of public institutions, so as to enhance the talent competitiveness of public institutions, avoid brain drain, and make more contributions to the units, to the society and to the country. In the rapid development of society today, because of the higher requirements for talents and intensified the competitiveness of the market talent, want to improve their professional level and comprehensive quality, have to use the form of "internal volume" to improve themselves, in order not to let institutions eliminate their own. At this time, institutions must carry out human resource management work, human resource development into it, only in this way, in order to enable the personnel of all departments to obtain resource advantages, achieve competitive development, and stand firm in the market.

1.2 Promoting the fundamental development of the functions and roles of public institutions

Nowadays, the human resources management of public institutions has changed its direction, and human resources development has been integrated into it to promote the work, so as to give full play to the functions and roles of public institutions and move forward towards the direction of management goals. As we all know, public institutions are places of talent gathering, with a large number of professionals and diversified human resources. Their functions are closely related to many fields and can achieve mutual promotion and common development. In the context of the current development of knowledge economy, public institutions want to strengthen their own internal executive power, must first start from human resources management, strengthen human resources development, let the staff accept higher quality skills, improve their professional level, first let themselves become an excellent talent, then can play their own functions. Help public institutions to better manage and allocate human resources, so as to promote the development of public institutions in a better direction [1].

1.3 Continuously improve the management level of human resources in public institutions

Today, with the rapid development of social economy, public institutions play a vital role, providing a large number of talent momentum, using reasonable means to motivate employees to work, so that they can establish a sense of mission, responsibility and lifelong learning concept, in the work to give full play to their own strength. This reflects the importance of human resource management in public institutions, which can fundamentally promote the development and mining of human resources and make the advantages of human resources more obvious. In this regard, public institutions must develop diversified human resources, retain more talents, so as not to be affected by the development of units.

2. SUGGESTIONS FOR IMPROVEMENT OF HUMAN RESOURCES DEVELOPMENT AND MANAGEMENT IN PUBLIC INSTITUTIONS

2.1 Formulate and improve human resources management and development systems

For the human resources management of public institutions, in order to optimize the human resources development and management system, public institutions have identified the problems in the traditional human resources organization framework, and carried out continuous innovation, on the original basis to enhance the scientific and systematic reform of human resources work, so that human resources management is more reasonable. Then, when carrying out human resource management, public institutions

must follow modern human resource management principles and concepts, formulate modern human resource development systems, build new human resource development approaches, introduce more talents, form high-quality talent teams, and improve work efficiency [2]. In addition, public institutions should accurately understand their own internal development needs, use scientific management system, give better management to talents, try to meet their needs and retain talents. At the same time, the resource development of middle and senior management personnel is also a work that institutions must pay attention to, but it should be noted that this work must not use the most common talent resource management mode, reform and innovation should be made on the basis of the existing personnel system, the improvement of personnel quality as the core of the work, to carry out management around the core. In order to improve their own level of talent development and development, not only to ensure that the original talent is not lost, but also to introduce more talents from the society, improve the talent system.

2.2 Optimize the training and education system of human resources

Under the background of the new situation, new requirements are put forward for public institutions, which must play the role of talent incentive, let employees establish the concept of lifelong learning, create a learning organization for them, and then provide employees with enough practice and learning opportunities according to the needs of career development, take the evaluation of professional title and certificate issuance as motivation, and constantly improve themselves. Encourage them to learn actively and realize all-round development. In addition, the human resource development department of public institutions should play a supporting role, conduct in-depth research, fully understand the training requirements and needs of talents, and then carry out training according to the actual work situation, adhere to the principle of pre-emptive, targeted planning of staff training, so that it is in line with the ability of employees, so that the professional ability of employees can be more perfect. Better service to public institutions.

2.3 Establish and improve the human resources performance management mechanism

First of all, public institutions need to establish a talent performance management system, because in the process of human resources development, performance evaluation is the most important work, so public institutions must focus on, develop a set of scientific and reasonable performance management plan, implement it

into the internal human resources management work, and give full play to its role [3]. Secondly, public institutions can take proper custody measures based on performance evaluation results, and formulate salary and bonus standards according to their own actual situation. In this way, the effectiveness and authenticity of performance management activities can be guaranteed. Strive to make all employees can obtain the salary proportional to their own work ability, so that they can always keep the motivation of work, the task arranged by the superior leader can be completed quickly, without affecting the smooth progress of the follow-up work.

3. CONCLUSION

With the acceleration of social development, it has promoted the continuous progress of Chinese institutions and made more contributions to society. Among them, any work carried out in public institutions can not be separated from the help of human resources, which highlights the importance of human resources management, its role in public institutions is becoming more and more obvious, has become the focus of attention in the field of public institutions, are using effective means to carry out human resources management work, so that the advantages of staff more prominent, And then promote the sustainable development of public institutions. At the same time, the institution should also apply the development of human resources in the work, timely discover the problems in the work, and formulate solutions, adopt scientific and reasonable measures, in order to improve the level of human resources management, improve the professional quality of the staff, create more economic and social benefits for the institution.

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Research on Debt Financing Efficiency of New Energy Vehicle Enterprises: An Empirical Analysis Based on Additive Non-cooperative Model

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Abstract: In 2020, the country put forward the carbon emission target of "3060", and then the country took a lot of measures to achieve this goal. In this process, the concepts of carbon peak and carbon neutrality were gradually known and practiced. the research object of this paper is 20 enterprises that produce new energy vehicles, and the research direction is the debt financing efficiency of these enterprises. the method is to use the additive non-cooperative model to measure and analyze the financing efficiency of listed companies of new energy vehicles from 2016 to 2021. the results show that the debt financing efficiency of new energy automobile enterprises in China is generally low at present, mainly due to the low efficiency in the debt financing stage, and the new energy automobile enterprises pay the principal and interest.
Keywords: Debt financing efficiency, additive non-cooperative model, fund raising efficiency, fund allocation efficiency

1. INTRODUCTION

While peak carbon dioxide emissions and the concept of carbon neutrality are deeply rooted in people's hearts, the contradiction between supply and demand of energy is also deepening.

The number of traditional cars is huge, and traditional cars need to burn fossil energy, which means that it takes a lot of fossil energy to meet the needs of people driving traditional cars. Not only that, but also the use of traditional cars has caused extremely serious environmental pollution while consuming a lot of non-renewable energy. the transportation industry is the second largest carbon dioxide emission industry after the power industry. the rapid growth of car ownership is promoting the growth of China's national economy, but it can't be exchanged for the rapid economic development at the expense of the environment. the exhaust emissions of cars have caused huge environmental pollution and the air quality is declining day by day. In order to reduce carbon dioxide emissions and alleviate the climate change caused by carbon emissions, all major developed countries in the world have clearly announced the timetable for banning the sale of fuel vehicles, and Germany, Britain, France, Norway and other countries have announced that they will completely ban the sale of fuel vehicles around 2030.

2. LITERATURE REVIEW

2.1 RESEARCH ON THE FINANCING EFFICIENCY OF LISTED COMPANIES OF NEW ENERGY VEHICLES

Xiong Zhengde et al. (2014) studied the financing efficiency of listed companies of new energy vehicles during 2010-2012, using the two-stage data envelopment model, and using the quadrant method with clearer expression to show the final research results. Finally, it shows that the low efficiency of debt financing is due to the relatively low efficiency of bond financing and the long time for funds to arrive. Based on this, three angles to improve the efficiency of debt financing are given, namely, enriching financing channels. Zhang Genwen (2014) and Wang Hairong, Geng Chengxuan (2016) used to measure the financing efficiency of 21 listed companies of new energy vehicles in China, and found that in terms of financing efficiency, pure technical efficiency is in the low efficiency stage and financing efficiency is in the high efficiency stage, and the results of the two are different. Then, the factors affecting financing efficiency, such as increasing research funds and improving the overall quality level of employees' education, were analyzed and studied. Improving the overall quality will reduce the financing efficiency of enterprises, while reasonable and targeted government subsidies and a symmetrical social financing environment will improve the financing efficiency of enterprises. Chen Yanjie and Ji Jing (2018) studied the financing efficiency of 17 new energy automobile companies listed in China from 2008 to 2016 from a dynamic perspective. According to their different positions in the industrial chain, the companies studied were divided into enterprises whose main business is vehicle manufacturing and enterprises whose main business is battery R&D and manufacturing. the final results show that under the static and dynamic analysis of data envelopment model, the financing efficiency of new energy automobile industry has not

been improved because of policies or other factors, but has been in a declining stage.

2.2 RESEARCH ON THE INFLUENCING FACTORS OF DEBT FINANCING EFFICIENCY

The research result of Tang Liangziye (2016) is that there are two ways to improve the efficiency of corporate debt financing. The actual situation and the development rules of the industry choose appropriate accounting policies, and the other is to use accounting policies reasonably and efficiently. Hu Xuwei and Ma Yilan (2020) found that the excellent performance in ESG, positive and honest disclosure of relevant financial information and good public impression can effectively improve the bond financing efficiency of enterprises. Lin Yan et al. (2019) studied the manufacturing enterprises listed on the New Third Board in China, and found that companies with good profitability have high financing efficiency because of their sound enterprise operation mechanism and good capital use channels, and good corporate reputation can also effectively improve the financing efficiency of enterprises Tian Xiaoli and Zhang Ling (2020) investigated and analyzed the announcements disclosed by companies listed in China's A-share market, and found that the information of entrepreneurs' talents, such as the chairman's academic background, played an obvious positive role in promoting the debt financing efficiency of enterprises. Contrary to most people's impression, salary incentives were negatively related to the financing efficiency of companies, which ran counter to the original intention of salary incentives. Xu CRBT (2021) studied the financing efficiency of 10 real estate companies in China, and found that the financing methods and financing structures have great correlation with the financing efficiency of companies. the more diversified the financing methods and the more diversified and stable the financing structure, the more suitable the measurement of the financing efficiency of enterprises is. Liu Chao (2019, Wang Wei (2020), Song Yunxing (2020) and Lei Hui (2020) studied the internal factors that affect the financing efficiency of the company, and realized the cost of corporate financing, the proportion structure of equity financing and debt financing, the future growth of the company, and the debt repayment.

3. MEASUREMENT MODEL AND DATA SOURCE
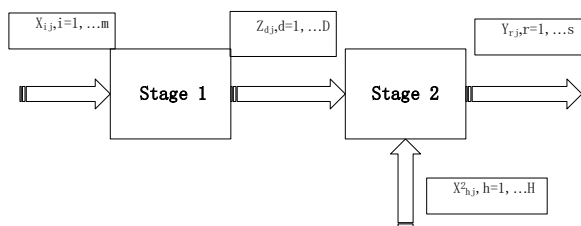
3.1 MEASUREMENT MODEL

Fig. 1. Flow chart of additive non-cooperative model

In YongJun Li's research method in 2012, the additive non-cooperative model is deeply subdivided, which is mainly divided into nonlinear centralized model and

non-cooperative model. According to the characteristics of the research object selected in this paper, the following focuses on the discussion and research of nonlinear centralized model. the figure shows a two-stage model with nonlinear concentration. Compared with other data envelopment models, the input of this model in the second stage is not only the output of the first stage, but also additional external input.

Where $x_{hj}^2, h = 1, \ldots H$, are the extra input variables in the second stage, representing the input of the h variable in the j decision-making unit. the calculation formula of the first stage efficiency is shown in the following figure:

$$s.t \begin{cases} \theta_1^{0\ max} = \dfrac{\sum_{p=1}^{q} w_p Z_{pi}}{\sum_{j=1}^{m} v_j X_{ji}} \leq 1 \\ \dfrac{\sum_{r=1}^{s} u_r Y_{ri}}{\sum_{p=1}^{q} w_p Z_{pi} + \sum_{h=1}^{H} Q_h x_{hj}^2} \leq 1 \\ v_j, w_p, Q_h, u_r \geq 0 \end{cases} \quad (1)$$

Then the efficiency value $\theta_1^{0\ max}$ of the first stage is traversed and added as a known parameter to the following model.

$$\theta^{cen.1.*} = max\theta_1^0 \sum_{r=1}^{s} u_r Y_{ri}$$

$$s.t \begin{cases} \sum_{p=1}^{q} w_p Z_{pi} - \sum_{j=1}^{m} v_j X_{ji} \leq 0, \\ \sum_{r=1}^{s} u_r Y_{ri} - \sum_{h=1}^{H} Q_h x_{hj}^2 - \sum_{p=1}^{q} w_p Z_{pi} \leq 0 \\ \sum_{h=1}^{H} Q_h x_{hj}^2 + \sum_{p=1}^{q} w_p Z_{pi} = 1, \sum_{p=1}^{q} w_p Z_{pi} - \sum_{j=1}^{m} v_j X_{ji} = 0 \\ \theta_1^0 \in [0, \theta_1^{0\ max}], v_j, w_p, Q_h, u_r \geq 0 \end{cases} \quad (2)$$

The efficiency of debt financing is divided into two stages, one is the debt fund raising stage, the other is the debt fund allocation stage. the efficiency of the first stage refers to the enterprise's ability to obtain financial support by investing interest and other efforts; the efficiency of the second stage refers to the ability of an enterprise to apply the borrowed funds to its production, invest in the construction of a factory, and realize its profits. When using additive non-cooperation model to evaluate efficiency, firstly, the number of decision units should be more than 2 times of the sum of input and output (intermediate) indicators. Secondly, the data should not be negative. Although negative numbers do occur in actual production and life, the data with positive and negative values together will produce great volatility and thus have an unpredictable impact on the empirical results. Therefore, linear transformation can be carried out according to the following formula to transform the initial situation of indicators into positive values.

$$y_{ij} = 0.1 + \frac{x_{ij} - m_j}{M_j - m_j} \times 0.9 \quad (3)$$

Among them $m_j = \min(x_{ij}), M_j = \max(x_{ij}), y = [0, 1], (i = 1, 2, \ldots, n)$

3.2 DATA SOURCES

This paper selected 20 A-share listed new energy enterprises as research objects, debt financing cost and debt financing risk as input indicators, total debt financing and return on assets as intermediate indicators, and return on assets, turnover rate of total assets and growth rate of operating revenue as output indicators. Compared with other previous data enveloping models,

In the second stage, this model introduced an additional input variable -- equity multiplier, which eliminated the impact of equity funds raised by listed enterprises on the efficiency of corporate debt financing, making the empirical results more real. Table 1 shows the descriptive statistics of input index, intermediate index and output index variables:

Table 1. Descriptive statistics of main variables

Index collectively	Index	Average value	Maximum value	Minimum value	Standard deviation
Input index	Cost of debt financing	0.0632	0.2384	0.0010	0.0079
	Debt financing risk	10.3158	156.6000	0.6230	1192.6872
Intermediate index	Total debt financing	654.8875	5882.0000	31.0700	1722072.8292
	Debt financing ratio	65.2150	97.1900	35.9100	241.2368
Second stage input	Equity multiplier	4.9827	35.6000	1.5600	56.4732
Output index	Turnover of total assets	0.7293	1.5455	0.2024	0.1597
	Revenue growth rate	0.2851	0.4199	0.1537	0.0037

4. EMPIRICAL RESULTS AND ANALYSIS

In order to study the debt financing efficiency of new energy vehicle enterprises, based on the above model, this paper conducts an empirical study based on the data of annual reports of 20 A-share listed new energy vehicle enterprises from 2016 to 2021 disclosed by Oriental Wealth and other media and databases. Among them, b is the overall stage, efficiency c is the first stage, and efficiency d is the second stage. After empirical analysis, three conclusions are summarized as follows:

1) the efficiency value of segment B indicates that the financing efficiency of Chinese new energy vehicles is not uniformly measured and the concentration is relatively low. the overall efficiency reaches the peak in the eighth unit and falls to the bottom in the thirteenth unit, with a difference of > 0.5 between the two.

2) In terms of the efficiency of fund raising stage C, the efficiency of fund raising stage of energy automobile enterprises is relatively discrete. the reason may be that the capital sources of enterprises present diversity in fund raising stage, and different enterprises have different capital sources. Some enterprises may have low pressure of repayment and interest due to some advantages, thus leading to high fund raising efficiency. Some companies do the opposite.

3) In stage D, that is, the capital allocation efficiency stage, the efficiency distribution of all enterprises is the

most concentrated. Except for the sixteenth decision making unit, the difference of efficiency values of other decision making units is relatively small, which indicates that the allocation efficiency of enterprise funds is relatively consistent. the reason lies in the simple use of enterprise funds under the same macro situation. Enterprises have the same goal, so the difference in the efficiency of capital use is small.
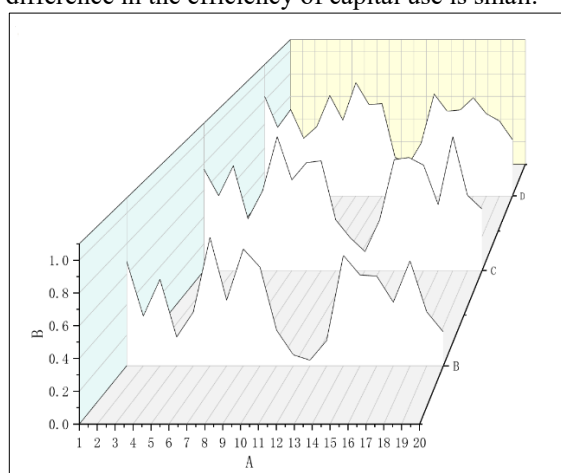

Fig. 1. Mean efficiency curve of additive non-cooperative model at each stage

Table 2. Average efficiency of additive non-cooperative model at each stage

Decision unit	Overall efficiency	Stage 1 efficiency	Stage 2 efficiency
Baic Blue Valley	0.6848	0.7550	0.8348
Foton Motor	0.3261	0.5583	0.5745
Yutong bus	0.5672	0.7817	0.7235
Cyrus	0.1886	0.3867	0.4830
BYD	0.3529	0.5950	0.5803
Guangzhou Automobile Group	0.8408	1.0000	0.8408
Dongfeng Motor	0.4304	0.6767	0.6357
Faw Jiefang	0.7656	0.8050	0.9489
Great Wall Motor	0.6462	0.8183	0.7657
Lifan Technology	0.2325	0.3783	0.7728
Ankai bus	0.0719	0.2433	0.3251
Yaxing bus	0.0369	0.1417	0.2575
Golden Dragon Motor	0.1657	0.3783	0.4412
Jiangling Motor	0.7243	0.8283	0.8530
Changan Automobile	0.5950	0.8433	0.7097
Haima Automobile	0.5883	0.7867	0.7200
Sinotruk	0.4168	0.4917	0.8223
Saic Motor Corporation	0.6885	1.0000	0.6885
Jianghuai Automobile	0.3544	0.5617	0.6283

| Zhongtong bus | 0.2216 | 0.4583 | 0.4725 |

5. CONCLUSION AND ENLIGHTENMENT

According to the previous literature, this paper sets the efficiency stage evaluation of debt funds as high efficiency and low efficiency. the low efficiency interval is [0, 0.7], and the high efficiency interval is [0.7, 1].

1) At present, the median value of overall stage efficiency of new energy vehicle enterprises is 0.42, which indicates that each unit of investment will generate 0.42 return, and the overall debt financing efficiency of new energy vehicles is low.

2) From the debt fund is the raising and allocation stage, the median efficiency of debt fund raising stage is 0.63, which indicates that the efficiency of financing of new energy automobile enterprises in our country is in the low efficiency stage, although the state support for the development of new energy enterprises is very great, but the interest cost of debt funds generally still has a great impact. Because the upstream and downstream industries of new energy enterprises also need a large amount of capital investment, the huge capital demand is the biggest pressure in the early stage of enterprise development.

3) the median efficiency of debt fund allocation is 0.69, indicating that the efficiency of fund allocation stage is low, but it is not much different from 0.7, indicating that the investment return brought by the efficiency of fund use is immediate. However, due to the efficiency loss of the first and second stages, the overall efficiency of the final stage is low, so it still needs to be improved. Based on the above three conclusions, the following suggestions are put forward:

1) On the basis of respecting market competition, loan policies should be increased to support new energy automobile enterprises, because these enterprises are not only traditional production enterprises, but also high-tech intensive, requiring a longer period of capital investment.

2) Take the R&D investment intensity of new energy vehicle enterprises as the reference standard, and implement the standard of subsidizing different funds for different investment enterprises. This prevents some companies from wasting money while others have no money to spend.

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IPv4 to IPv6 Address Format Analysis

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Abstract: IP address is the address of networking devices in the network, which aims to address the networking devices, maximize the sharing of network resources, and adapt to the growing online demand of people. the addressing method of IP address reflects the requirements of network equipment, and also reflects the number of network equipment. In the face of the increasing demand for network equipment, the IP address has also developed from the original 32-bit IPv4 address to the current 128bit IPv6 address, and its corresponding data format, related IP protocol and other aspects have also undergone great changes. Based on the knowledge learned, through the analysis of the whole development process of IPv4 address to IPv6 address, we study the change of IP address.
Keywords: IP address; IPv4; IPv6; addressing mode; Network development

1. INTRODUCTION

In recent years, with the update of network equipment and the development of network technology, especially the emergence of intelligent products, the application of the network has been pushed to a new level, the network has entered everyone's life, as long as there is a network on the earth, you can communicate through a mutual address, this address is IP address.

2. THE IP PROTOCOL AND THE IP ADDRESS

2.1 IP protocol

The Internet has been integrated into our lives, and without the Internet our life will stop. So, in the face of the network from different manufacturers production network system and equipment, they in the internal structure, interface performance are many different, in theory they cannot communicate between each other, and cannot communicate the main reason because they transmit basic data unit-- "frame" format is different. In order to achieve barrier-free connectivity between network devices, Robert Kahn's team has developed a set of address allocation standards--TCP/IP protocol. It is a set of protocol software composed of software programs, which uniformly transforms various "frames" into "IP datagram" format. Due to the unified format, all types of connected devices can be connected on the Internet. IP protocol (Internet Protocol)means "a protocol for interconnection between networks", and is a protocol designed for computer networks to communicate with each other.

The main manifestation of the IP protocol is the IP address. Any device connected to the Internet must meet the provisions of the IP protocol and have a legitimate IP address to communicate with other devices on the Internet.

2.2 IP address

2.2.1 Role of the IP address

The IP address is a networking interface used to identify network devices. In order to ensure that the networked information can be delivered quickly and accurately, it is necessary to uniformly number each interface of each networked device, so that it has a unique address- - - -IP address. We compare network communication to mail transmission: network information terminal equipment (such as computer, mobile phone, etc.) is like the recipient and sender, network to transmit information like mail, network equipment is the postman, cable (wired/wireless) like a highway, mail is broadband capacity, and IP address is the recipient and sender's sending and receiving address, only the address is correct and only, postman can mail to, complete a data transfer.

2.2.2 Status of IP address

Since 1973 proposed IPv4, because the development of the network lag, so IPv4 address space has been very abundant, in the 20th century, with the development of the network, especially the emergence of intelligent products, make people's demand for the network began to surge, the original IPv4 address space began to dry up. China, from 1981 began the introduction of the Internet, to February 3, 2011, China has no available IPv4 address. By 2019, with the last distributable IPv4 distribution in Africa, all IPv4 addresses were allocated globally.

2.2.3 IP address structure analysis

IP addresses are now assigned by ICANN (Internet Name and Number Allocation Agency). Generally, the IP address is divided into two parts: network address and host address.

The network address is used to identify the network where the device is located (the subnet), and the network address is located in the front segment of the IP address. When an organization or enterprise applies for an IP address, it is not an IP address, but a unique and identifiable network address. All devices on the same network have the same network address. Network address is similar to the street number.

The host address is located in the back segment of the IP address and can be used to identify network devices (i. e. hosts) in the same subnet. Devices on the same network will have the same network address, and the devices are distinguished by the host address. In order to adapt to the needs of different network sizes, the IP address is designed and divided into the IP address of the host according to the length of the network address.

3. DEVELOPMENT COURSE OF IP ADDRESS----FROM IPV4 TO IPV6

3.1 IPv4 phase

3.1.1 Overview of the IPv4 addresses

IPv4 is the fourth edition of IP (Internet Protocol, Internet Protocol), and has been a widely used protocol since the release of IP standards. IPv4 has long been the cornerstone of the Internet due to its excellent design ideas at the beginning of the designation. An IPv4 address is to assign a unique worldwide identifier to each network interface of the connected host (or router) on the Internet. the 32-bit decimal point split used by IPv4, e. g:192.168.10.1, Its corresponding binary representation is given as in the following way:11000000 10101000 00001010 00000001, Each 8 bit is a byte, converted to 10 system can be. the structure of the IPv4 addresses allows us to easily address them on the Internet. However, with the increasing demand of the network, the original address structure is no longer adapted to the needs of the network, and must be changed. During this period, there were three major changes.

3.1.2 Stage 1: Secondary structure — classification and addressing of IPv4
(1) Overview of IPv4

In theory, IPv4 could have an address space of 232 (about 4.228 billion), which was enough to distribute at the time. Therefore, in the early stage, the IPv4 form was adopted, which was very standardized. Different networks correspond to different subnet capacity, which also adapted to the network needs at that time.

he structure of the classified addressing of IPv4 addresses is based on the network scale (see Table 2-1). This way can effectively distinguish between different network types, network address and host address used in the form of "divide and rule", to facilitate the management of users.

IPv4 class	All address	Private address	Network category
A	1.0. 0.1---126.255.255.254	10.0. 0.0---10.255.255.255	Large-sized network
B	128.0. 0.1---191.255.255.254	172.16.0. 0---172.31.255.255	Medium-sized network
C	192.0. 0.1---223.254.255.254	192.16.0. 0--192.168.255.255	small-sized network
D	224.0. 0.1---239.255.255.254		broadcast address
E	240.0. 0.1---255.255.255.255		Keep the address

Table 1 Classification of IPv4 addresses

(2) Classified to address the IPv4 format

Network address (highest byte)	Host address (different host numbers within the same network)

Figure 1 Classification and address IPv4 format

In Figure 1, the network address and the host address have different meanings respectively. the sum of their addresses is 32 bits, which is divided into 4 bytes. Because the classification address is made of network bit and host bit, it is called the secondary structure.

For example: a company purchased the network address of 178.20.0. 0, its company has 5 organizations, the number of hosts of each organization is up to 200, requiring the company for network address planning.

Analysis: 178.20.0. 0 is a class B address (128 <178 <191), then the first two bytes are the network flag, the last two bytes are the host address, the decimal number of the host is:13×256+5=3333. Because it is class B address, the number of hosts in each subnet is as high as $2^{16}-2=65534$ 个, the number of hosts in the subnet is large, in addition, because there is only one network number, we need to unified planning, namely the 178.20.0. 1----178.20.3. 232the 1000 addresses, obviously, this address is bound to cause management difficulties, more importantly, caused the waste of IP address (waste65534-1000=64534), but the advantage of this way is convenient expansion later expansion.

3.2 The second stage: the tertiary structure — divides the IPv4 of the subnet

3.2.1 Why to divide the subnets?

With the rise of local area networks, the shortcomings of classification and address gradually revealed. First of all, the address form is rigid, and the fixed network bit leads to the bytes of the network part to participate in the address allocation. Especially, when there are many subnets within the LAN, this form cannot be reasonably addressed; Secondly, due to the fixed number of the host, it is not conducive to management to a large extent. In order to make effective use of the limited address space, a more flexible division of subnet IPv4 addresses appears, which solves the problem of dividing many subnets within the same LAN to a certain extent.

for instance, In IPv4, For the class C network, the IP address of the host is 0- -255, in other words, For each class C IP address purchased by a certain unit, the maximum number of hosts that can be connected to the Internet is 254(0 and 255 as network addresses and broadcast addresses, respectively, cannot be assigned to host), If the number of connected machines in the unit exceeds 254, You must buy another class C IP address, It needs to cost you even more money; Also for class A and class B addresses, Due to the large number of hosts that can be networked within each network, Can cause a waste of resources, And all the hosts share one route exit, It may affect the security of the data.

Based on the above reasons, the IPv4 address of the divided subnet is proposed, that is, keep the network address unchanged, and divide the host address into the subnet according to the need, based on the application scope of the subnet (sometimes also known as the number of departments) and the number of hosts in the subnet. In other words, the host address is divided into the subnet number and the host number, so it is called a tertiary structure.

3.2.2 Format of IPv4 after dividing the subnet

This format is shown in Figure 2:

Network bits	Subnet bits	Subnet host bits

Figure 2 divides the subnet IPv4 format

For example: a company purchased the network address of 178.20.0. 0, its company has 5 organizations, the number of hosts of each organization is up to 200, requiring the company for network address planning.

Analysis: According to the method of dividing subnets, we divide the following two bytes, namely 16-bit binary bits. Since each department has 200 machines, we assign the 8 bits of the lowest bytes as the host bits(128<200<256, 256=2^8), The other 8 bytes are used as subnet bits, which form 256 combinations, of which we use the 5 subnet addresses. Thus, we obtained the distributable address space of these five subnets:178.20.0. 1----178.20.0. 254、178.20.1. 1----178.20.1. 254、178.20.2. 1----178.20.2. 254、178.20.3. 1----178.20.3. 254、178.20.4. 1---178.20.4. 254. The method of dividing subnets well solves the problem of address waste of classifying IPv4 addresses.

3.3 Stage 3: Secondary structure — Variable length IPv4 addressing(CIDR)

3.3.1 The causes of the CIDR production

It can be seen from the analysis of the second stage that although the IPv4 address of the subnet solves the problem of wasting the host addresses in the subnet, the fixed network bit limits the expansion of the host capacity to some extent, which will also cause the waste of IP addresses inside the subnet. A variable length IPv4 address mode — CIDR (Classless Inter-Domain Routing) was created. The number of network address and host address in this way is not fixed, so IP addresses can be reasonably and dynamically allocated according to different requirements, so that they can be maximum utilized.

3.3.2 Characteristics of the CIDR

This division is similar to the "equal principal and interest" in savings, that is, the network bit+host bit =32, when the network number of networks is small, the corresponding host capacity is relatively large; when the number of hosts is small, the corresponding network number is more. the value of the network bit passes the form "/ m", where m is the value occupied by the network bit in the 32 bits. CIDR eliminates the traditional concept of class A, B and C addresses and dividing subnets, and can allocate IPv4 address space more effectively.

As in the example above, using CIDR, we need to allocate from high to low according to the host requirements in the subnet, so as to ensure the optimal choice, as shown in Figure 3 below:

Example:A unit has 3 departments, whose IP address is 128.3. 0.0, and the number of hosts required by each department is 300, 20 and 120, respectively. Please use the IPV 4 (CIDR) method to assign IP addresses.

Analysis: according to the number of hosts, according to the order of large to small allocation. Key point 1: No classification concept

~~128.3. 0.0 is a class B network, so the interval dividing subnets is the lowest 2 bytes, a total of 16 bits~~.

Above is the classification of the address way, not the CIDR way. the CIDR is calculated according to different requirements.

For example, in this question, the most is department 1(300 units), 256(2^8) <300 <512(2^9), 9 host bits, 23(32-9=23) for network bits.

Key point 2: the concept of no default subnet mask

According to the network bit value analyzed above, then the subnet mask of Department 1 is 255.255.254.0/23

Solution:

For Department 1 (the host number is 300):

Based on the previous analysis, it is concluded that the address space of the department is 128.3. 0.0----128.3. 1.255, the subnet mask is 255.255.254.0/23, where 128.3. 0.0 is the network address and 128.3. 1.255 is the broadcast address. A total of 512 address space is allocated to the department, of which 300 of them can be used.

For Department 3(120 hosts):

Because 64(2^6) <120 <128(2^7), the network digit is 7, then the host digit is 25(32-7=25), according to the host digit, the department address space is 128.3. 2.0----128.3. 2.127, the subnet mask is 255.255.255.128/25, where 128.3. 2.0 is the network address, 128.3. 2.127 is the broadcast address, a total of 128 address space for the department, which can use 120 of them.

For Department 2(20):

Because 16(2^4) <20 <32(2^5), the network digit is 5, then the host digit is 27(32-5=27). According to the host digit, the address space of the department is 128.3. 2.128----128.3. 2.159, the subnet mask is 255.255.255.224/27, where 128.3. 2.128 is the network address and 128.3. 2.159 is the broadcast address. A total of 32 address spaces are allocated for the department, 20 of which can be used by the department.
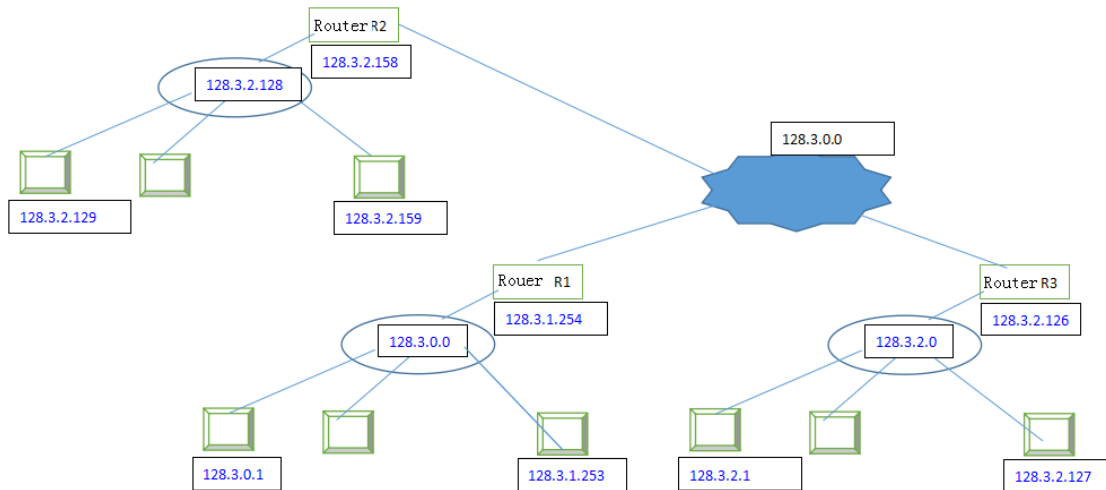
The wiring diagram is as follows:

Figure 3: A CIDR example

3.4 The IP address form of the IPv4 IPv6 transition period

When IPv4 developed to the CIDR address format, the original 32-bit IP address space has been basically allocated. In the face of no new allocation address, many relevant organizations have launched many new address methods, the most typical is VLSM and private network IP.

3.4.1 Variable long subnet mask:VLSM

(1) VLSM summary

VLSM (Variable Length Subnet Mask) is a kind of produce different size subnet network allocation mechanism, specifies how in a subnet division of different parts using different subnet mask, namely through the subnet mask the large IP into small IP process, this for the network internal different segments need different size subnet is very effective.

(2) Difference between VLSM and CIDR

VLSM appeared during the CIDR period. Its core idea is to change the network bit (variable subnet mask), while the CIDR core is to change the host bit (variable length), so that each subnet retains enough number of hosts while having more flexibility to divide a network into multiple subnets.

3.4.2 Private network IP

(1) Overview of the private IP addresses

Private IP is proposed for public IP. As mentioned in the first part, IP address types are divided into public addresses and private addresses, and public address is addresses assigned to a public network that has direct access to the Internet. Private address is a non-registered address that can be used when assigning addresses to each enterprise internal network. RFC1918 defines the range of private IP addresses:

A class: 10.0. 0.0~10.255.255.255 ------10.0. 0.0/8

B class: 172.16.0. 0~172.31.255.255------172.16.0. 0/12

C class: 192.168.0. 0~192.168.255.255 ------192.168.0. 0/16

For example, 192.168.1. 1 often seen is a private IP address.

(2) The application limitations of private network IP

Private IP addresses are mainly allocated in the LAN and are invalid on the Internet. This will separates LAN and Internet. Private addresses can convert internal IP addresses into public IP addresses through technical means (such as NAT technology) to realize the communication between internal IP addresses and the external public network, which can be used like public IP addresses in the internal LAN. Some devices that do not need to communicate with Internet, such as printers, can use these addresses to save IP address resources.

3.5 IPv6 address

3.5.1 Background of IPv6 production

The primary purpose of the emergence of IPv6 technology is to solve the address shortage problem. the length of IPv6 address is 128 bits, and its address space can reach 2128 (about3.4×1038, The 7.9 billion people worldwide can each have 4.86×1028 IPv6 addresses), 96 times 2 more than the IPv4 address. This number is too large to imagine, and a very vivid metaphor is that —— IPv6 can assign an address to almost every grain of sand on earth. China has also been constantly seeking more effective address forms, and took the lead in completing the integration of IPv6.

3.5.2 The development status of IPv6 address

The upgrade from IPv4 to IPv6 is not just about changing the next address, but about all aspects of the network. From personal terminals to operator networks, from various applications to website services, they all need to be fully transformed and upgraded, which all require a lot of costs.

3.5.3 The format of the IPv6 address

IPv6 is composed of 128-bit binary. For writing convenience, a 16-bit integral hexrepresentation is adopted, separated by ":", such as 1234:5678:9ABC: DEF 0: AAAB 0:0000: CEFF: 67FE, which is a 128-bit IPv6 address. For a seamless transition to IPv4, this is sometimes said: 1234:5678:9AB0:0000: AAA1:0000:191.168.10.1, namely, IPv4 is said at the last edge of IPv6. Therefore, the representation method of IPv6 is also called the "risk split hexadecimal notation".

In short, the development from IPv4 to IPv6 is a history of changes in network function. the huge address space of IPv6 conforms to the diverse needs of a large number of 5G users, especially with the rapid development of the Internet of Things and artificial intelligence, the functions of the network are infinitely possible.

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Research on the Cooling and Dehumidification Performance of Evaporative Cooling Air Conditioning under Summer Climatic Conditions in Kunming

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Abstract: The energy consumption of evaporative cooling air conditioning has good seasonal compatibility. the process of evaporative cooling utilizes the characteristic of water evaporation requiring absorption of latent heat, avoiding the disadvantage of cooling the working fluid below the dew point temperature in traditional compression refrigeration cycles, and improving energy utilization efficiency. This paper combines evaporative cooling with dehumidification to build a dehumidification evaporative cooling air conditioning system. Studied the evaporative cooling efficiency, dehumidification efficiency, and regeneration capacity of the evaporative cooling device in the air conditioning system under the summer climate conditions of Kunming. the air in the environment is introduced into the evaporative cooling device, and the low-temperature and high humidity air after evaporative cooling pre-treatment is introduced into the dehumidification device by a fan for dehumidification. After passing through the evaporative cooling device, the temperature of the ambient air can be reduced by up to 9.6 °C. After passing through the dehumidification device, the humidity at the gas outlet can be controlled at around 50%. During the cycling process, the silicone material is regenerated in hot air at 60 °C for 25 minutes, demonstrating good regeneration performance. the experiment has verified that this system can meet the cooling needs of facility agriculture planting environment, facility breeding environment, and people's daily life under the summer climate conditions of Kunming.

Keywords: Solar Air Conditioning; Evaporative Cooling; Dehumidification Efficiency; Regeneration Capacit

1. INTRODUCTION

The refrigeration unit of traditional air conditioning operates with high energy consumption, which not only causes energy waste, but also often puts pressure on the power grid during the peak summer electricity consumption period [1]. There is a good seasonal matching between solar energy supply and air conditioning cooling energy [2]. the solar evaporative cooling air conditioning system consists of three subsystems: evaporative cooling subsystem, solid adsorption dehumidification subsystem, and solar regeneration subsystem. Solar evaporative air conditioning has the advantages of simple equipment, low operating costs, and avoiding high energy consumption of compressors, making it suitable for dry and hot areas. In recent years, many cooling technologies have been developed to replace traditional air conditioning, and solar evaporative cooling air conditioning is one of them. In China, direct evaporative cooling methods such as wet curtain and spray are generally used for cooling the facility agricultural production environment in summer [3-4]. However, direct evaporative cooling in high temperature and low humidity areas has poor cooling effect and cannot meet the basic needs of production and daily life [5]. Therefore, in response to the climate characteristics of the high temperature and low humidity areas in Kunming, this article has developed an evaporative cooling air conditioning system. It proposes to first dehumidify the high temperature and low humidity air, then perform evaporative cooling, and at the same time use solar energy to regenerate the dehumidification materials. Making solar evaporative cooling air conditioners have good recyclability not only meets the summer cooling needs of agricultural planting, breeding, and production, but also achieves the goal of energy conservation and cost reduction [6].

The highest temperature in Kunming is mostly concentrated in May and June, with the highest temperature around 28 ℃ to 32 ℃. In order to meet the temperature and humidity requirements of people's lives, dehumidification evaporation cooling can be used to cool the ambient air. the gas cooled by evaporation is low-temperature and high humidity gas. Through the analysis of gas humidity, if the humidity is higher than 60%, it is necessary to dehumidify the air, that is, to pass the cooled air into the dehumidification device for dehumidification, dehumidify the air, and then send it indoors. If the humidity of the air after evaporative cooling is less than 60%, the air can be directly introduced into the room. the flexible combination of dehumidification system and evaporative cooling system is more suitable for the needs of different environmental conditions and has stronger adaptability. Evaporative cooling is an energy-saving,

environmentally friendly, and economical cooling method. the desiccant silica gel used can effectively reduce system costs due to its strong adsorption performance and low price [7]. Nowadays, evaporative cooling air conditioning technology has been widely used in the production and daily life of data centers, hospitals, sports venues, office buildings, power plants, and other fields [8]. In rural areas, compared with traditional air conditioning, evaporative cooling air conditioning has larger air volume, smaller temperature difference changes, and lower operating costs. These advantages can precisely meet the needs of agricultural planting, facility breeding environment, and people's daily life for summer cooling [9]. For the high temperature and humidity areas south of the Yangtze River, we can first dehumidify and then evaporate for cooling, making our air conditioning system flexible and achieving good cooling effects.

In recent years, researchers have developed many cooling technologies to replace traditional air conditioners, and solar evaporative cooling air conditioner is one of them. Because the air supply moisture content provided by direct evaporative cooling solar air conditioning is high, adding dehumidification devices after the evaporative cooling subsystem can effectively reduce the air supply moisture content and improve room comfort [10]. the selection of dehumidifying materials in dehumidification devices affects the recyclability and cooling performance of solar evaporative cooling air conditioning applications [11-12]. At present, dehumidification materials are mainly divided into composite dehumidification materials, inorganic porous media materials, and polymer dehumidification materials. Inorganic porous media materials, including molecular sieves, silica gel, and activated carbon, are commonly used dehumidifying materials in traditional industry and modern life [13]. It has the advantages of stable performance, simple manufacturing process, and convenience, and is very environmentally friendly. However, compared to composite dehumidification materials and porous polymers, the dehumidification amount is relatively small. Molecular sieve has good dehumidification effect, but the regeneration temperature is higher, which reduces the recyclability of solar evaporative cooling air conditioning. the regeneration temperature of silica gel and activated carbon is moderate, and they can be dehydrated and regenerated using energy sources such as solar energy. Solid dehumidification can dry air by adsorbing water vapor molecules through dehumidifiers, and its excellent dehumidification performance can be applied to new air conditioners. This article uses direct evaporative cooling combined with dehumidification devices to build a solar evaporative cooling air conditioning system [14]. Only the energy consumption of the fan and water pump is required, and a dehumidification device is added in front of the existing wet curtain to meet the summer cooling needs of facility agriculture planting, facility aquaculture, and daily life.

the solar evaporative cooling air conditioning system is scientifically sound in theory, and has good feasibility in equipment and system design. So under the climate conditions of Kunming, relevant experiments were conducted on the dehumidification performance of evaporative cooling air conditioning in the summer climate.

2. EXPERIMENTS
2.1 EXPERIMENTAL SYSTEM

The experimental system built mainly consists of evaporative cooling device, dehumidification device, solar water heater, cooling tower, water pump, and fan. the schematic and physical diagram of the device are as follows:
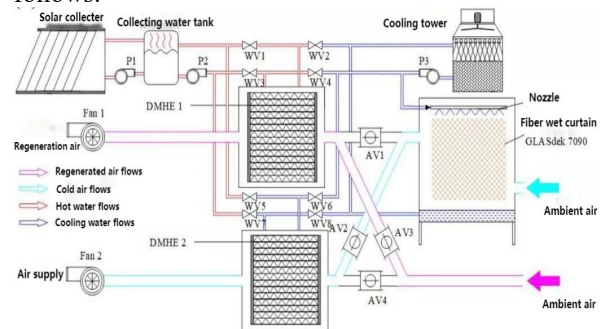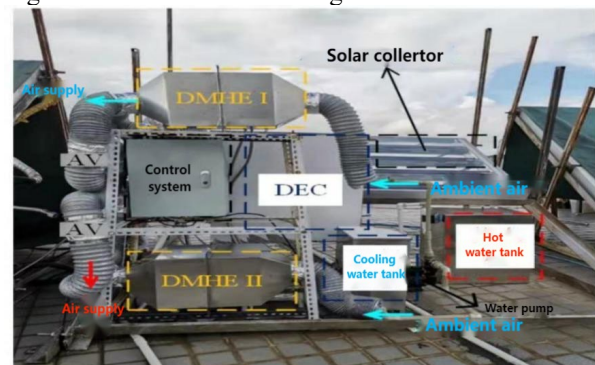

Figure 1 Device schematic diagram

Figure 2 Physical diagram of the device

There are two different modes of operation for the evaporative cooling air conditioning system:

Mode 1 (evaporative cooling mode): Fans 2 and 3 are turned on, while fans 1 and 4 are turned off.

Mode 2 (heating regeneration mode): Fans 1 and 4 are turned on, while fans 2 and 3 are turned off.

The flow direction of air in the dehumidification box is shown in Figures 3 and 4. When the air conditioning operation mode is Mode 1, as shown in Figure 1, the air is dehumidified by the dehumidification device, which enters from the upper right opening of the box and dynamically adsorbs and dehumidifies with solid dehumidifiers. Compared to static dehumidification, dynamic dehumidification can provide high flow of air supply. When the air conditioning operation mode is Mode 2, as shown in Figure 4, turn on Fan 1 and Fan 4, turn off Fan 2 and Fan 3, and hot water in the solar air collector enters from the upper left port of the dehumidification box. the dehumidification material is heated and regenerated through heat and mass exchange. When the relative humidity of the air at the outlet of the

dehumidification device remains basically unchanged, the regeneration process is completed. After one cycle, the dehumidification process and regeneration process can be carried out simultaneously, thus ensuring the working efficiency of the device.
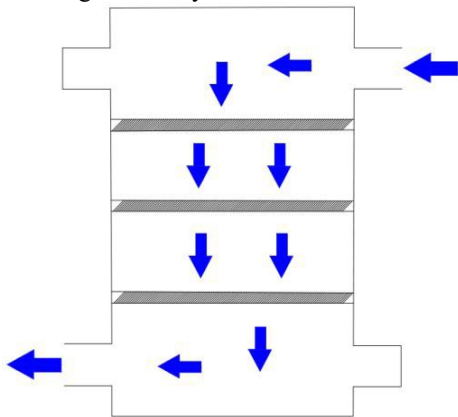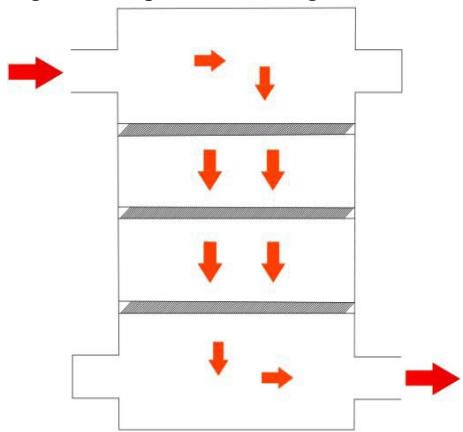

Figure 3 Evaporative cooling mode

Figure 4 Heating regeneration mode

2.1.1 EVAPORATIVE COOLING DEVICE

The outdoor high-temperature air enters the evaporative cooling device, and is humidified and cooled for the first time through the wet curtain at the lower layer of the device, and then humidified and cooled for the second time through the spray room. After treatment, the air outlet temperature is close to the wet bulb temperature. the function of the wet curtain is to initially increase the air moisture content, and the function of the spray chamber is to further increase the air moisture content, so that the temperature of the high-temperature air drops close to the limit temperature of evaporative cooling. At this point, the humidity content of the air is high, which is not suitable for people's daily needs. It needs to be dehumidified through a dehumidification device before being sent into the room.

2.1.2 DEHUMIDIFICATION DEVICE

The dehumidification device is made by mixing silicone powder and curing agent, uniformly coating them on the fins of the heat exchanger through electrostatic spraying, and then curing at 150 ℃ for 25 minutes. Wet air smoothly passes through the heat exchanger coated with desiccant, achieving a dehumidifying effect. At the same time, cold water is fed into the heat exchange copper tube through a water pump, and the copper tube

and fin adsorbent inside the heat exchanger transfer the generated adsorption heat to the cooling water, forming a good circulation. Compared to the enthalpy value of the air at the outlet of evaporative cooling, the enthalpy value at the outlet of the dehumidification device has decreased. the dehumidification process of solid dehumidifiers in dehumidification devices is no longer equal enthalpy dehumidification, but rather enthalpy reduction dehumidification. the addition of heat exchange copper pipes effectively solves the problem of excessive adsorption heat of dehumidifiers and improves the dehumidification efficiency of air conditioning. During the dehumidification process, as shown in Figure 5, cooling water is introduced into the flat tube of the dehumidification heat exchanger to remove the adsorption heat generated during the dehumidification process. High humidity air is dehumidified, and its moisture is adsorbed by the dehumidifying material coated on the surface of the dehumidification heat exchanger. During the regeneration process, as shown in Figure 6, hot water flows through the flat tube, and the saturated dehumidifying material is heated, causing moisture to desorb to the air, restoring the dehumidifying ability of the dehumidifying material.
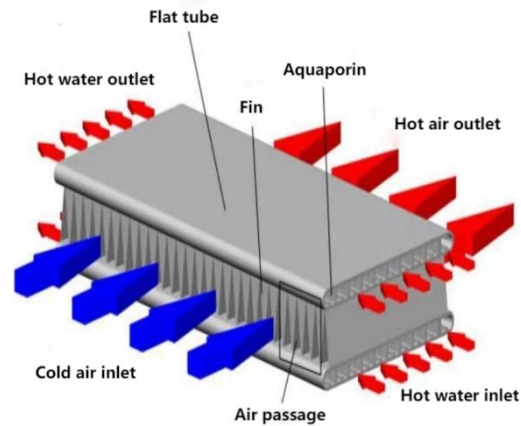

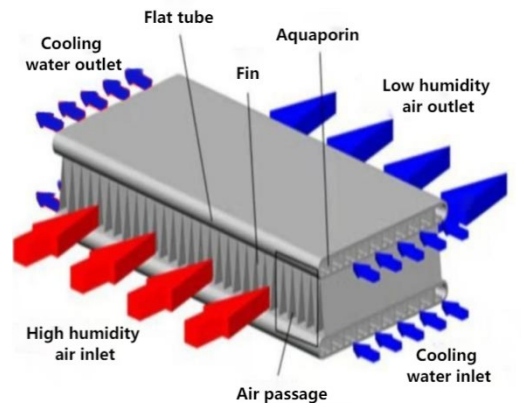
Figure 5 Dehumidification Principle

Figure 6 Regeneration Principle

2.1.3 OTHER DEVICES

The solar water heater used in this experiment is a vacuum tube type solar water heater, which is composed of related parts such as a heat collection pipe, water

storage tank, and bracket. the vacuum heat collection pipe converts solar energy into thermal energy, utilizing the principle of hot water floating up and cold water sinking, to generate a small cycle of water and obtain the required hot water. the cooling tower uses water as a circulating coolant, which absorbs heat from the previous system and is discharged into the atmosphere to lower the water temperature. It uses the principle of heat exchange between water and air flow to generate steam, which evaporates and carries away heat to dissipate the waste heat generated in the refrigeration air conditioning system, ensuring the normal operation of the system. the water pump plays a role in conveying liquid and boosting pressure in this experiment. the fan is used for cooling and ventilation in air conditioning equipment in this experiment.

2.2 SYSTEM PERFORMANCE PARAMETERS
2.2.1 CALCULATION OF SYSTEM COOLING EFFICIENCY AND COP

During the evaporative cooling process, air and water come into direct contact and undergo heat and mass exchange. the maximum cooling range is the difference between the dry and wet bulb temperatures of the inlet air. the cooling efficiency of the evaporative cooling system is defined as follows:

$$7 = \frac{T_{in} - T_o}{T_{in} - T_{wb}} \quad (1)$$

In the above equation, are the dry bulb temperatures of the primary air inlet and outlet, ℃ ; the wet bulb temperature at the inlet of the secondary air, ℃.

The performance of the system is measured using the coefficient COP, which is the ratio of the cooling capacity Qc to the power consumption of the fan Wfan and the water pump Wpump.

$$COP = \frac{Qc}{Wfan + Wpump} \quad (2)$$

In the above equation, Wfan is the electrical power consumed by the fan, W; Wpump is the electrical power consumed by the water pump, W.

In an evaporative cooling device, the latent heat of water evaporation comes from air. During this process, the air is subjected to adiabatic humidification treatment, and the system cooling capacity is the system evaporative cooling capacity, as shown in the following equation:

$$Q_c = c_p m_a \Delta T \quad (3)$$

In the above equation, ma is the mass flow rate of air passing through the evaporative cooling device, kg/s; Cp is the constant pressure specific heat capacity of air, KJ/(kg * k); ΔT is the cooling amplitude of evaporative cooling, ℃.

The calculation formula is as follows:

$$\Delta T = T_1 - T_2 \quad (4)$$

In the above equation, T1 is the inlet temperature of evaporative cooling, ℃; T2 is the outlet temperature of evaporative cooling, ℃.

During the regeneration process of an internally cooled dehumidifier bed, the average moisture absorption and adsorption capacity Δ davg, and the total moisture adsorption capacity Δ dtotal are represented as follows:

$$\Delta davg = \frac{1}{td} \int_0^{td} (d2 - d3) dt \quad (6)$$

$$\Delta dtotal = m1 \cdot \sum_0^{td} (d2 - d3) \quad (7)$$

In the above equation, td is the effective adsorption time of the dehumidification bed, min, d3 is the moisture content of the air at the outlet of the dehumidification bed, Q is the adsorption heat released by the dehumidification bed during the dehumidification process, J.

3. EXPERIMENTAL RESULTS AND DISCUSSION
3.1 SYSTEM DAYTIME PERFORMANCE

Through experimental research, record the data changes of evaporative cooling air conditioning from 10am to 8pm, record the inlet temperature, inlet humidity, outlet temperature, and outlet humidity, analyze the performance of evaporative cooling air conditioning, and create the following figure through the analysis of experimental data:
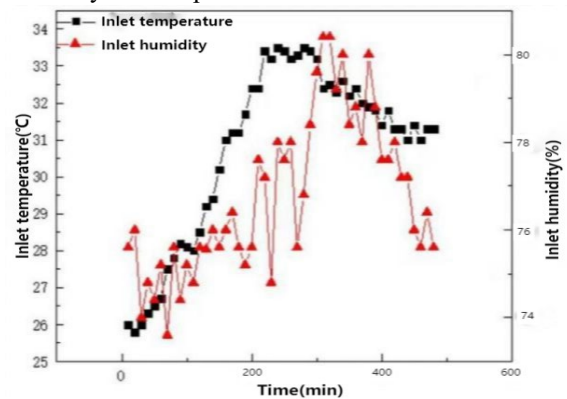

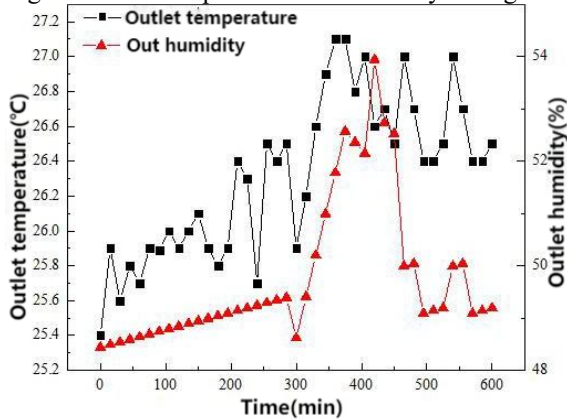Figure 7 Inlet Temperature and Humidity Change Curve

Figure 8 Outlet Temperature and Humidity Change Curve

From the graph, we can intuitively understand the climate characteristics of Kunming in summer. the initial ambient temperature is around 28 ℃, and over time, the ambient temperature gradually increases. By around 2 pm in the afternoon, the temperature reaches the highest value of around 33.5 ℃ , and the environmental humidity is about 80%. After being treated with evaporative cooling air conditioning, the temperature at the outlet is basically stable in the range of 25 ℃ ~27 ℃ , and the humidity at the outlet

fluctuates around 50%, Satisfying people's daily needs for environmental temperature and humidity. This experiment proves that evaporative cooling air conditioning has strong adaptability in the summer environment of Kunming and can meet people's daily needs.

3.2 EVAPORATIVE COOLING EFFICIENCY, COOLING CAPACITY, ANMD COP

Through the processing and analysis of experimental data, the cooling efficiency diagram 9, cooling capacity diagram 10, and COP diagram 11 of evaporative cooling air conditioning under the summer climate conditions in Kunming are shown below:
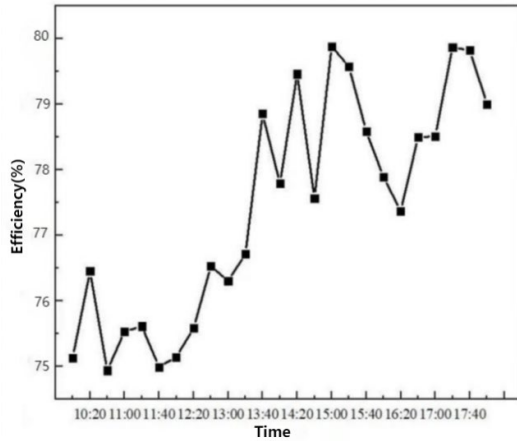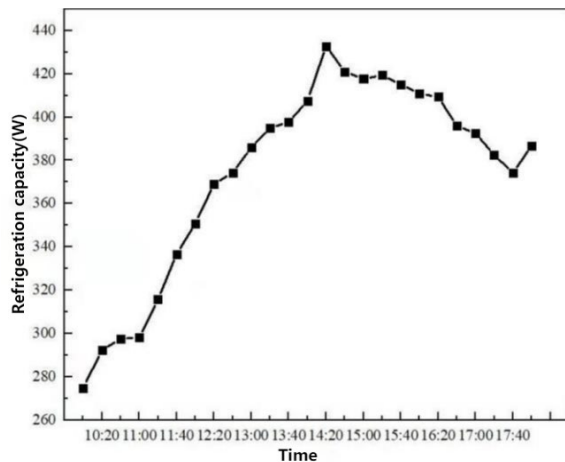

Figure 9 Evaporative Cooling Efficiency

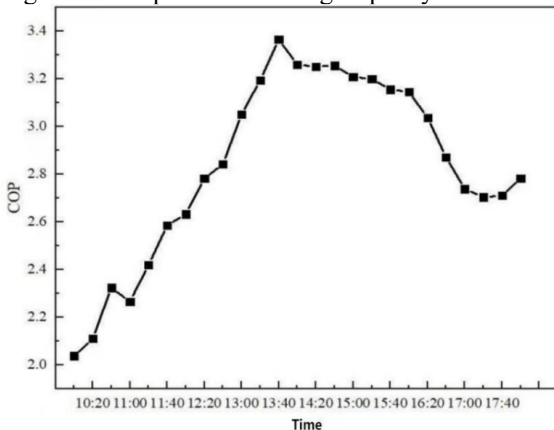Figure 10 Evaporative Cooling Capacity

Figure 11 Air conditioning energy consumption curve

From the line changes in the above figure, it can be seen that the cooling efficiency of the evaporative cooling air conditioner is between 75% and 80%, which is relatively high, fully reflecting the superiority of this device. Moreover, the evaporative cooling process always maintains good cooling capacity, and the air conditioning performance has also been good. the COP value gradually increases over time, and remains above 3 around 2 pm in high temperatures. the energy efficiency is also relatively good, fully highlighting the energy-saving characteristics of evaporative cooling air conditioning.

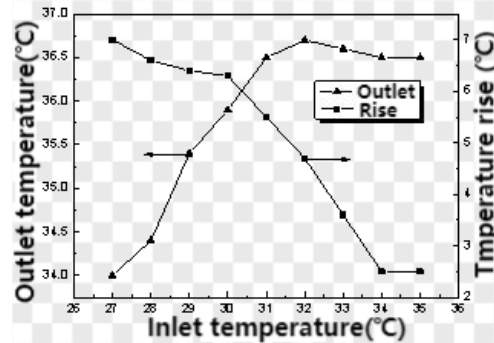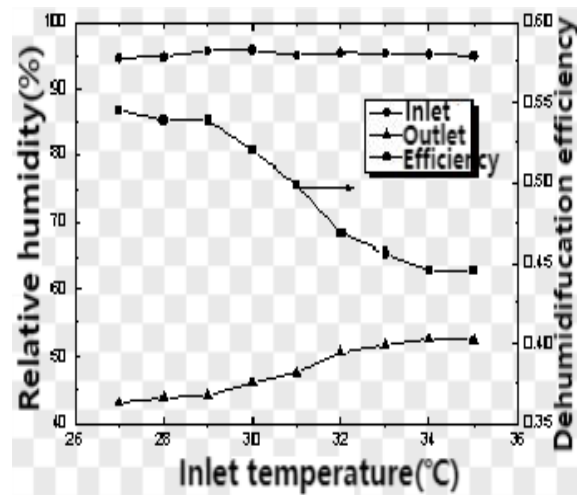## 3.3 DEHUMIDIFICATION AND REGENERATION PERFORMANCE OF DEHUMIDIFICATION HEAT EXCHANGERS

Figure 12 (a) Impact of inlet temperature on outlet temperature

(b) Impact of inlet temperature on outlet humidity

According to the characteristics of the summer climate in Kunming, this experimental research improves the existing wet curtain cooling system. In the evaporative cooling dehumidification device, the high-temperature and low humidity air is first cooled by evaporation, and then dehumidified by adsorption on solid silica gel. the designed evaporative humidification device is used to produce low-temperature and high humidity air, and then the low-temperature and high humidity air is passed into the dehumidification device to measure the temperature and humidity at the outlet, and calculate the temperature rise and dehumidification efficiency of the

dehumidification device. As shown in Figure 12 (a), by changing the inlet temperature of the dehumidification device, the outlet temperature of the device gradually increases with the increase of the inlet temperature, and tends to stabilize after the inlet temperature reaches 32 ℃, with a maximum temperature rise of 7 1 ℃, with a minimum temperature rise of 2.5 ℃. As the inlet temperature increases, the adsorption heat released by the silicone dehumidification material also slowly decreases, ultimately leading to a stable outlet temperature and a decrease in temperature rise, which has a positive impact on the cooling of the air system. However, as shown in Figure 12 (b), as the inlet temperature increases, the relative humidity at the outlet gradually increases, and the dehumidification efficiency slowly decreases. However, it tends to flatten out after 33 ℃, mainly due to the weakening of the ability of silica gel to adsorb water vapor as the inlet temperature increases. the relative humidity at the outlet of the dehumidification device affects the cooling limit temperature of the air conditioning system and also affects the temperature drop of the evaporative cooling section. As the relative humidity increases, the temperature drop of the air conditioning system will also decrease.

When the silica gel dehumidification material adsorbs water vapor to a saturated state, the air supply fan can be turned off and the solar collector regeneration device can be turned on. the fan introduces high-temperature dry air from the solar collector and enters the dehumidification device to desorb and regenerate the silica gel dehumidification material. the solar air supply in this experiment is replaced by a blower, which can continuously deliver high-temperature dry air at around 60 ℃. As shown in Figure 13, the study on the regeneration performance of silica gel shows that after introducing high-temperature gas for 25 minutes, the relative humidity at the outlet of the dehumidification device tends to stabilize, indicating the completion of silica gel dehumidification regeneration. Therefore, it proves that silica gel can be regenerated using solar energy and can be recycled after treatment.
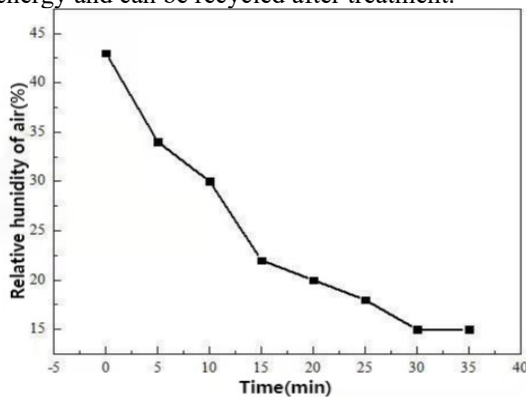

Figure 13 Change Curve of Relative Humidity of Air at the Outlet of Dehumidification Device

The outlet temperature and humidity of the dehumidification device are important conditions that affect the temperature drop of the air conditioning. As the inlet temperature of the dehumidification device changes, the temperature drop of the air conditioning also changes. As shown in Figure 14, the temperature drop of the air conditioning system increases with the increase of the inlet temperature of the dehumidification device, reaching its maximum value at 35 ℃, with a temperature drop of approximately 8.5 ℃. the main reason is that when the inlet temperature of the dehumidification device is 35 ℃, the temperature of the cooling water is relatively low, which is very conducive to evaporative cooling of the wet curtain. When dry and hot air passes through the wet curtain, the water film on the wet curtain comes into full contact with the air, conducting heat and mass exchange, reducing the temperature of the dry and hot air and increasing its moisture content, thereby playing a cooling role, effectively solving the problem of insignificant cooling effect of the wet curtain in high temperature and low humidity areas, forming a good circulation in the air conditioning system and improving energy utilization efficiency.
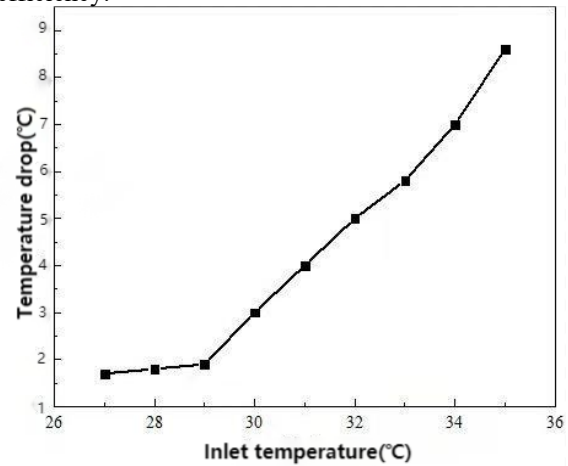

Figure 14 Temperature drop amplitude change curve

4. CONCLUSION

The solar evaporative cooling air conditioning system constructed in this experiment studied the temperature rise, dehumidification efficiency, and regeneration capacity of the dehumidification device with changes in inlet temperature, as well as the cooling and temperature drop of the evaporative cooling device and air conditioning system. the following conclusions were drawn:

(1) By changing the inlet temperature of the air conditioning system and calculating the evaporative cooling efficiency, temperature rise, and dehumidification efficiency of the dehumidification device, the temperature rise and dehumidification efficiency of the dehumidification device will gradually decrease with the increase of inlet temperature, and the temperature rise is beneficial for reducing the cooling load of the wet curtain. Based on the characteristics of summer climate conditions in Kunming, this experiment improved the existing wet curtain cooling system by cooling first and then dehumidifying, so that the inlet air

state during the dehumidification stage is no longer high-temperature and low humidity air, but low-temperature and high humidity air, which is conducive to dehumidification of the dehumidification device. At the same time, the evaporative cooling device also maintains a high cooling efficiency.

(2) Based on the characteristics of the summer climate in Kunming, the evaporative cooling air conditioning system used in this experiment can control the outlet temperature at around 25 ℃ and the humidity at the outlet around 50%, which can meet the needs of facility agriculture planting, facility aquaculture, and people's daily life for summer cooling under the climate conditions in Kunming.

(3) the outlet temperature and humidity of evaporative cooling devices are important conditions that affect the temperature drop of air conditioning. As the inlet temperature of the evaporative cooling device changes, the temperature drop of the air conditioning also changes. the temperature drop of the air conditioning system increases with the increase of the inlet temperature of the evaporative cooling device. When the inlet temperature reaches the maximum value of 35 ℃ and the cooling amplitude reaches about 8.5 ℃, the evaporative cooling efficiency is particularly significant.

(4) Under the regeneration of hot air at 60 ℃, after 25 minutes, the silicone material is basically regenerated and can be reused, enhancing the recyclability of the air conditioning system and reducing pollution. And the dehumidification process and regeneration process can be carried out simultaneously, ensuring the efficiency of air conditioning work.

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Auction-based Cognitive Radio Spectrum Allocation Research

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[*]*Corresponding Author.*

Abstract: The purpose of the paper is to analyse the characteristics of auction-based spectrum allocation in cognitive radio, give a spectrum auction model in cognitive radio system, discuss the application of the first price and second price sealed auction mechanism in cognitive radio spectrum allocation, as well as study the optimal price and reserve price of spectrum auction problems in cognitive radio. the simulation results show that compared with the random allocation scheme the auction-based spectrum allocation has remarkably improved the performance of throughput and packet loss.

Keywords: Cognitive Radio; Spectrum Allocation; Auction

1 INTRODUCTION

Cognitive Radio (CR) was first put forward by Mitola with the purpose of achieving sufficient use of the wireless spectrum. Tests carried out by Spectrum Sharing have shown that some allocated frequency bands [1] are underutilized, which indicates that there are spectrum holes. It is cognitive radio that has brought new opportunities to make the most of low-utilization spectrum resources, and as soon as the spectrum hole is detected, how to allocate spectrum in cognitive users becomes a research field which raises the public's concern.

In recent years, quite a lot of researchers have conducted deep analysis on spectrum allocation used in CR systems, particularly the dynamic spectrum allocation anchored in the auction theory. Sorabh Gandhi et al. proposed a low-complexity framework to attain real-time dynamic spectrum auction [2]; Bin Chen et al. provided an auction mechanism for users to get access to the channel by bidding for transmission time slots, and the currency paid was to perform out-of-band detection of the environment at the end of every frame of transmission to acquire more free channels [3]; Bin Chen et al. [4] proposed an optimization strategy which is based on second-price auctions; Xia Zhou et al. proposed a dynamic spectrum auction driven by traffic [5]; Yu Yanying et al. [6] proposed a channel allocation mechanism based on multi-bid auction, and gave three distribution rules: maximum throughput rule, utility fairness rule and time fairness rule.

To begin with, this paper hypothesizes the dynamic spectrum allocation based on auction, and analyses the first price and second price sealed spectrum auction mechanism in the CR system, and then the problems of the optimal market clearing price and the best reserve price in the auction are discussed, and finally the performance of the system is tested and verified by simulation.

2. SPECTRUM ALLOCATION MODEL BASED ON AUCTION MECHANISM

2.1 Spectrum auction features

Spectrum allocation in cognitive radio networks is a dynamic process as nodes move at random and the network topology changes all the time. As a consequence, spectrum auctions have their own features. First of all, the auction is limited by radio interference, and neighboring users fail to use the same channel. However, users who are not adjacent can bid on the same channel simultaneously. Besides, because of different real-time traffic requirements of cognitive users themselves, the same spectrum resources may have different characteristics for them, which will result in diverse bidding for the same spectrum. In the end,,, it may not be possible for every cognitive user to take part in the bidding at some point of the auction due to the communication of neighboring authorized users, but it may suddenly appear in the next round of auction, which will cause fierce competitions and therefore make it difficult to predict the number of bidding users in the auction

2.2 System assumptions

This paper considers a model of a cognitive radio network where N cognitive users have M spectrum owners, and each spectrum owner can have multiple channels, assuming that these channels are the same, and the channels of different spectrum owners can be different. Each cognitive user has an estimated VJI for the available channels (i=1, 2,.. M), VJI is controlled by a combination of Shannon's theorem, the number of groups in its own buffer zone, and the previous bidding status. Supposing that each cognitive user can choose any spectrum owner to bid on freely, and can only obtain 1 available channel at a time. What's more, it is assumed that the channel condition won't be changed during each auction, and the cognitive user will not move at great speed.

2.3 Auction Mechanism

At the very beginning of the auction, the spectrum owner initiates through a commonly controlled channel, and then each cognitive user j(j=1, 2,.. n) selects the spectrum owner who he or she is interested in. Then the spectrum owner decides the reserve price RI according to the number of free channels and the number of cognitive users participating in the competition, at the same time the cognitive user begins to initiate a bid,

setting the bid as BJ and its revenue as VJI-BJ. Next, each spectrum owner begins to sort all the bid values participating in the channel auction so as to find out the largest bid value of the top k, and finally assigns the k channels that it owns to each user randomly.

Consider using a first price sealed auction. Since multiple channel auctions are involved here, the highest bidder gets the channel and pays its bid. But some users with lower bids can also get access to the same channel, but they must pay different prices, which means they use discriminatory prices. Because the valuation of channels by cognitive users is different, discriminatory prices can actually achieve good social benefits.

The second price sealed auction is also a sealed auction with simultaneous bidding, which is different from the first price auction because the highest bidder acquires the item, but his payment is not its own bid, but the second highest bid in all the bidders after that bid level. In multi-channel auctions in cognitive radio, when the second price auction is used, the highest bidder can also be the winner, but the payment can be in the form of a flat price. For example, the top K users with the highest bidder win, but they pay the lowest bidder of all the top K users, which ensures some fairness.

3. SPECTRUM ALLOCATION ANALYSIS BASED ON AUCTION MECHANISM

3.1 Determination of the best price

What we have discussed earlier is that the mechanism of using a first-price and second-price sealed auction can also be used for spectrum allocation for cognitive radio, which can also be used in the ordinary British auction scheme. Then how do spectrum owners determine the best price by gradually raising their own clearing price until the optimal price is reached?

Suppose that all users' bids are a discrete bid vector B{b0, b1, b2,..., bk}[2], where b0=0, where b1 is the reserve price, the highest bid is b_k, and $b_k - b_{k-1} = b_{k-1} - b_{k-2} = \cdots = b_2 - b_1$. Now spectrum owners set a price $p_{optimal}$ that maximizes the benefits they expect. the user's evaluation of the channel is the independent random variable X of the same distribution, and the distribution function is F(x)=P{X≤x}. If the probability of a channel being successfully allocated after a round of bidding is x(p), then there are:

$$1 - F(p)^n = x(p) \quad (1)$$

Let it be the probability density function of X. To maximize its mathematical expectation px(p), it can be found that its optimal price poptimal satisfies the following equation:

$$p - \frac{1 - F(p)^n}{nF(p)^{n-1}f(p)} = 0 \quad (2)$$

At this time, if the interval in which the above auction is evenly distributed is known, the optimal price can be found from the distribution of F(x).

3.2 Best Reserve Price

For second-price sealed auctions, the cognitive user of the bid bids directly according to their true valuation,

and this bid is optimal, because users do not want their bid to be higher than the estimate, which will make the expected return negative; They also don't want to bid below the estimate, which will consequnencely make them less likely to win the auction. It is still assumed that there are N cognitive users, under the optimal bidding strategy, the probability of a cognitive user with a valuation of v successfully obtaining a channel is p(v), and the minimum expected cost it can pay is e(p), at which time the expected return $R = pv - e(p)$ of the cognitive user, where p is chosen in the above p=p(v) optimal way. For the derivative of v, there is $v - e'(p) = 0$, and then for v in e [p(v)], and $v = e'(p)$ will be substituted, there is:

$$\frac{d}{dv}e[p(v)] = e'(p)\frac{dp}{dv} = v\frac{dp}{dv} \quad (3)$$

Partial points can be obtained for (3).

$$e[p(v)] = e[p(0)] + \int_0^v u\frac{dp(u)}{du}du = vp(v) - \int_0^v p(u)du \quad (4)$$

Further generalizing the equation, the mathematical expectation of the seller can be obtained, at this time the derivative of B1, we can get $b_1 f(b_1) = [1 - F(b_1)]$ when the above expectation is the maximum, we call B1 The optimal floor price. That is $b_{optimal} = b_1$, at this time, if the distribution of cognitive users participating in the bidding is known, the optimal reserve price can be calculated.

4. SIMULATION RESULTS AND ANALYSIS

With the purpose of verifying the performance of the auction mechanism in the CR system, this paper simulates the performance of the first price and second price auctions, and the CR system environment under the condition of reserved price and optimal price. we consider a simple case of a cognitive radio network with M = 1 and N≥2. Assuming that the primary user is shut down during the initial state, it will not be woken up for a long time. Let the packet reach rate be 0.2 packets per millisecond (each packet length is 500 bytes and the lifetime of each packet is 20 milliseconds). In this case, we compare the packet loss rate under random allocation, first price auction and second price auction (Table 1), and we can find out that the packet loss rate under random allocation is much higher than that of the first price and second price auction, but the difference between the packet loss rate of the first price and the second price is very small, which is consistent with the above theoretical analysis results. In addition, no matter which solution we choose, with the number of users increasing, the packet loss rate cannot be ignored. It can also be seen that with the increase in the number of users, the throughput of users tends to be small, and the difference between the first price and the second price scheme is still very small, which shows that both of the first price and the second price scheme are valid in the cognitive radio spectrum auction.

Table 1 Packet loss rate by number of cognitive users (%)

Number of users	First price	Second price	Randomly assigned
2	0.12	0.12	0.15
3	0.28	0.29	0.34
4	0.39	0.40	0.47
5	0.49	0.49	0.56
6	0.56	0.55	0.63
7	0.62	0.61	0.69
8	0.65	0.65	0.71
9	0.68	0.69	0.74
10	0.70	0.70	0.76

5. CONCLUSION

This paper discusses the application of auction theory in economics to spectrum allocation in cognitive radio systems, gives the characteristics of spectrum auction in CR system under auction mechanism, and analyses the optimal reserve price and price in spectrum auction. Finally, a system simulation in a simple case is given, and the performance of the system is compared. In the future, research should focus on specific auction-based allocation algorithms, and study low-complexity and high-efficiency allocation methods for spectrum allocation in CR systems.

ACKNOWLEDGMENTS

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The Design and Application of a Novel Melon and Fruit Intelligent Picking System

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Abstract: This project designs a new type of intelligent picking and loading system for melons and fruits to improve the quality of products while inspecting the safety of melons and fruits. The system is a three-axis robot with high degree of freedom. The control system adopts Q03UDEPLC control servo system to detect melons and fruits. The melons and fruits to be selected are transported into the material, and the images of melons and fruits from various angles are visually detected by industrial cameras. Finally, the size and grade of each melon and fruit are judged by weight to carry out the classification and packaging of melon and fruit.
Keywords: Three-axis robot; Q03UDE PLC Control servo system; Visual detection

1. INTRODUCTION
Due to the high cost of sorting line, low price of melons and fruits, seasonal production and low labor cost constraints, few domestic businesses invest in the technical field of melons and fruits sorting. At present, the domestic melon and fruit sorting should adopt the mode of "semi-mechanized + manual sorting". Looking at the performance of the market and circulation link, the application of fruit sorting in China is still in the initial stage. In foreign countries (such as Japan, the United States), fruit sorter has gained certain popularity, but due to its large area, high throughput (there needs to be enough fruits for sorting), huge investment, so it is limited to large-scale wholesale and retail enterprises or large-scale farms. This project aims at the transformation of consumers' demand for melons and fruits from "quantity type" to "quality type", as well as the problems of complex structure, expensive price and high error rate of intelligent sorting in the current market quality detection machinery, and designs a new type of intelligent sorting system for melons and fruits. [1]

2. MECHANICAL DESIGN OF THREE-AXIS ROBOT
Figure 1 shows a three-axis mechanical arm, which adopts a vacuum sucker. The base of the arm is called axis 1, which can rotate horizontally. The horizontal direction is called the X-axis, or the 3-axis. 23 axes constitute the position mechanism of the robot, the three axes are driven by three independent servo motors, motor 1 through the coupling to drive the turntable, the turntable to drive the 2, 3 axis rotation, motor 2 and 3 through the coupling to drive the screw, sucker through the vacuum generator, solenoid valve

and air pump control, 3 axis offset and Angle determine the position of the sucker[2].
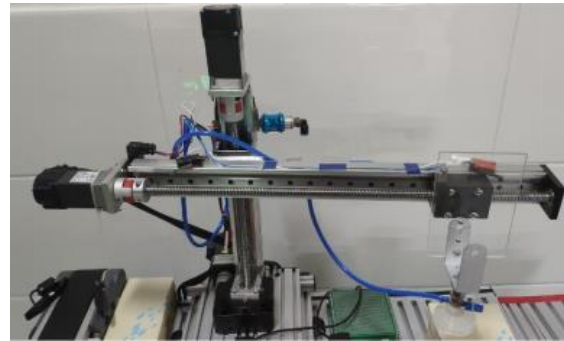

Figure l Mechanical design of three-axis robot

3. HARDWARE DESIGN OF THE SYSTEM
The design and application of a new melon and fruit intelligent picking and loading system are mainly composed of three-axis robot, conveyor belt, solenoid valve, visual detection module and weight detection module. The control system includes Mitsubishi Q series plc, switch, servo system and photoelectric sensor, touch screen; The monitoring system is mainly monitored by LABVIEW software and mobile phone. To be selected through the transfer into the material, after reaching the designated position through the photoelectric sensor control conveyor belt stop, and then Q03UDE PLC control servo system to detect the fruit, and then grab fruit, grab fruit we use the suction cup, with the suction cup will be sucked up, to ensure that the fruit will not be damaged. The servo system controls the three-axis robot to suck up the fruit, first place it on the turntable for visual detection, and complete the image acquisition of the fruit from all angles by the camera through rotation. Then the data is transmitted to the control system with the camera, and the damaged fruits are directly placed in the defective area without being processed, while the good fruits continue to be placed on the analog scale for weight detection. Finally, the size of each melon and fruit is judged by weight, and the classification and packaging of melon and fruit are carried out according to the weight. Figure 2 shows the structure diagram of the system. [3]

4. SOFTWARE DESIGN OF YHE SYSTEM
The system uses an emergency stop switch, a reset switch, a stop switch and a start switch to form the start and end of the system action. Power on the equipment, when there is an emergency, press the emergency stop button, the system power off; When the stop button is

pressed, the stop indicator lights up and the system is in the stop state; Press the start button, the stop light will not turn on, but the start light will keep on, and the system is in the start state. The control system can complete the starting and closing of the whole machine, trigger detection, and control the classification module to complete the classification action. The control system is mainly composed of computer, Q03UDE PLC, touch screen, photoelectric sensor, motor and serial communication module. By clicking the start detection button on the touch screen, the plc is controlled to start the detection, and the whole machine starts to power on. The photoelectric sensor is used to sense the position signal of the fruit. When the fruit reaches the detection position, the photoelectric sensor sends the detection command through plc to trigger the detection. The quality detection realizes the communication with the camera through the mc protocol and transmits the information to the plc. At the same time, LABVIEW software and PLC are used to realize communication monitoring of the whole process data, and the sorting system is controlled through the touch screen, and the remote monitoring can be carried out through the mobile phone, to ensure the safety detection and improve the quality of the product. [4-5]

5. SYSTEM DEBUGGING
5.1 MACHINE WISION DEBUGGING
When the melon reaches the machine vision detection bit, the software part will be collected image segmentation and synthesis, to ensure that the synthesized image contains as much information as possible including the appearance quality of a single melon and fruit sample. Contour extraction by industrial phase machine to complete the judgment of whether there is a collision, when the judgment is a collision, the sample is directly removed and no further processing. We conducted experimental verification on the melon and fruit bruise detection algorithm. According to the test results, 188 of 200 samples of melon and fruit bruise detection were correctly judged, and the overall accuracy was 94%, among which the detection accuracy of samples with and without bruise was 91% and 97%, respectively[6].
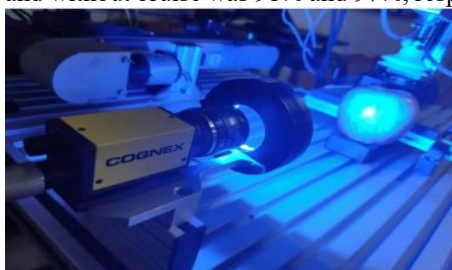

Figure 2 Visual inspection of industrial cameras
5.2 SERVO POSITIONING AND DEBUGGING
Turn on the enable signal of the servo through the amplifier; First, let each axis return to the origin, and then carry out relative positioning for each pump. Before positioning, set the speed on the touch screen,

and finally reach the set position at the input position[7].
5.3 SYSTEM JOINT ADJUSTMENT
After the debugging of each module, the overall debugging of the equipment is carried out. The system can complete the loading and unloading of melons and fruits, the grab and release of three-axis robot sucker, visual detection, rotary table rotation, measurement and weighing, touch screen control, upper computer monitoring and other tasks. The overall operation of the equipment is stable. Figure 5 shows the overall combined adjustment effect of the system[8].
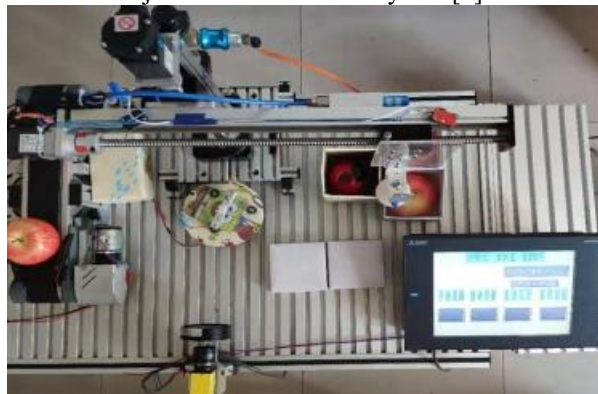

Figure 3 Overall joint adjustment effect of the system

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Design and Construction of Teaching Resource Database for Electrical Automation Technology Major in Higher Vocational Colleges

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Abstract: Building a shared professional teaching resource database in higher vocational colleges is an important measure for the country to accelerate the development of higher vocational colleges. Through the construction of the professional teaching resource database for electrical automation technology, this article proposes the structural model, functional design, construction content, and mechanism protection of the professional teaching resource database.
Keywords: Major; Teaching resource; Database pository; Resource sharing.

Shared Professional teaching resource database is a core content of educational informatization, and its construction content includes professional teaching objectives and standards, high-quality course system, teaching content, experimental training, teaching guidance, learning evaluation, and other elements to meet the needs of students' autonomous learning, and to build a public platform for the cultivation of high-tech talents and the construction of a lifelong learning system.[1]
Taking our college as an example, after several years of construction, the major of electrical automation technology, as a key construction specialty in a national demonstration university, has achieved initial results in the construction of a professional teaching resource database.

1. SIGNIFICANCE OF CONSTRUCTING PROFESSIONAL TEACHING RESOURCE DATABASE

1.1 INTEGRATE AND PROMOTE THE CONSTRUCTION ACHIEVEMENTS OF DEMONSTRATION SCHOOLS, EFFECTIVELY LEADING THE CONSTRUCTION OF NON DEMONSTRATION HIGHER VOCATIONAL COLLEGES

Since the launch of the national demonstration higher vocational college construction project, a large number of higher vocational colleges have achieved significant results in specialty construction, curriculum construction, training base construction, and social service construction. Integrating high-quality professional teaching resource banks can lead the development direction of these colleges and effectively solve the problems of insufficient

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development space, lack of social resources, lack of information sources, and weak teaching staff in non exemplary vocational colleges.[2]

1.2 PROVIDE PROFESSIONAL TEACHERS WITH TEACHING RESOURCES TO IMPROVE THEIR CURRICULUM AND RESOURCE DEVELOPMENT CAPABILITIES

The regional and strength distribution of vocational colleges across the country is uneven, and many colleges lack policies, funding, training conditions, low levels of curriculum and teaching resources, and few opportunities for teachers to go out for training. They urgently need to improve their own curriculum reform and teaching reform capabilities.[3]In view of this, the construction of a teaching resource database project for electrical automation technology majors in higher vocational education can provide professional teachers with abundant high-quality teaching resources, effectively meeting the needs of teachers' curriculum development and teaching implementation resources.

1.3 PROVIDE TEACHING RESOURCES FOR AUTONOMOUS LEARNING FOR STUDENTS AND SOCIAL LEARNERS

There are more than 1000 vocational colleges in China, of which more than 60% have opened electrical automation technology majors. Many students majoring in electrical automation technology need a large number of authoritative, complete, and effective learning resources to learn. Using the teaching resource network sharing platform can share the construction results in the shortest time and maximize the utilization of resources. At the same time, the construction of the teaching resource database project for electrical automation technology majors in higher vocational education can provide autonomous learning resources for many social learners. Therefore, the construction of the project resources has great social value.[4]

1.4 MEET THE NEEDS OF ENTERPRISES FOR HIGHER VOCATIONAL TALENT CULTIVATION AND IMPROVE THE SOCIAL SERVICE ABILITY OF HIGHER VOCATIONAL EDUCATION

With the rapid development of the national economy, enterprises and vocational colleges need to share the

development achievements. One of the fundamental tasks of talent cultivation in higher vocational colleges is to provide high-quality skilled talents for enterprises, and enterprises need personnel trained in higher vocational colleges to effectively meet their job needs and grow and develop together with enterprises. In the construction of this project, a group of well-known or characteristic enterprises in the industry have been jointly established in the construction of training bases, development of training courses, establishment and implementation of training projects, and internship management models, to achieve a seamless connection between higher vocational colleges and enterprises in cultivating talents.

2. PROFESSIONAL TEACHING RESOURCE DATABASE CONSTRUCTION SCHEME AND CONTENT ELECTRICAL AUTOMATION TECHNOLOGY

Professional teaching resource reform scheme design content mainly includes platform construction design based on user needs, industry enterprise information database design based on user needs, professional resource database design, course resource database and material resource database construction design, and network service platform.

2.1 PLATFORM CONSTRUCTION DESIGN BASED ON USER NEEDS

The homepage of the resource library is planned to be set up into three portals, namely, students, teachers, and social learners. Users can click on their corresponding items to log in and enter the corresponding content.

2.2 STUDENT PORTAL

The student portal mainly sets up projects such as social needs, professional resources, curriculum resources, experimental training, internship, examination and assessment, exchange and Q&A, and resource updates.

Social needs: including the current situation of the industry, well-known enterprises, well-known experts, new technologies and new products, industry and enterprise standards, work specifications, work records, and other content.

Professional resources: including learning objectives, curriculum system, training programs, evaluation programs, vocational qualifications, professional videos, and other content.

Course resources: including course standards, teaching videos, self-learning courseware, digital teaching materials, working principles, working processes, internal structure of equipment, etc.

Experimental training: including virtual factories, virtual processes, virtual workshops, virtual equipment, virtual training, training conditions, training instructions, training reports, and other content.

Post Practice: including internship plans, internship specifications, internship records, graduation project topics, graduation project specifications, graduation project reports, graduation thesis writing, and other content.

Assessment and evaluation: including evaluation scheme, comprehensive test questions, online testing, automatic test paper generation, etc.

Communication and Q&A: including career planning, learning plans, learning experiences, teacher-student communication, problem suggestions, satisfaction testing, and other content.

2.3 TEACHER PORTAL

The teacher portal mainly includes social research, professional resources, curriculum resources, material resources, internship and practical training, examination and assessment, communication and Q&A, and resource updates.Social research: including industry status, enterprise needs, main positions, typical tasks, new technologies and products, industry and enterprise standards, work procedure specifications, research plans, research reports, and other content.

Professional resources: including training objectives, training specifications, training programs, curriculum systems, professional standards, evaluation programs, professional position analysis, professional competence standards, professional videos, and other content.

Course resources: including course standards, lesson telling courseware, lesson telling videos, lesson plans, teaching courseware, course evaluation plans, and other content.

Material resources: including text resources, picture resources, video and audio resources, animation resources, virtual resources, enterprise cases, teaching courseware, test papers, and other content.

Internship Training: Including internship plans, internship management, internship evaluation, training plans, training instructions, training records, and other content.

2.4 SOCIAL LEARNER PORTAL

It mainly sets up projects such as industrial enterprises, continuing education, vocational training, exchange and Q&A, and resource update.

The construction and design of the industry enterprise information database is based on the characteristics of the industry enterprises involved in the electrical automation technology specialty. The system collects industry field dynamics, industry policy information, industry development overview, industry expert information, basic human resources situation and demand analysis of industry enterprises, well-known enterprise information, well-known entrepreneur information, typical professional positions, and typical work tasks; Information on new products and technologies, professional qualifications, industry qualifications, industry standards, industry norms, etc., and the establishment of an industry enterprise information database. Display relevant information such as professional service background, professional training content, professional training direction,

professional positions, and applicable relevant standards in various media forms to provide a series of complete services for the government and relevant competent departments to meet the needs of employers such as professional identification, enterprises, and institutions, and the professional learning choices of students and trainers, as well as for the professional construction of colleges and universities, employment of students Provide a reliable basis for employees' career planning.

The professional information database construction design combines the actual needs of resource database construction to develop the "Theory and Practice of Professional Curriculum Development in Higher Vocational Education", which covers all aspects of the entire professional development. The resource database construction guidance manual is prepared to guide the professional resource database construction work of various joint units.

Establish a leading expert and project construction guidance group, and form a construction team with over 20 project construction universities, industries, enterprises, and resource construction technology support enterprises. Based on extensive research, accurately position talent cultivation goals based on market demand changes and job requirements in the field of electrical automation technology and professional positions (groups), Elaborate the design of universal talent training specifications for electrical automation technology majors in higher vocational colleges, and formulate a universal talent training plan that integrates dual certificates.

The construction and design of the curriculum resource library mainly focuses on the core courses of electrical automation technology, including construction of electrical circuit analysis, analog circuit analysis and application, digital application circuit design and production, maintenance of S7 series PLC control systems, maintenance of automation production line equipment, factory electrical control design, motor and drag maintenance, AC/DC speed regulation, application and maintenance of micro control systems, selection and application of sensor and measuring devices A resource library for 12 courses such as maintenance of DCS and fieldbus equipment, factory power supply and distribution operation and maintenance.

The construction and design of professional material library is the core of Professional teaching resource database. The construction of material resources aims to meet users' direct use, digestion and absorption, integrated innovation, and independent innovation. It is necessary to meet both basic needs and individual needs. The material teaching resource library mainly includes text resources, picture resources, video resources, animation resources, virtual training resources, courseware resources, question library resources, case resources, etc.

The construction of a network service platform and the construction of a teaching resource integration and service website are based on the principle of customization and independent selection by vocational colleges.

3. GUARANTEE MECHANISM FOR THE CONSTRUCTION OF PROFESSIONAL RESOURCE BASE

Organize and ensure the establishment of a project construction guidance group, a project construction working group, and a project construction monitoring and audit team, and formulate the "Zibo Vocational Institute Teaching Resource Database Management Measures" and "Zibo Vocational Institute Virtual Simulation Software Management Measures" to provide organizational support.

The system ensures that the construction of the teaching resource database adopts a project management approach, and each subproject has a person in charge who is fully responsible for the implementation of the project; Establish a project goal responsibility system, combining goal management with performance appraisal, and implement a "one vote veto system"; Implement process monitoring, dynamic management, and regular evaluation and feedback.

Fund Guarantee This project adopts measures such as government support, local financial support, enterprise support, and school self-financing to provide financial support for the completion of the project. The construction of a Professional teaching resource database cannot be achieved in one step, and is a process of continuous modification, enrichment, and improvement. Teaching resources should not only reflect national standards, but also be popularized and sustainable; At the same time, it is necessary to consider multiple participation and make full use of various resources such as industry and enterprises, so that the students trained can be closer to the actual needs of the enterprise.

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Research on Frequency Converter Communication

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Abstract: MODBUS is easy to implement on many communication media, and the controller communicates easily with other devices through the network. It supports traditional devices and is applied to various data collection and process monitoring. The frequency converter is the main driving device of industrial power, and the V20 frequency converter, with its convenient communication macro, is controlled by a simple 1200 communication block, which is convenient for engineering personnel to program and adjust speed, providing great convenience for automation control.
Keywords: Frequency Converter; MODBUS; Automation control

1. INTRODUCTION TO MODBUS FUNCTIONS

MODBUS was invented by Modicon in 1979 and is the world's first truly industrial field bus protocol. As advanced concepts such as fieldbus and mesh network continue to emerge and be applied in modern control fields, the simplicity of MODBUS and its ease of implementation on many communication media have always made it the most widely supported and widely used industrial protocol worldwide. Through this protocol, the controller can communicate with other devices through a network (such as Ethernet), which supports traditional RS-232, RS-422, RS-485, and Ethernet devices. [1-2]Many industrial equipment, including PLC, DCS, frequency converters, intelligent instruments, etc., are using the MODBUS protocol as their communication standard, which can be applied to various data acquisition and process monitoring. [3]

2. MODBUS COMMUNICATION PROTOCOL ANALYSIS

The Modbus protocol defines the message structures that a controller can recognize and use, regardless of the network through which they communicate. It describes the process of the controller requesting access to other devices, how to respond to requests from other devices, and how to detect and record errors. It establishes a common format for message domain patterns and content.

When communicating on a Modbus network, this protocol determines that each controller needs to know their device address, recognize the messages sent by the address, and decide what action to take. If a response is required, the controller will generate feedback information and send it out using the Modbus protocol. On other networks, messages containing the Modbus protocol are converted into frame or packet structures used on this network. This transformation also extends the methods for addressing node addresses, routing paths, and error detection based on specific networks.

The protocol uses a reply connection (half duplex) on a communication line, which means that signals are transmitted in opposite directions on a separate communication line. Firstly, the signal from the host computer is addressed to a unique terminal device (slave), and then the response signal from the terminal device in the opposite direction is transmitted to the host. The protocol only allows data exchange between the main computer and terminal devices, and does not allow data exchange between independent devices.[4] This does not occupy the communication line when initializing them, but is limited to responding to query signals reaching the local machine.

2.1 TRANSMISSION METHOD

The transmission method is a series of independent data structures and limited rules used for data transmission within an information frame. When communicating in RTU mode on the Modbus bus, every 8 bits in the information are divided into 2 4-bit hexadecimal characters, and each message must be continuously transmitted. The following definition defines a transmission method that is compatible with the Modbus RTU method.

Each word contains: 1 starting bit; 8 data bits, with the smallest significant bit sent first; 1 parity bit, if there is no parity, then there is none; 1 stop bit (with verification) and 2 bits (without verification); Error detection domain, CRC (cyclic verbose detection). [5]

2.2 PROTOCOL

When the information frame reaches the terminal device, it enters the addressed device through a simple "port". The device removes the "envelope" (data header) of the data frame, reads the data, and if there are no errors, executes the task requested by the data. Then, it adds the generated data to the obtained "envelope" and returns the data frame to the sender. The returned response data includes the following content: terminal slave address, executed command (Function), requested data generated by executing command (Data), and a check code (Check). There will be no successful response when any error occurs. [6]

Information frame: A total of 256 bits, including 8-bit address, 8-bit function, up to 252 bits of data, and 16 bit checksum. Alternatively, a frame has a total of 32 bytes, including 1 byte address, 1 byte function, up to

28 bytes of data, and 2 byte verification.

2.3 DDRESS DOMAIN

The address domain (information address) is composed of 8 bits at the beginning of the frame, with a valid slave device address range of 0-247 (decimal), and the addressing range of each slave device is 1-247. The host places the slave address in the address area of the information frame and addresses it to the slave. When the slave responds, place its own address in the address area of the response information, allowing the host to recognize the slave address that has already responded. Address 0 is a broadcast address, which can be recognized by all slaves. When the Modbus protocol is used for advanced networks, broadcasting or other methods of substitution are not allowed.

2.4 FUNCTION FIELD

The functional domain code tells the addressed terminal what function to perform. The valid code range is 1-225 (decimal), some codes are applicable to all controllers, some are applicable to a certain controller, and some are reserved for future use.

When the host sends information to the slave, the function code explains the actions that should be performed to the slave. For example, reading the ON/OFF status of a set of discrete coils or input signals, reading data from a set of registers, reading the diagnostic status of the slave, writing coils (or registers), allowing for truncation, recording, and confirmation of programs within the slave. When the slave responds to the host, the function code can indicate that the slave responds normally or has an error (i.e. abnormal response). When responding normally, the slave simply returns the original function code; In case of abnormal response, the slave returns a code that is equivalent to the original code and sets the most significant bit to "1".

When the host requests to read a set of holding registers from the slave, the function code for sending information is: 000000 11 (hexadecimal 03). If the slave correctly receives the requested action information, it returns the same code value as a normal response. When an error is found, an abnormal sound message is returned: 10000011 (hexadecimal 83)

The slave made modifications to the functional code, and in addition, a special code was placed in the data area of the response information to inform the host of the type of error that occurred and the reason for the abnormal response. The application program of the host device is responsible for handling abnormal responses. The typical processing process is that the host sends testing and diagnosis of information to the slave machine and notifies the operator.

2.5 DATA FIELD

The data domain contains the data required by the terminal to perform specific functions or the data collected by the terminal when responding to queries. The content of these data may be numerical values, reference addresses, or limit values. He has two hexadecimal data bits (2 to the 8th power of 256) in the data area, with a data range of 00-FF (hexadecimal). For example, the functional domain code tells the terminal to read a register, while the data domain needs to indicate which register to start from and how many data to read. The embedded address and data vary depending on the type and different capabilities between the slave machines. If there are no errors, the response information from the slave to the host contains request data. If there are errors, there is an abnormal code in the data, allowing the host to determine and take the next action. The length of the data area can be 'zero' to represent a certain type of information.

2.6 ERROR VERIFICATION FIELD

This domain allows hosts and terminals to check for errors during transmission. Sometimes, due to electrical noise and other interference, a set of data may undergo some changes on the line when transmitted from one device to another. Error checking can ensure that the host or terminal does not respond to the data that has changed during the transmission process, which improves the security and efficiency of the system. Error checking uses a 16 bit cyclic redundancy method, known as CRC checking.

The error detection field contains a 16Bit value (implemented using two 8-bit characters). The content of the error detection domain is obtained through cyclic verbose detection of message content. The CRC domain is attached to the end of the message, starting with low bytes and then high bytes. Therefore, the high byte of CRC is the last byte of the sent message.

3. SIEMENS V20 FREQUENCY CONVERTER

3.1 BASIC STRUCTURE

Before connecting the frequency converter to the circuit for operation, the function code (parameters) of the frequency converter should be modified based on the actual application of the universal frequency converter. There are usually tens or even hundreds of function codes, involving various aspects such as speed regulation operation port designation, frequency variation range, torque control, system protection, etc. The function code is stored at its default value at the factory. The revision is to make the performance of the frequency converter more compatible with actual work tasks. There are many interfaces for exchanging information between frequency converters and the outside world. In addition to the input and output terminals of the main circuit, the control circuit also has many input and output terminals, as well as communication interfaces and an operation panel. The revision of function codes is usually completed through the operation panel.

Controlled by a microprocessor and using insulated gate bipolar transistors (IGBTs) as power output components, it has high operational reliability and strong functionality. It adopts a modular structure with flexible configuration, and is equipped with various comprehensive frequency converters and motor protection functions. Communication is carried out

through the built-in RS-485 interface, and the I/O terminals can be customized according to the special needs of users. Fast Current Limiting (FCL) improves dynamic response characteristics and can also output large torque at low frequencies.

When setting the parameters of the frequency converter, users can choose the inexpensive basic operation panel (BOP) or the advanced operation panel (AOP) with multiple text display functions. AOP can store up to 10 sets of parameter settings.

3.2 EXTERNAL STRUCTURE AND CONTROL METHOD OF FREQUENCY CONVERTER

There are four ways to control the output frequency of a frequency converter:

Operation panel control mode. This is a method of manually setting the output frequency through the buttons on the operation panel. There are two specific methods for operation: first, press the button on the panel to increase or decrease the frequency, and adjust the output frequency; Another method is to adjust the output frequency by directly setting the frequency value.

External input terminal digital frequency selection operation mode. The frequency converter has a permanent multi frequency selection function. The frequency values of each segment are set through function codes, and the selection of frequency segments is selected through external terminals. The frequency converter usually sets some control terminals in the control terminals. The combination of these terminals can be achieved through external devices such as PLC control.

External input terminal analog frequency selection operation mode. In order to facilitate the connection with regulators and controllers with analog current or voltage output, the frequency converter is also equipped with an analog input terminal. The L1, L2, and L3 terminals are three-phase voltage input terminals. When the current or voltage connected to these ports changes smoothly within a certain range, the output frequency of the frequency converter changes within a certain range.

Communication digital operation mode. For the convenience of network interface, frequency converters are generally equipped with network interfaces, which can receive frequency change instructions through communication. Many frequency converter manufacturers have also designed special protocols for their frequency converters and PLC communication. The P+and N - of V20 frequency converters are connected to 485 lines.

4. COMMUNICATION IMPLEMENTATION

The matching application of frequency converters and PLCs is a common automation integrated system. The PLC sends commands such as start, stop, and operating frequency to control the operation and frequency output of the frequency converter, achieving the goal of controlling the automation of the production process. The advantages of integrating

frequency converters and PLCs based on serial communication have been widely recognized in engineering.

(1) Connection between frequency converter and PLC
The CM1241 RS485 communication module of S7-1200PLC has one 485 port and adopts a two wire connection. Its terminals 3 and 8 are connected to the P+(6) and N - (7) of the V20 frequency converter.

(2) Modbus communication register and macro settings
Directly select the connection macro CN011 and select the default parameters set afterwards.

(3) Module Configuration
The CPU module enables system memory. 485 module configuration: baud rate 9600, parity check, 1 stop bit. Due to the delay caused by the transmission response required for MODBUS communication, cyclic interrupts are used to organize block coordination. Insert OB30, interrupt cycle 30ms; Insert OB31 with a cycle of 40ms.

(4) Modbus communication instructions
Instruction communication communication processor MODBUS. Note: MODBUS (RTU) cannot be selected

(5) PLC programming
In the main program, M1.0 initializes the Modbus communication interface, uses 485 port, and the baud rate on the PLC side is 9600, even parity, and consistent with the V20 setting.

Description: PORT: Communication port ID, 270; BAUD: Baud rate, 9600; Parity: Check, 2 is even check; MB_ DB：MB_ MASTER's background DB block 2.

Write the required control word through register 40100. REQ uses M1.2 normally closed; MB_ ADDR: ModbusRtu slave address is 1; MODE: Mode selection, 1 is for writing. DATA_ ADDR: Register address 40100 is the control word. DATA_ LEN: The data length (in word units) is 1; DATA_ PTR: Point to the storage address of the CPU, read data from this location, and use MW10.

Initialize the port, system startup, and automatically initialize the port. Write the forward control word, force MW10 to be 16 # 047e, and first put the frequency converter in a stopped state. Force MW10 to be 16 # 047f again, and then put the frequency converter in forward running state. Write the operating frequency and force MW12 to be 16 # 0666, with the frequency converter running at 5Hz forward. Forces MW12 to be 16 # 1332, and the frequency converter operates at 15HZ forward rotation. Write the reverse control word, force MW10 to be 16 # 0c7f, and the frequency converter will reverse at the set frequency. Fault, if the "PLC red light is on" appears, it is due to the use of MODBUS (RTU) command, FB561 problem; There will also be issues such as "port busy". The V20 frequency converter has issues such as "F72" (no frequency set value).

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Effects of SiC Contents on Microstructures and Properties of Carbon/Ceramic Conductive Composites

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Abstract: In order to investigate the effects of SiC contents on microstructures and properties of carbon/ceramic conductive composites. Carbon-ceramic conductive composites were prepared with raw materials consisting of albite, diopside, quartz, graphite and SiC. The effect of SiC content on the phase composition, microstructure and mechanical properties of the composite was investigated in detail. Grain phases and fracture surfaces of the composites were analyzed by XRD and SEM, respectively. The results show that the bending strength and conductive properties of composites are decreased when the SiC content increases from 1% to 3%, whereas they are increased obviously when the SiC content increases from 3% to 9%. Little change was observed on surface of the ceramic particles when the SiC contents ranging from 1% to 3%; while, more and more white SiC particles occurs on the ceramic surface when the SiC contents ranging from 3% to 9%.

Keywords: Conductive composites; SiC; Resistivity

1. INTRODUCTION

As a typical functional material, carbon/ceramic conductive composites have shown various applications in home appliances, building heating, health care[1]and other industries. At present, the research on carbon/ceramic conductive composites focuses on the effects of the contents of conductive filler on their conductivity [2-4]. Duan and Xie prepared carbon/ceramic conductive composites by adding graphite into composites. And they found that the graphite hindered the densificaton and strength of the composite[5]. Qiao studied the influence of Cr, TiC,SiC,B4C on the conductive properties of carbon/ceramic conductive composites. It is discovered Cr dopant was favorable to the conductivity of composites, while the thermal shock resistance was significantly increased because of the B4C dopant[6-7]. Liobtained carbon/ceramic composites by adding carbon black, graphite and the mixture of them into the kaolin poeder. The results showed that the composite turned into a good conductor when the conductive filler is more than 25%[8]. However, the influence of the combination conditions between flake graphite and ceramic matrix on structure and conductive properties of carbon/ceramic conductive composites, has rarely been studied from the published literatures.

For the carbon/ceramic conductive composites filled with graphite conductor, large pores can be easily found between graphite and ceramic matrix. As a result of these large pores, the composite presents increased porosity and reduced bending strength. In this study, the influence of silicon carbide addition on the material microstructure, sintering performance and conductivity of carbon/ceramic composites investigated[9].

2. EXPERIMENTAL

Carbon/ceramic conductive composites were prepared from albite, diopside, quartz, SiC and graphite. Four samples were prepared and the composition of each was shown in Table 1.The mixtures were milled, dried, granulated, and then dry-pressed and sintered at a low temperature.

Table.1 Compositions of various samples(wt/%)

Samples number	Ceramic matrix	Graphite	SiC	Balance
a	88	10	1	1
b	86	10	3	1
c	83	10	6	1
d	80	10	9	1

3.RESULTS AND DISCUSSION
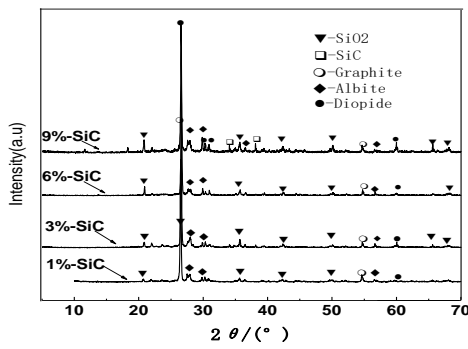## 3.1GRAIN PHASES

Figure 1 XRD patterns of specimens with different SiC contents

Fig.1 shows the XRD patterns of specimens with different SiC contents,from which can we learn that the diffraction peaks of the sample with 1%,3% silicon carbide content are basically the same.Both of them contain diffraction peaks of quartz,graphite,albite and diopside.Compared samples of 6%,9% silicon carbide content with the former two,two more diffraction peaks of 34.8 ° and 38.2 ° were found,which are the characteristic peaks of silicon carbide.In addition to the characteristic peaks of silicon carbide,four samples of other XRD patterns of diffraction peaks corresponding basic agreement,all belonging to quartz,graphite,albite and diopside,we can include that samples of 6%,9% silicon carbide content have no other new phase besides silicon carbide.[10]

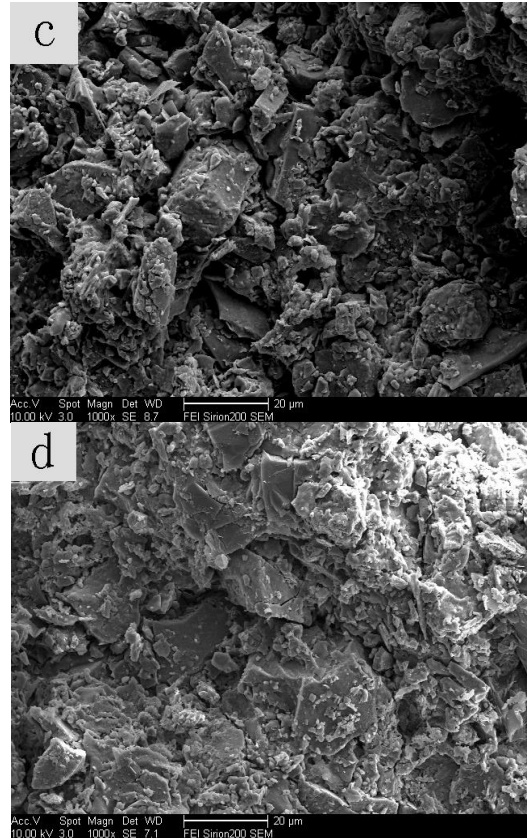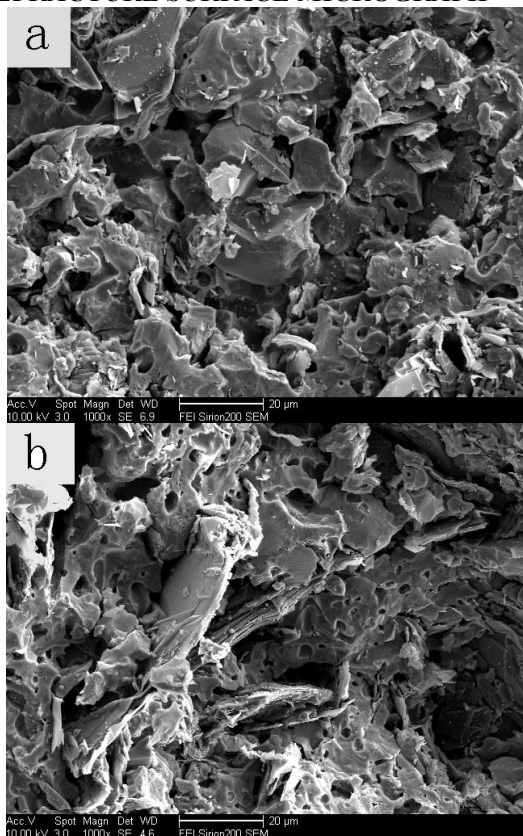## 3.2 FRACTURE SURFACE MICROGRAPH

Figure 2 SEM micrographs of carbon/ceramic conductive composites with different SiC contents: (a) 1%,(b) 3%,(c) 6%,(d) 9%

Fig.2 shows SEM micrographs of carbon/ceramic conductive composites with different SiC contents. SiC content is 1% in fig.2(a),in this map, we can clearly see flake graphite and smooth ceramic phase, graphite and ceramic matrix are combinated closely,flat pores distribute in ceramic matrix evenly. SiC content is 3% in fig.2(a),this map indicates that the porosity increased,s pace become larger,it is clear that flake graphite insert ceramic matrix, SiC content are 6% and 9% in fig.2(c) and fig.2(d),there were no previous pores in this two maps, observed less than flake graphite, the surface layer was covered with milky white material, we can learn from fig.1 that this milky white material is SiC. The main reasons for this phenomenon are followed: when there is a small amount of SiC, SiC may react with oxygen, formed silicon dioxide which changed into smooth ceramic phase, as showed in fig.2(a) and fig.2(b).When added larger amount of silicon carbide, SiC covering the surface of the ceramic matrix, forming a layer of white material, as showed in fig.2(c) and fig.2(d).[11]

3.3 INFLUENCE OF SIC CONTENTS ON THE SINTERING PROPERTIES OF CARBON/CERAMIC CONDUCTIVE COMPOSITES

3.3.1 EFFECTS OF SIC CONTENTS ON THE POROSITY AND WATER ABSORPTION OF CARBON/CERAMIC CONDUCTIVE COMPOSITES

Fig.3 shows the dependences of the porosity and water absorption of carbon/ceramic conductive composites on the SiC contents.With the increase of SiC contents,the porosity of carbon / ceramic conductive composites first increases and then decreases.That is,the porosity of carbon / ceramic conductive composites increases when the content of SiC increases from 1% to 3%.While the contents of SiC continue to increase,the porosity of carbon / ceramic conductive composites decreases.This is because of the following chemical reaction.

$$2SiC+3O_2 \rightarrow 2SiO_2+2CO \qquad (1)$$
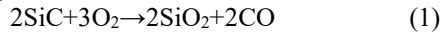
SiC reacts with oxygen to generate the silica.When the SiC contents increase from 1% to 3%,more and more silicas generate.Because of the expansion of silica at high temperature,the porosity of carbon/ceramic conductive composites is larger.When the SiC contents continue to increase from 3%,oxygen consumes in full and the SiC particles fill the pores between the ceramic particles.So the porosity of carbon / ceramic conductive composites decreases.Known from the fig.3,the water absorption of carbon/ceramic conductive composites is relative to the porosity.[12]
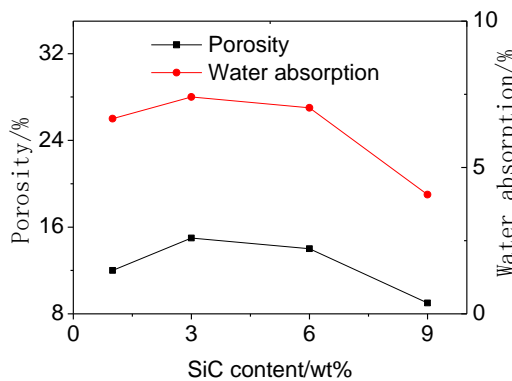

Figure 3 Influence of SiC contents on the porosity and water absorption of carbon/ceramic conductive composites

3.3.2 INFLUENCE OF SIC CONTENTS ON THE SHRINKAGE RATE OF CARBON/CERAMIC CONDUCIVE COMPOSITES

Fig.4 shows the curve between the SiC contents with the shrinkage rate of carbon/ceramic conductive composites. When the SiC contents increase from 1% to 3%,the shrinkage rate of carbon/ceramic conductive composites sharply decreases and reaches a plateau at 3%.This is mainly because of the silicon that generates from chemical reaction between SiC and oxygen. Silica expands in the firing process and partly offsets by a contraction of adobe. Therefore, SiC content from 1% to 3% by the process, carbon/ceramic composite conductive materials reduce the rate of contraction firing line. With the increase of the content of silicon carbide, oxygen in ceramic green body is less and less. Until no longer have a new generation of silicon dioxide. SiC added is left, but SiC particles do not play part in the shrinkage rate. Therefore, the content of

silicon carbide continues to increase by 3 percent, the shrinkage rate of carbon/ceramic conductive composites is no longer a significant change.
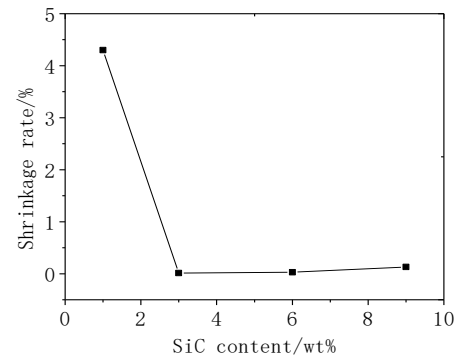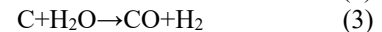

Figure 4 Influence of SiC contents on the shrinkage rate of carbon/ceramic conductive composites

3.3.3 INFLUENCE OF SIC CONTENTES ON THE WEIGHT LOSS OF CARBON/CERAMIC CONDUCTIVE COMPOSITES

Figure 5 shows the relations between the SiC contents with the weight loss of carbon/ceramic conductive composites. It indicates that the weight loss of carbon/ceramic conductive composites gradually reduces when SiC contents increase from 1% to 3%.While the SiC contents continue to increase by 3 percent, no more significant changes. This is mainly because: When SiC content is 1 %,the chemical reaction is as(1),(2),(3) as shown.

$$2C+O_2 \rightarrow 2CO \qquad (2)$$
$$C+H_2O \rightarrow CO+H_2 \qquad (3)$$

From the three formulas we can see that the quality of the green body is reduced by the body dehydration, the graphite oxide and SiC oxide. With the increase of the content of SiC, more and more oxygen is consumed by SiC and less and less graphite is consumed. So the quality of adobe reducing gets smaller and smaller and the weight loss is less and less. When SiC content of reaches 3%,oxygen in the ceramic matrix reacts completely consumed and the weight loss rate no more significant changes**.**
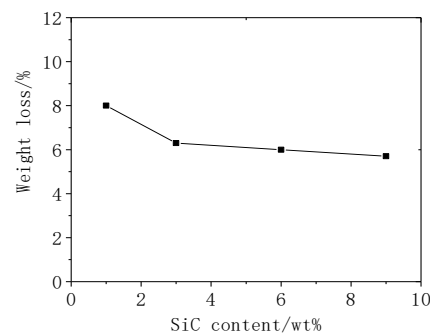

Figure 5 Influence of SiC contents on the weight loss of carbon/ceramic conductive composites

3.3.4 INFLUENCE OF SIC CONTENTES ON THE BENDING STRENGTH OF CARBON/CERMIC CONDUCTIVE COMPOSITES

Figure 6 shows the curve between the SiC contents with the bending strength of carbon/ceramic conductive composites.As shown,the bending strength of carbon/ceramic conductive composites first increased and then decreased. This is mainly because: When SiC content rarely, silicon carbide and oxygen to form silicon dioxide, silica heat expansion and increase the porosity of composite materials, composite materials to reduce the effective cross-sectional area so that the stress concentrates and intensity declines. When the content of SiC increased to 3 percent, the oxygen in body consumes in full. Continuing to add SiC, SiC particles cover the ceramic particles, fill the pores between ceramic particles and results in reduce of the porosity. The bending strength of composites is closely related to the porosity[13].

$$\sigma = \sigma_0 e^{-k\alpha} \qquad (4)$$

σ—Bending strength of material with the porosity,σ_0—Bending strength of material without the porosity,α—Porosity,κ—Constant.

The formula (4) indicates that the bending strength composite materials is contrary to the porosity of the number of index function, that is the porosity of composites directly affect the bending strength, that is the bigger is the porosity, the lower is the bending strength. Based on the above analysis available, SiC into ceramic particles appropriate fine grain, ceramic materials reduce the porosity of the remnants of the materials densification. Therefore, SiC content continue to increase by 3 percent, the bending strength of carbon/ceramic conductive composites increases, and the content of SiC for more than 1% of the carbon/ceramic conductive composites.
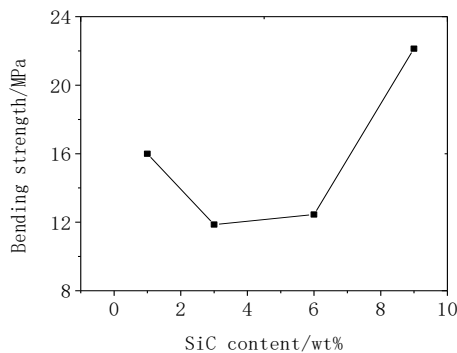

Figure 6 Influence of SiC contents on the bending strength of carbon/ceramic conductive composites

3.3.5 INFLUENCE OF SIC CONTENTES ON THE RESITIVITY OF CARBON/CERAMIC CONDUCTIVE COMPOSITES
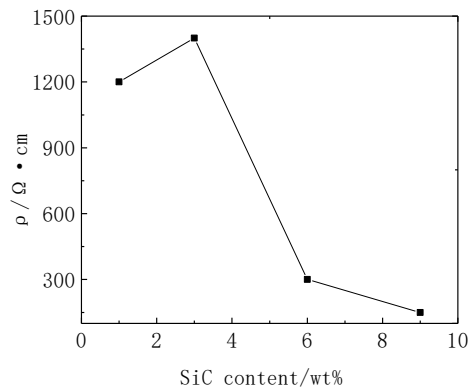

Figure 7 Influence of SiC contents on the resistivity of

carbon/ceramic conductive composites

Fig.7 shows the curve between the SiC contents with the resistivity of carbon/ceramic conductive composites. As shown, the resistivity of carbon/ceramic conductive composites first increases and then decreases. This is mainly because: when SiC content is less than 3%,SiC is oxidized to silica that reduces the contraction and increases the distance between graphite. And some disconnect conductive network which results in the resistivity of carbon /ceramic conductive composites increasing. When the content of SiC content increased to 3 percent, the body of oxygen consumes in full. Continuing to add SiC, SiC particles fill into the ceramic pores.With the nature of the semiconductor SiC, the disconnect electrical network is linked. Thus, the content of SiC continues to increase by 3 percent, the resistivity of carbon / ceramic conductive composites reduces, and that is less than carbon / ceramic conductive composites with 1% SiC.

4. CONCLUSIONS

Firstly, Bending strength and conductive properties of composites are decreased when the SiC content increases from 1% to 3%, whereas they are improved obviously when the SiC content increases from 3% to 9%. Secondly, there is no obviously change in the surface of ceramic particles when the SiC contents ranged from 1% to 3%, while more and more white SiC particles are adhere to the ceramic surface in the conductive composites with the SiC contents ranged from 3% to 9%. Thirdly, the content of SiC for 1 percent of the carbon / ceramic conductive composites than SiC content increased to 9 percent, the carbon / ceramic composite reduces the porosity, increases bending strength, cuts down the resistivity.

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The Student-centered College Student Management Path

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Abstract: The introduction of student-centered concept in college student management can improve the shortcomings of traditional student management methods and the quality of student management. Therefore, It is necessary to do a good job of research and analysis in order to improve the shortcomings of traditional student management methods. Based on this viewpoint, this article takes the student-centered idea as the starting point to analyze the current situation of university student management. Moreover, improving the quality of college talent training by optimizing the solution method base on the specific situations or problems.
Keywords: Student management; Student-centered; New media

In recent years, China's higher education has gradually entered the "post-popularization" stage. The slogan changes from "quantity" to "quality", which is important to the management of college students to make new demands. The moment the colleges and universities carry out student management work. It is shown that they need to stand in the perspective of students' student-centered thinking, respect students' personality development and the growth of their personalities. Under this background, colleges and universities should change their ideas in time and seek a student-centered management model that promote the improvement of talent training quality.

1. ANALYSIS OF THE RELATIONSHIP BETWEEN STUDENT-CENTERED AND STUDENT MANAGEMENT

It can be mentioned that the student-centered idea should be introduced as the university student management. Then, it should carry out high talent training quality, promote the healthy development and improve the effectiveness of both colleges and universities as well. It is helpful to analyze the relationship between student-centered and student management. It seems that student management work develops healthily as expected. [1]

1.1 IMPROVE THE QUALITY OF COLLEGE PERSONNEL TRAINING

University student management work based on the students growth and succeed. Student management that focus on student-centered era should concentrate on talent development. Formulate scientific and reasonable educational management plans formulate scientific and reasonable educational management plans will strengthen the cultivation. Moreover,

students' daily behavior norms education and ideological guidance will promotes the improvement of students' abilities.[2]Furthermore, student management is required because it is necessary to meet the educational environment of the student-centered era, which form a good educational flexibility and transform the education management of students at all stages, will achieve a good cycle of student management.

1.2 PROMOTE THE HEALTHY DEVELOPMENT OF COLLEGES AND UNIVERSITIES

Student management is the top priority in academic schools. Meanwhile, its' level directly reflect the ability for running schools and the level of personnel training. It is the foundation of the academic schools' long-term development.

The student management that works in the central era needs to focus on the new situation and new characteristics. It is suggested that the student-centered educational management resources are put forward in combination with the current situation of student management. Moreover, the implementation of coordinated management ensures the balance between education and management which truthfully achieve the harmonious coexistence between them, eventually promotes the healthy and sustainable development of academic schools. [3]

1.3 IMPROVE THE EFFECTIVENESS OF COLLEGE MANAGEMENT

In the early period, the content of student management is relatively simple, which mainly maintains the order of students in their life and study. Therefore, it ensures the students participation in various practical activities within a reasonable range. In order to focus on student-centered development in academic schools, which continually promote the reform of educational informationalization, student management should consider the characteristics of student-centered times and implement systematic management reason. In other words, it requires the extension of student management, which involving students' ideology, morality, behavior, skill training and so on, to consolidate the foundation of high-quality skilled personnel training.

2. THE MAIN PROBLEMS OF UNIVERSITY STUDENT MANAGEMENT

2.1 EMPLOYMENT COMPETITIVENESS CAUSES STUDENTS' NEGATIVE EMOTIONS

Due to the increasing enrollment of college students

and academic market competition, college students are facing difficult employment status. It should be noted that in the entire education system, college students are at a disadvantage in employment. On the one hand, students force themselves hard to study. On the other hand, students lose their willingness to study. In fact, those are the two extremes of secondary vocational students indicate that management work from schools is not good enough. In addition, the new media easily misleads the impression of the school for the people that live outside the school. Thus, it is more necessary for the school governor to establish a reasonable student management evaluation system, so that students will get involved in school management [3]. Students who will shift learning pace from high school to academic school , tend to lack time management on planning their spare time and personal long-term academic development. Therefore, the ability for the academic student to reasonably arrange their independent time is quite important.

2.2 THE CHANGE OF STUDENTS' IDEAS UNDER THE NEW SITUATION

For contemporary students, network technology has a great impact on students' living habits, learning methods style, ideology and other aspects. The spread of network technology is based on management work, which provides bad information that influence students in new ways. Unfortunately, student got some negative impact from that bad information, which lead them to lose the ability to distinguish property between right and wrong. All these will hinder the development of school management. At present, due to the deepening reform of the education system, it combines curriculum reform and engineering, flexible credit system reform, traditional student management model and traditional academic year. Someone believes that the system must be reformed. Furthermore, it brings new opportunities and challenges to the management of college students. However, the management of college students in the new period lack innovation. Contemporary college students grow in different ways which lead everyone to be unique. Individuation is their notable feature. Thus, it requires universities to carry out targeted management and make full use of big data platforms. The management mode of teaching that according to students' aptitude would accomplish the students' all-round development.

2.3 LACK OF NORMATIVE STUDENT MANAGEMENT EVALUATION SYSTEM

In recently, most college student management work is not carried out from the perspective of students. Student management is not only an one-way service for students, but also a mandatory requirement for students to obey the rules. The chapter system also requires students to timely feedback relevant information to the management center, which improve the school student management ability. In fact, most of the student management in academic school did not set up the channels which make student to feedback the

problems. Thus, there is less dialogues between school and students and the communicate channel doesn't work well, which affects the optimization of school management and leave students with no choice but to ask opinions about the current situation of student management online. Eventually, it affect the school's reputation.

Right now, information spreads rapidly in the new media environment but misinformation is easy to occur among the college students as well. Department management needs to build a reasonable management evaluation system by inviting students whom participate in the school management. It is necessary to through the implementation of the student-centered concept and furthermore optimize the learning of Student management evaluation system.

2.4 MANAGEMENT MODE DOES NOT MEET THE ACTUAL SITUATION OF STUDENTS

Although the student-centered management time in China is relatively short and not yet formed in line with their own actual situation of the student management system during the management of university students, there are still some universities that totally copy the method from other universities without considering their own situation. They did not　analysis the specific problem properly. Although academic schools have adopted a new management mode, they don't take real action so that the mode didn't work. In addition, the quality of management determine the effect of student management. Actually, the management of college students needs systematic management department though the implementation has some complex and realistic problems. For instance, student administrators are lack of relevant expertise and the quality of managers is not reliable. Overall, all of that has influence the improvement of student management.

3. MEASURES TO INTEGRATE STUDENT-CENTERED IDEAS INTO COLLEGE STUDENT MANAGEMENT

Under the new media environment, academic schools need to consider the new media community to carry out student management based on the realities of students, develop scientific and reasonable programs and make full use of new media.improve the technology of student management in time, and further improve student management. The effectiveness of the following specific measures can be taken below :

3.1 GIVE FULL PLAY TO THE ADVANTAGES OF NEW MEDIA TO DO MORAL EDUCATION

The values of contemporary college students have changed under the market economy environment, which is very easy to appear. Recently, the student managements tend to be difficult than before due to the individualism and quick success. The popularization of Internet technologies on computers provide new learning and entertainment ways to the student. In Taiwan, students always get mixed and complex information , which make students' values tend to be

uncertain and form the diversity values and psychological qualities. Student-centered learn student management philosophy, consider into students' actual needs and personality differences, adept learning student management measures effectively and achieve the purpose of improving the quality of student management. Colleges and universities should make clear the responsibility of moral education and attach importance to think while conducting students' learning management political education. In the traditional management mode, moral education training used to adopts the way of preaching. The main forms are themed class meetings and lectures, but the educational effect is not clear and difficult to attract students interest. The significance of ideological and political education in the process of students' growth is an important foundation for training qualified citizens and talents. Therefore, the education sector needs to completely take the advantages of new media and create more paths for students' management to choose. For example, enhance the interest of education for the student by choosing the way of education through the questionnaires that attract the student. Real cases, social hot issues, ideological and political education films can be used to organize students to watch and discuss when conducting ideological and political education for students. It is possible to integrate pictures, videos and audio in the process of breeding in ideology, politics and education. In vision and sound technique, which combined art, enhance the appeal of ideological and political education and guide students to own empathy during the learning process. Moreover, the process which guide students to establish correct moral principle and political concepts, has very important significance in reality. It is possible to assign relevant questions for students to think about. For example, how to be an excellent student ? It is the way that combine education and practice, which eventually improve the effect of the education. It is suggested to use of ideological and political education to guide students to form correct values. Students is easier to conduct self-education and discipline in the process of study in life. Not only it reduces the difficulty of student management but also reduce the difficulty of teaching. Furthermore, the breeding effect will also be significantly improved as well. The application of new media for ideological and political education can broken through the limit of time and place and enable students to receive education in anytime, anywhere. The positive energy is actively transmitted to the students during the education process and the public opinion will be guide properly.

3.2 MAKE GOOD USE OF NEW MEDIA TO COMMUNICATE WITH STUDENTS

Communication is very important in the process of managing students in academic schools. The high efficiency communication mechanism can establish a better platform for benign communication between teachers and students, which is also the an important way to grasp students' thoughts and desires. Through the analysis of communication results, the academic management can better formulate management objectives and plans, improve management measures target and the quality of education. The communication methods in the new media environment are diversified. It provides a great convenience for communication between students, teachers and schools and students. In fact, many traditional management mode is face-to-face communication. The timeliness is bad and the excellent content of potential communication will be more restricted as well. Now, teachers and students can quickly get in touch with each other by using the terminal of smart phone. Tencent chat software or Wechat. The characteristics of concealment can help managers to truly understand the confusion of the students in their study and life. Then, the administrators can develop targeted measures and provide appropriate assistance for students to solve their problems. Furthermore, the administrators are able to gain a comprehensive understanding of student development. It will benefit to the student to deal the problem from theirs' life, study, thought, psychology and emotion. It is conducive to guide students to cultivate correct values, good psychological quality and moral quality. Colleges need pay a attention on special groups while carrying students in the process of management, such as poor students, handicapped students or students with academic difficulties. Compared with traditional communication, Such as face-to face, new media communication is better to protect the students' personal privacy. Thus, this communication would established a platform that can provide help to all kinds of students. Universities use new media to innovate student management By transmission platforms, such as Wechat groups. the quantity of information flow is reduced and the quality is increased. Moreover, the work efficiency and management effect are improved as well. In addition, the manager is able to listen positively to the students' ideas, encourage students to speak with others and invite them to participate in student management to promote the improvement of students' comprehensive quality during the daily management process.

3.3 DO A GOOD JOB IN THE SUPERVISION OF NEW MEDIA ON CAMPUS

Under the background of the information age, academic administrators should realize the importance of information technology and network construction by actively improving hardware and software and build good network campus. In new media activities, students not only can get information quickly, but also create and transfer information. In this regard, universities need to make their job better in public opinion management. Such as strengthen the supervision of the platform, grasp the public opinion of students, do a good job of guidance and ensure the correct dissemination of energy information. The

academic governor should helps students to build a correct values concept and make good use of new media to manage students. They need to abandon the traditional ideas that influence the study, enhance the initiative of management work and help students development through positive guidance. Moreover, schools need to establish corresponding management objectives, draw up and improve the corresponding rewards and punishments system. It will limit the spreading fake information and inducing harmful speech among students, build a healthy campus network environment and reduce the negative effects that from new media for the development of students. During the work of party building in academic schools , it is necessary to ensure the unified leadership of the Party Committee and the democracy of all the work arrangement. Therefore, the party building work should follow the principle of brainstorming the democratic management in the process to leverage the advantages of trading. The number of Party Committee Personnel is limited, so the decision-making is inevitable to request the university to improve the leadership and decision-making mechanism, implement the principle of democratic centralism, combine the democratic procedures, and emphasize the roles' importance of work for Communist Youth League and the Student Union . It is academic school's duty to cultivate talents from academic schools. Theirs daily work demonstrate the student-centered concept that ensure the work development successfully finish. The related work should develop surround the students, implement employment's guidance, and effective show the influence of student party members and promote the development of student in almighty ability by fulfilling the political responsibility and excavation the potential of student party members. For instance, the implementation of the "double high plan" needs to promote the construction of party building brand, concentrate strength on cultivating party building projects, meet the diversified needs of social development, condense out the grassroots Party Building style, realize the purpose of party building brand construction and eventually improve the reality of party building work effectiveness.

3.4 IMPROVE STUDENTS' SELF-MANAGEMENT ABILITY

The range of new media information source channels are very wide and the information interaction is very strong.it seems that taking advantage of new media platform can achieve the information sharing quickly. On the other hand, academic schools utilize new media table and produce the corresponding positive energy content. Students can quickly complete self-education, constantly standardize their words and deeds, establish the right concept and develop good habits by guiding student to study and discuss in the whole process. It is acceptable to use the advantage of new media's popularity on students, to fully recognized the thought

and mental development of the student. Moreover, the new media is convenient to help governors to aim the problems that student would have during their development process and eventually promote student to grow in healthy. During the student management, students should be guided to understand the new media correctly, continuously cultivate their awareness of network security and enhance the level of network morality. Ideological and political education should be combined together to continuously improve students' ability in order to discriminate information online. Students should be taught to set up the correct value concept orientation, consciously resist bad faith and thoughts, participate more actively in outdoor activities and interpersonal communication, enrich spare time and achieve all-round development. In addition, considering the network in the new media environment is convenient, it is necessary to strengthen students' network moral education, consciously resist on the bad network information influence, avoid using VPN when browsing information online and improve students' Internet self consciousness.

3.5 DO A GOOD JOB IN CAMPUS DORMITORY CULTURE CONSTRUCTION

Generally, academic students come from all over the country with different growth backgrounds and life habits. Thus, it is customary to form a diversified dormitory culture in student dormitories. Students who come from different places, have different living and learning habits. It helps the campus to promote the diversity of dormitory culture because different dormitory cultures will be formed by different life styles, such as study plan, life habit and entertainment. Moreover, the different cultures between male and female dormitories further enrich the diversity of dormitory culture. College students always has a close connection with the dormitory, which student call it as "home" in the school. The hostel House culture can infect dormitory members. It is necessary to make perfect rules and regulations to exert this dormitories culture. For example, it should make the health regulations and management rules, through this external system to stimulate and restrict the behavior of students and improve the effectiveness of education for the dormitory culture. Furthermore, the construction of dormitory culture should enrich and expand the cultural connotation continuously to fulfill the purpose of people's education. For instance, railway transportation majors carry out the construction of dormitory culture, the accommodation is not focus on material culture construction, but concentrate on the concept of aesthetic education, which is introduced to infect students through external environment. The purpose is to provide students with multi-functional living space. Moreover, dormitory spiritual and cultural construction are combining with the professional characteristics of railway transportation. The vocational culture of academic

schools are further highlighted with professional characteristics, which achieve the purpose of penetrating the core quality of the profession. Meanwhile, in order to perfect the dormitory system culture construction, we should improve the system management from many aspects, such as line standardization, health standards, evaluation and other aspects, that guide students to develop advocating labor, heat the concept of love labor that encourages students to do it by themselves, do a good job in dormitory public health, create good dormitory atmosphere and improve the overall quality of transportation students.

4. CONCLUSIONS

To sum up, in the new media environment, the management of students in academic schools are faced with great challenges. Thus, administrators should pay more attention to this, combine it with current students' learning practical problems in life, provide targeted solutions, innovate management model, give full play to the advantages of new media, strengthen guidance and supervision, comprehensively do a good job of thinking and politics education helps students develop

in an all-round way. Meanwhile, college student management workers should familiar practices, grasp the connotation of student-oriented concept, formulate scientific and reasonable student management plans, improve the deficiency of traditional management mode and increase the purpose of college student management quality.

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Research on Problems and Countermeasures of College Students' Entrepreneurship Under the Background of Entrepreneurship and Innovation

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Abstract: At present, the problem of college students' employment has become a hot social topic under the background of college students' entrepreneurship problems and countermeasures, many college students choose to start their own businesses. College students are often affected by many factors in the process of entrepreneurship. This paper studies the problems and countermeasures of college students' entrepreneurship under the background of entrepreneurship and innovation, pointing out the entrepreneurial problems of college students, and put forward the countermeasures. Hoping to better provide relevant support for college students' entrepreneurship, stimulate the willingness of college students to start their own businesses, ease the awkward situation of college students' employment difficulties, and guide them to find employment and choose jobs flexibly.
Keywords: Mass entrepreneurship and innovation; College students entrepreneurship; Self-employment

1. INTRODUCTION

Nowadays, it is an important node of China's rapid economic development and structural transformation, innovation and entrepreneurship have become a new driving force for economic development, and it is the most discussed topic among the current young generation. As the hope of the future development of the country, college students should actively respond to the call of the country and undertake the new mission and task entrusted by The Times. The implementation of mass entrepreneurship and innovation by college students can not only effectively solve the problem of employment and career selection of college students, but also inject fresh blood into economic transformation and development. Based on the research of the current situation and influencing factors of college students' entrepreneurship, this paper deepens the understanding of the problems and countermeasures of college students' entrepreneurship under the background of entrepreneurship and innovation. [1]

2. CURRENT SITUATION OF COLLEGE STUDENTS' ENTREPRENEURSHIP UNDER THE BACKGROUND OF ENTREPRENEURSHIP AND INNOVATION

2.1 ANALYSIS OF THE CURRENT SITUATION OF COLLEGE STUDENTS' ENTREPRENEURSHIP

2.1.1 THE NUMBER OF ENTREPRENEURS IS LARGE AND GROWING

With the support of the state, social organizations and universities for "mass entrepreneurship", more and more college students have joined the team of self-employment, and the number of them has shown an increasing trend year by year. In recent years, in order to actively respond to the national "double innovation" policy, major universities in China have given college students extensive support and attention in terms of teachers, technical support, personnel training, entrepreneurial atmosphere and teaching concept. All these have positively guided college students' entrepreneurial willingness[2]. Therefore, more and more college students choose to start their own businesses after graduation.

2.1.2 ENTREPRENEURSHIP INVOLVES A WIDE RANGE OF FIELDS

With the economic transformation of the whole society and the adjustment of industrial structure, the ideas and fields of college students' entrepreneurship have become more extensive and flexible, and nearly 20% of college students are willing to try entrepreneurship. Although 90% of the entrepreneurial fields of college students are concentrated in catering, agriculture, information technology, cultural communication and other industries, there are still some in the traditional industries to find new breakthrough points, which have shown that most college students have a deeper understanding of entrepreneurship and more specific goals and directions. [3]

2.2 PROBLEMS EXISTING IN COLLEGE STUDENTS' ENTREPRENEURSHIP

2.2.1 THE OVERALL PROPORTION OF STUDENTS STARTING BUSINESSES IS RELATIVELY LOW

According to a survey on college students' employment and entrepreneurship, finding a job first and then choosing a career is still the first choice for college students at this stage, China Education Daily reported. 51% of the respondents would choose traditional employment methods to avoid the crisis of unemployment upon graduation. Only 25% of people

choose a career first and then work, and have a clear career plan; Another 14 percent chose to continue their studies and put their careers on hold; Only 10% of people actually choose to start a business. This is enough to show that most of today's college graduates have begun to adopt a more flexible attitude on the issue of career selection, but only a small number of them choose to start a business, which also reflects the many worries of college students about entrepreneurship. In addition to financial problems, more people are worried about their lack of experience, or even delay their studies because of too much experience, which are all factors that college students must weigh when choosing to start a business. [4-5]

2.2.2 THERE ARE MANY RISKS AND LOW SUCCESS RATE IN THE PROCESS OF ENTREPRENEURSHIP

The living and learning environment of college students is basically campus. Therefore, before starting a business, they lack a full understanding of the big economic environment and a comprehensive and objective understanding of entrepreneurial projects. More college students start businesses with enthusiasm and great hope. Without a full understanding and investigation of the industry, the probability of success is very low. Because of this, the feasibility of college students' entrepreneurial projects is low, and the probability of their failure after encountering practical difficulties is very high. Some college students bring heavy economic pressure to themselves and their families after the failure of entrepreneurship, and some college students have great doubts about themselves and the market after the failure of entrepreneurship, and have great psychological and spiritual pressure on entrepreneurship again. All in all, based on the above analysis, it can be seen that college students have more risks and lower probability of success in entrepreneurship[6].

2.2.3 THE SUPPORT SYSTEM OF NATIONAL POLICIES FOR COLLEGE STUDENTS' ENTREPRENEURSHIP IS STILL NOT PERFECT

College students' entrepreneurship support system is a systematic project. In the process of college students' entrepreneurship, school management and education workers, governments at all levels and parents of college students are all members of the college students' entrepreneurship support system. As the main body of entrepreneurship, the contact and interaction between college students and various members are the necessary conditions for entrepreneurial activities to be put into practice. With the development of China's economy and the prominence of college students' employment, in recent years, from the central government to all colleges and universities, there has been policy support for college students' entrepreneurship. In particular, the slogan "Mass entrepreneurship and innovation" has

been put forward, and more and more college students have a certain willingness to start businesses. However, as the long-term mechanism of college students' entrepreneurship and the support system of college students' entrepreneurship success are still not perfect.

3. SOLUTIONS TO COLLEGE STUDENTS' ENTREPRENEURSHIP PROBLEMS UNDER THE BACKGROUND OF MASS ENTREPRENEURSHIP AND INNOVATION

3.1 ENHANCE THE PERSONAL ENTREPRENEURIAL QUALITY OF COLLEGE STUDENTS

First of all, schools should actively carry out a variety of publicity activities aimed at college students' entrepreneurship, through a variety of publicity activities to make college students interested in self-employment, so that it is possible to actively participate in college students' entrepreneurship, so as to have a more objective and true understanding of college students' entrepreneurship. Secondly, we should pay attention to the competition of students' self-employment projects, and obtain good results through the form of competition training. For college students, only by effectively adopting the form of project management can they have a greater sense of achievement. At the same time, the form of competition is more in line with the psychology of college students, and they are more willing to participate in it. Finally, college students need to have an accurate and profound grasp of entrepreneurial policies in order to promote college students to make full use of entrepreneurial policies in their entrepreneurial activities. Under the background of mass entrepreneurship and innovation, the state, schools and society have paid great attention to the entrepreneurship of college students. Through the implementation of entrepreneurship, college students can improve their own ability to a large extent, and at the same time better achieve employment, provide more jobs for the society, and effectively solve the problem of difficult employment.

3.2 CREATE A FREE AND OPEN FAMILY ENVIRONMENT

3.2.1 REASONABLE SUPPORT FROM THE FAMILY

The key to creating a free and open family environment is family support. Family is the most important emotional source for college students, and the support and affirmation of family members is very important for one's growth and success. College students need family support and affirmation, not only in material, but also in spirit. The situation of each family is different, and not all parents can provide enough money, contacts, resources and other support for college students to start a business, but what can be done is spiritual support and adequate encouragement. Parents can participate in entrepreneurship training with college students and understand the changes in

the economic market and the information of entrepreneurial projects together. In the process of college students' entrepreneurship, parents need to see the advantages of college students and give positive recognition and encouragement, and objectively correct and correct their defects and deficiencies, so that college students can feel the real care and help from parents. Not the shock and denial of what you want.

3.2.2 CHANGE THE PREJUDICE AGAINST COLLEGE STUDENTS' ENTREPRENEURSHIP

In order to improve the entrepreneurial willingness of college students effectively, it is necessary to change the prejudice of families towards college students' entrepreneurship. It is necessary to improve the publicity of the entrepreneurship policy of college students by the news media, focus on the theoretical basis of the entrepreneurship policy, increase the publicity of the typical entrepreneurship, play the role of policy interpretation, and increase the interaction of all sectors of society. It is necessary to let students' parents understand that college students' entrepreneurship does not affect their study, and the prejudice against college students' self-employment should be eliminated, and college students who are brave enough to start their own businesses should be fully affirmed and encouraged. College students who dare to start businesses have a certain degree of courage, courage to accept challenges and bear the corresponding results, which are worthy of social and family recognition of the advantages.

3.2.3 IMPROVE BUSINESS CONSULTING SERVICES

Improving entrepreneurship consulting services is a requirement for relevant government departments and staff, and requires relevant government departments to do a good job in training, improve the professional level of staff, and give full play to various consulting and service functions in the process of entrepreneurship and growth of entrepreneurial enterprises, such as providing policy service consulting, technical service consulting, education and collaboration service consulting. In the Internet era, the importance of information for college students to start a business is self-evident, because of this, local governments should build information platforms as soon as possible. The government will take the lead in building an entrepreneurial information platform to promote the projects to be built and the consultation and analysis of relevant policies to the society, so that college entrepreneurs can clearly know the current project and market access policies, government financial support and training information.

3.3 IMPROVE ENTREPRENEURSHIP EDUCATION FOR COLLEGE STUDENTS

In order to effectively enhance the entrepreneurial willingness of college students, we should constantly strengthen the entrepreneurial education of college students and effectively innovate the education system of college students. First of all, schools should actively set up education courses related to entrepreneurship. Through relevant entrepreneurship training and education courses, college students can understand self-employment and master basic knowledge related to entrepreneurship. Only in this way can they effectively avoid detments in the process of entrepreneurship and improve the success rate of entrepreneurship. It is necessary to strengthen the systematization of college students' entrepreneurship training courses and the training courses of college students' entrepreneurship training education. Training courses for college students are required to include the teaching of basic knowledge of entrepreneurship, the training of entrepreneurial skills, the teaching of business management knowledge, and the training of entrepreneurial practice, etc. The above contents can ensure the systematization of entrepreneurial training and education courses for college students, and also ensure the comprehensiveness of knowledge reserves for college students entrepreneurs in the future entrepreneurial process. Secondly, schools should constantly build a team of entrepreneurship guidance teachers. At present, there is still a lot of room for improvement in the overall quality and ability of college entrepreneurship guidance teachers. Schools can invite some successful entrepreneurs in society to serve as college students' entrepreneurship guidance teachers, so that their guidance will be more targeted. It can better help college students solve various problems encountered in the process of entrepreneurship.

4. CONCLUSION

College students' self-employment is an effective measure to effectively solve the problem of college students' employment difficulties. Under the background of mass entrepreneurship and innovation, more and more college students have a strong desire for self-employment. This paper studies the problems and countermeasures of college students' entrepreneurship under the background of entrepreneurship and innovation, and draws the following two conclusions: (1) Based on the analysis of the current situation of college students' entrepreneurial willingness and existing problems, the current situation of college students' entrepreneurial number is large and growing step by step, and the entrepreneurship involves a wide range of fields. There are some problems in college students' entrepreneurial intention, such as relatively low overall proportion of students' entrepreneurship, high risks and low success rate in the process of entrepreneurship, and incomplete support system of national policies for college students' entrepreneurship. (2) In view of the suggestions on the improvement of college students' entrepreneurship under the background of entrepreneurship and innovation, the author puts forward suggestions on enhancing college

students' individual entrepreneurship quality, creating a free and open family environment, and improving college students' entrepreneurship education.

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