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CONTENTS

Analysis Of the Latest MAN B&W Engine Cylinder Oil Adjustment Guide.....	1
<i>Peng Chen</i>	
Analysis of the Integration of Computer Application Technology Courses and Certificates in Higher Vocational Education under the 1+X Certificate System	4
<i>Jing Zhang</i>	
Exploring the Management of Vocational College Students under the Concept of Putting People First.....	7
<i>Yi Zhou</i>	
The Path of Empowering Rural Revitalization with Vocational Education	10
<i>JingWei Zhou</i>	
Strategies and Research on Student Management by Vocational Counselors	13
<i>Bing Xu</i>	
Research on the Reconstruction of Higher Vocational English Curriculum System Under the Background of "1+x" Certificate.....	16
<i>Li EnLiang</i>	
An Improved Secret Sharing Aggregation Scheme for Secure Data Aggregation.....	19
<i>Xinyu Wang</i>	
Low Surface Energy Organosilicon Marine Antifouling Coatings.....	22
<i>Yuanyuan Qu</i>	
The Application of Flipped Classroom in The Teaching of Aerobics Teaching in Colleges and Universities.....	27
<i>Qianqian Gao, Zhishuai Shi, Qi Gao</i>	
Building a Modern University System to Promote the Connotation Development of Universities	30
<i>Li Zhang</i>	
Correlation Analysis of Green Building Industry Development and Technological Innovation Based on Var Modeling.....	33
<i>Lv Junyi</i>	
The Value Connotation and Implementation Path of Rural Community Education under the Background of Rural Revitalization.....	36
<i>Li Xue</i>	
"Polarization Phenomenon" In the Reception Process of "Yuli Soul"	39
<i>XiaoYu Liu</i>	
Discussion on the Feasibility and Necessity of the Group Development of Maritime Vocational Education	41
<i>Zhang Yuanyuan</i>	

Analysis Of the Latest MAN B&W Engine Cylinder Oil Adjustment Guide

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Abstract: In March 2014, MAN B&W Company issued a technical service letter (SL2014-587/JAP) for cylinder lubrication update guidelines for electronic injectors of low-speed two-stroke diesel engines such as ME/ME-C/ME-B/MC/MC-C and ME-GI. Analyze and explore the mainstream models of our company's current ship main engine MK7 and below.

Keywords: Cylinder Lubrication; Residual Oil Analysis; Oil Injection Rate

1 CYLINDER LUBRICATION

In order to reduce the risk of low-temperature corrosion in the cylinder and reduce cylinder fuel consumption, lubricant manufacturers have successively launched high total base value (BN) cylinder oils on the market. MAN B&W Company uses BN 100 cylinder oil in the design of its new MK 8-8.1 and above models; It is recommended to use cylinder oil within the range of BN 70-100 for old models of MK 7 and below. Diesel engines select cylinder oil based on its BN value and SAE viscosity, while determining the cylinder oil injection rate depends on the BN value and fuel sulfur content.

2. WEAR MONITORING

The normal wear rate of cylinder liners should generally be less than 0.1mm/1000 working hours. Due to uneven temperature on the surface of the cylinder liner, corrosion is prone to occur in low-temperature areas. the high ovality of the cylinder liner is a sign of corrosion and wear inside the cylinder. At the same time, it is necessary to monitor the wear of the piston ring. For CPR-CL piston rings, the leakage control groove (CL) should not be worn below the limit value (see Table 1).

The best method to establish a suitable ACC factor is to measure the wear of moving components in the cylinder of a diesel engine. If

the wear rate of cylinder liners and piston rings is too high, the ACC factor must be increased to reduce the wear of moving parts in the cylinder. When conducting the suitability test for the fuel injection rate of diesel engine cylinders, the upper limit of the ACC factor range should be started, and then the ACC factor should be slowly lowered according to the actual measured decrease in wear of internal components in the cylinder.

3. RESIDUAL OIL ANALYSIS

The evaluation of the lubrication condition in the cylinder of a diesel engine can be achieved by sampling and analyzing the residual oil at the bottom of the scavenging box. the iron content in residual oil reflects the degree of corrosion and wear in the cylinder, and the residual alkali value (BN) reflects the working performance of the cylinder oil and its ability to neutralize acidic substances in the cylinder. When a specific diesel engine, fuel, and cylinder oil are working together, an appropriate ACC factor for cylinder oil injection rate can be established based on the residual oil analysis results. the iron (Fe) content in residual oil is measured according to ASTM D5185-09 standard, and the BN value is measured according to ISO 3771:2011 (E) standard. Residual oil analysis is a useful tool for determining the wear and tear in the cylinder of a diesel engine. If the ship is equipped with a residual oil analyzer, it can quickly measure the Fe and BN values. However, in order to obtain accurate and reliable results, MAN B&W suggests that it is best to send residual oil samples to a specialized laboratory on shore for analysis.

4. OIL INJECTION RATE SCANNING TEST

In theory, the injection rate of cylinder oil can be reduced to the extent that corrosion in the cylinder begins to rise. the cylinder oil

consumption rate varies depending on the oil brand and diesel engine. MAN B&W suggests conducting independent cylinder oil injection rate estimation and testing for each diesel engine. Continuous sampling and testing of residual oil in the scavenging tank is a good method to determine the optimal cylinder oil injection rate for diesel engines, while also avoiding excessive wear and tear on the diesel engine. A load test method called "Feed rate sweep" (test program shown in Figure 2) can conveniently determine the optimal fuel injection rate by evaluating the corrosion situation in the cylinder when running a diesel engine at a pre-set fuel injection rate, shortening the ACC factor suitability test time. When a diesel engine operates stably with a high sulfur content range of 2.8 to 3.5% and a load of over 25% (MOP panel interface is not realistic "low load"), the fuel injection rate scanning test takes 4 to 6 days. During this period, the diesel engine must maintain stable operation as much as possible to avoid being affected by changes in load and fuel injection volume. Set the test fuel injection rates at 1.4, 1.2, 1.0, 0.8, and 0.6g/kWh for each level. Each level of fuel injection rate must undergo a 24-hour diesel engine operation test, and continue with the next level of fuel injection rate test after residual oil sampling.

5. REPLACE WITH CYLINDER OIL WITH DIFFERENT BN VALUES

The supplier provides a wide range of BN value cylinder oil for selection. MAN B&W's previous diesel engine design was based on traditional BN 70 cylinder oil, but due to the introduction of new cylinder oil products with higher BN values, the latest design standard is based on the new BN 100 cylinder oil. When using cylinder oil with different BN values, the ACC factor of the new BN value cylinder oil relative to BN 70 can be calculated proportionally. For example, if BN 80 is used and $ACC(BN\ 70)=0.26$, then $ACC(BN\ 80)=0.26 \times 70/80=0.23$ (refer to Table 2 for the conversion relationship between the BN and ACC factors of new cylinder oil).

When switching to a new cylinder oil grade or type, if necessary, starting from the upper limit of the ACC factor range, the cylinder oil injection rate can be gradually reduced based on the actual operation of the diesel engine or the injection rate scanning test program, and the appropriate ACC factor can be re determined.

6 LOW SULFUR FUEL AND LIGHT OIL

When a diesel engine is fueled with low sulfur fuel ($\leq 1.5\%$ S), the fuel injection rate of BN 70-

100 cylinder can be set at the minimum value of 0.6g/kWh. Due to the high BN value of cylinder oil containing excessive alkaline additives, it may lead to an increase in piston head deposits. Therefore, when switching to low sulfur fuel in a diesel engine, it is necessary to correspondingly switch to low BN value cylinder oil. Only in special circumstances is it allowed to continue using high BN value cylinder oil, but the operating time cannot exceed 7-14 days. When a diesel engine is fueled with distillate oil (MGO/MDO), low BN value cylinder oil should be used instead of high BN value cylinder oil (according to the type of diesel engine fuel (oil), matching BN value cylinder oil should be selected as shown in Table 3).

7 LOW LOAD OPERATION

After the ship slows down and navigates, the diesel engine operates at low load, and the surface temperature of the main engine cylinder liner will decrease, increasing the possibility of low-temperature corrosion. In order to reduce fuel consumption rate, various optimization measures such as waste heat recovery and reuse and partial load operation have been adopted in succession. the commonly used method of cutting off the main turbine turbocharger at present has relatively increased the combustion pressure in the cylinder at low load. In addition, prolonged low load operation has led to an increase in acid and water condensation products on the cylinder wall, exacerbating the low-temperature corrosion degree in the combustion chamber. Therefore, it is necessary to reassess and determine the ACC factor of cylinder oil injection rate based on the new risk of corrosion in the cylinder. MAN B&W has recommended cylinder oil matching guidelines based on the model, with a minimum injection rate of 0.60g/kWh. For new models of MK8-8.1 and above, BN100 and SAE50 cylinder oils are designed and recommended, with an ACC factor range of 0.40 to $0.20\text{ g/kWh} \times S\%$; For older models of MK 7 and below, it is recommended to use BN70-100 and SAE50 cylinder oil, with an ACC factor range of 0.34 to $0.20\text{ g/kWh} \times S\%$.

8 MANAGEMENT MEASURES

8.1 Mobile navigation and variable load operation

When starting a diesel engine, changing load, or maneuvering a ship, the fuel injection rate should be increased by 25% (the "LCD" on the MOP panel interface displays "On", and the low load function is activated). After the diesel

engine load stabilizes, continue to operate at this fuel injection rate for 30 minutes.

8.2 Abnormal situations

Order to maintain the safe working condition of the diesel engine cylinder, the condition of the piston rings and cylinder liners in the cylinder should be checked frequently from the scavenging port. If abnormal phenomena are found, the first consideration should be to adjust the cylinder oil injection rate.

When cylinder pulling, piston ring adhesion, high cylinder liner temperature, or temperature fluctuations occur, increase the cylinder oil injection rate to 1.2g/kWh and reduce the combustion pressure in the cylinder; Once the working conditions in the cylinder are stable, adjust the cylinder oil injection rate and combustion pressure back to normal working conditions.

When highly corrosive wear occurs, increase the ACC factor to the maximum value (0.34g/kWh \times S%, BN70); And when the wear condition is confirmed to be normal, at 0.02g/kWh \times Gradually reduce the cylinder oil injection rate with an S% amplitude.

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Analysis of the Integration of Computer Application Technology Courses and Certificates in Higher Vocational Education under the 1+X Certificate System

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Abstract: Currently, the Ministry of Education has implemented a 1+X certificate system, which includes academic certificates and several vocational skill level certificates. This has raised higher requirements for vocational computer application technology courses, and teachers need to update their existing teaching concepts and methods. This article briefly introduces the advantages of the 1+X certificate system, analyzes the integration measures of the 1+X certificate system for vocational computer application technology courses, and hopes to provide support for the smooth implementation of vocational computer application technology course teaching.

Keywords: 1+X certificate system; Vocational education; Computer application technology; Integration of course certificates

1. ADVANTAGES OF THE 1+X CERTIFICATE SYSTEM

The application of the 1+X certificate system and the teaching of computer application technology courses in vocational colleges can improve the level of talent cultivation, demonstrate the advantages of vocational education, reduce the difficulty of employment for students, and provide support for their subsequent development. Therefore, relevant personnel must strengthen the integration of the 1+X certificate system and the course certification of vocational computer application technology majors.

1.1 Reasonably utilize various resources

At present, the available educational resources in vocational colleges are relatively fixed, which leads to teachers being affected by class hours

when teaching computer application technology courses, making it difficult to improve student learning enthusiasm, and the quality of teaching cannot be guaranteed. By applying the 1+X certificate system to integrate courses and certificates, it is possible to make reasonable use of educational resources, government resources, and social resources in vocational colleges, establish clear teaching objectives, ensure that the teaching effectiveness of computer application technology majors in vocational colleges meets the requirements, and reduce the difficulty of subsequent employment [1].

1.2 Enable students to gain an advantage in competition

In the traditional model, education is a key factor in evaluating talent capabilities, which is relatively one-sided and not objective, and to some extent hinders the stable development of enterprises. By applying the 1+X certificate system, it is possible to analyze students' academic qualifications while also understanding their professional qualities, providing support for talent selection in employers. This is significantly different from the traditional mode of talent cultivation. Therefore, in the same context, students can only gain an advantage in job competition and better carry out job work by possessing more vocational skills and certificates.

1.3 Intensify efforts for reform and innovation

An analysis of China's economic development reveals that vocational colleges must recognize the importance of integrating the 1+X certificate system curriculum in order to achieve better development [2]. However, due to differences in financial strength, technical level, etc. among

different vocational colleges, there are also certain differences in the methods used to carry out teaching reforms. In this situation, the application of the 1+X certificate system in vocational colleges can improve the quality of computer technology teaching, provide successful experience for other schools, improve the problems that arise in traditional vocational education models, ensure that computer professionals have sufficient ability to perform job duties, and provide support for the long-term development of vocational colleges.

2. MEASURES FOR THE INTEGRATION OF COMPUTER APPLICATION TECHNOLOGY COURSES AND CERTIFICATES IN HIGHER VOCATIONAL EDUCATION UNDER THE 1+X CERTIFICATE SYSTEM

2.1 Update teaching concepts

To apply the 1+X certificate system, it is necessary to carry out the reform of integrating course certificates, actively update teaching concepts, and promote teaching reform from a rational and objective perspective. Firstly, teachers should increase their efforts to analyze and clarify the content of the 1+X certificate system, and integrate computer application technology teaching content into it to ensure that teaching methods can meet the teaching needs of the new era, prevent excessive consumption of teaching resources, and ensure that the overall strength of vocational computer application students can be improved. Secondly, teachers need to change the teaching method that originally only focused on teachers as the main body, and focus on students majoring in computer application technology to avoid a significant gap between teachers and students. In this process, it is also necessary to create a suitable teaching environment to ensure that students can enthusiastically engage in the study of computer science. Thirdly, we must adhere to keeping up with the times, update the current teaching methods, strengthen the connection between theory and practice, and ensure that students majoring in computer application technology in vocational colleges can achieve better development.

2.2 Optimize teaching methods

Under the traditional mode of teaching in vocational colleges, the transmission of theoretical knowledge is the focus of attention. Students find it difficult to combine theoretical knowledge with reality and provide support for

talent cultivation under the 1+X certificate system, which to some extent restricts the integration of courses and certificates. Therefore, when applying the 1+X certificate system, it is necessary to update teaching concepts and apply modern technologies such as information technology, big data technology, and new media technology to make teaching reform more profound.

In addition, teachers should increase their efforts to update teaching methods, create more practical activities related to computer application technology, ensure that teaching can include more diverse content, and enhance students' enthusiasm for self-directed learning. Vocational colleges should apply the school enterprise cooperation teaching method, fully utilize the resources of enterprises and vocational colleges, and ensure that students can participate in practical activities.

2.3 Strengthen school enterprise cooperation

Most students need to take a long time to adapt when joining the job, which to some extent hinders the improvement of their academic career abilities. From actual analysis, it is found that this is due to the lower professional quality of vocational colleges. When conducting vocational education, most teachers prioritize the transmission of professional knowledge in computer application technology, while neglecting the comprehensive development of students. Vocational colleges should consider their own practical situation and cooperate with computer enterprises. Strengthen school enterprise cooperation, encourage vocational college students to apply their learned knowledge to practice, and ensure that vocational college students can achieve better development.

From the perspective of enterprises, providing practical opportunities for vocational college students can provide talent protection and increase the economic benefits that enterprises can obtain. However, when promoting school enterprise cooperation, most enterprises have a lower level of acceptance towards students. This is mainly because companies believe that the overall strength of students is not high and cannot meet the needs of business operations. Therefore, teachers should provide training to vocational college students before they start internships, implement the preparation work, and shorten the time required for enterprises and students to connect.

2.4 Building a sound talent cultivation mechanism

In the 1+X certificate system, teachers need to improve the existing professional talent training mechanism and carry out work from the following points: first, employment oriented [3]. When carrying out talent cultivation, it is necessary to set up course content reasonably to ensure that the talents cultivated can provide support for social development. Secondly, it is necessary to improve the teaching management system, respect the classroom subject status of students, break the situation of independent information inside and outside the school, and ensure that students can recognize the development of computers and subsequent trends in the first time. Thirdly, optimize the teaching evaluation system. In addition to using exam scores as a basis for evaluating students, teachers also need to understand their practical level and mastery of professional skills from a holistic perspective, and integrate their daily behavior into the evaluation to ensure that students can form a full understanding of their own situation and provide guarantees for future employment.

3. SUMMARIZE

Based on the above analysis, it is crucial to ensure the integration of computer application

technology courses and certificates in vocational colleges under the 1+X certificate system. This can improve the problems that arise in the current vocational computer teaching process, enhance the computer literacy of vocational college students, and provide support for their comprehensive development.

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Exploring the Management of Vocational College Students under the Concept of Putting People First

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Abstract: In the current educational context, the concept of putting people first is increasingly valued in the management of students in vocational colleges. This concept emphasizes respecting the individuality of students, paying attention to their growth, and aiming to meet their needs to help them realize their self-worth. This article elaborates on the importance and significance of student management in vocational colleges under the people-oriented concept, analyzes the current challenges faced by management, and proposes corresponding countermeasures and suggestions, in order to provide reference and guidance for improving the level of student management in vocational colleges.

Keywords: People-Oriented; Vocational Colleges; Student Management

1. THE LACK OF HUMANISTIC MANAGEMENT CONCEPT IN STUDENT MANAGEMENT IN VOCATIONAL COLLEGES

In the student management work of vocational colleges, the people-oriented management concept is the key to ensuring the comprehensive development and growth of students. However, some vocational colleges currently have deficiencies in this area, resulting in unsatisfactory results in student management work. The student management work in vocational colleges often places too much emphasis on rules and regulations, neglecting the people-oriented management concept. While rules and regulations are important, excessive constraints can limit students' initiative and creativity. The people-oriented management philosophy emphasizes respecting the individuality and differences of students, encouraging them to unleash their potential and

realize their self-worth. In addition, the student management work in vocational colleges often only focuses on the grades and behavioral performance of students, neglecting the attention to their mental health. The people-oriented management concept requires attention to the comprehensive quality of students, including their mental health. Only when students have a healthy psychological state can they better cope with the challenges in learning and life. In addition, the student management work in vocational colleges lacks an effective communication mechanism. Although the people-oriented management concept emphasizes the need for interaction and communication between managers and students, some managers in vocational colleges only issue orders and regulations unilaterally without understanding the actual needs of students, resulting in weak targeting of management work. Not only does it fail to achieve the expected management effect, but it also causes students to feel disgusted and dissatisfied [1].

2. MANAGEMENT STRATEGIES FOR VOCATIONAL COLLEGE STUDENTS UNDER THE CONCEPT OF PUTTING PEOPLE FIRST

Under the people-oriented concept, the management strategy of vocational college students needs to fully consider the needs and characteristics of students. By creating environmental management, emotional management, and student self-participation management, comprehensive attention and guidance can be achieved to students, promoting their individual development and overall quality improvement.

2.1 Establishing a people-oriented environmental management system in vocational colleges

The environment is one of the important factors for the growth and development of students. Vocational colleges should establish a people-oriented environmental management strategy, starting from the construction of campus culture, educational and teaching facilities, and network information environment, to create a good learning and living environment, and promote the healthy growth of students. Firstly, campus cultural construction is an important aspect of environmental management. Vocational colleges should pay attention to the overall planning of campus culture, and build a campus culture with their own characteristics based on the characteristics of the school and majors; We should also pay attention to the inheritance and innovation of campus culture, and cultivate students' cultural literacy and innovative spirit through organizing various cultural activities, technology competitions, and social practice activities. Secondly, educational and teaching facilities are an important guarantee for environmental management. Vocational colleges should increase investment in educational and teaching facilities, establish and improve facilities such as experimental and training rooms, libraries, and gyms, and provide students with good learning and exercise venues. At the same time, attention should also be paid to the updating and upgrading of educational and teaching facilities, timely introduction of advanced equipment and technology, and meeting the learning and career development needs of students. Finally, the network information environment is a new field of environmental management. Vocational colleges should strengthen the management and maintenance of campus networks, establish a sound network security protection system, prevent harmful information from harming students, and then actively promote information-based teaching and management. By building digital campus platforms, online courses, etc., more convenient learning and life services should be provided for students.

2.2 Establishing a people-oriented emotional management system in vocational colleges

Emotional management refers to paying attention to the emotional needs of students, establishing good teacher-student relationships, stimulating their enthusiasm and creativity, and achieving their self-management and self-development. Based on this, vocational colleges should establish a people-oriented emotional

management strategy, starting from the following aspects: teachers should actively communicate and exchange ideas with students, understand their ideological dynamics and learning and life situations, pay attention to their emotional needs and psychological problems, and provide timely guidance and assistance; Attention should also be paid to interaction and feedback between teachers and students, encouraging students to participate in classroom discussions and extracurricular activities, and enhancing trust and cooperation between teachers and students [2]. Subsequently, create a good class atmosphere, as the class is one of the most important learning and living places for students. A good class atmosphere can promote emotional communication and learning outcomes among students. Therefore, teachers should strengthen the management and guidance of the class, pay attention to the construction of class culture and the cultivation of student cadres, and encourage students to actively participate in class activities and self-management. On this basis, attention should also be paid to individual differentiation management, mainly because each student has different personality, interests, and ability characteristics. Emotional management needs to focus on individual differentiation management. Teachers should develop personalized training and education plans based on the characteristics and development needs of students, pay attention to their psychological health and growth needs, and help them solve problems in learning and life.

2.3 Colleges create a people-oriented approach to student self participation management

Student self participation management refers to the process in which students, under the management of the school, achieve self-development and comprehensive quality improvement through self-restraint, self planning, and self implementation. In this regard, vocational colleges should create a people-oriented student self participation management strategy, starting from the following aspects: first, establish student autonomous organizations. Student autonomous organizations are one of the important platforms for students to participate in self-management. Vocational colleges should establish various student autonomous organizations, such as student unions, student clubs, etc., to guide students to participate in school management and service work, and improve their self-management and self-

development abilities. Then, provide opportunities and platforms for students to participate, such as conducting social practice activities, organizing cultural activities, etc., guide students to actively participate, and exercise their organizational skills, communication skills, and teamwork spirit. Next, strengthen guidance and support for student self participation management, such as providing training, guidance, and financial support, to help students better achieve self participation management. At the same time, it is also necessary to pay attention to the evaluation and feedback of student self participation management, timely identify problems and solve them. Through the implementation of these measures, comprehensive attention and guidance can be achieved for students, promoting their individual development and overall quality improvement, thereby providing better support and services for their growth and development [3].

3 CONCLUSIONS

In summary, guided by the people-oriented concept, student management in vocational colleges needs to pay attention to the comprehensive development of students, respect their individual differences, stimulate their potential, and serve their lives and future career development. By implementing humanistic management, vocational colleges can better

cultivate students' autonomy and sense of responsibility, enhance their comprehensive quality, and meet the demand for talent in society. However, it should be noted that people-oriented student management is not achieved overnight, but requires continuous effort and improvement. In addition, the concept of people-oriented is not only a management method, but also an educational philosophy, which requires vocational colleges to examine students from a more comprehensive and long-term perspective, so that they can realize their self-worth and social value.

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The Path of Empowering Rural Revitalization with Vocational Education

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Abstract: With the upgrading and transformation of industrial structure and the sustained development of the national economy, the importance of vocational education has become increasingly prominent. It is a link between talent cultivation and market needs, and can cultivate a large number of skilled talents for society. Therefore, it is necessary to establish a sound talent mechanism system, provide more opportunities for vocational college graduates to further their studies, and enhance the visibility and attractiveness of vocational colleges. And continuously strengthen the integration of industry and education in vocational education, so as to better reflect its role in entrepreneurship and entrepreneurship education, promote the trend of returning home for entrepreneurship, and accelerate the construction of digital rural areas.

Keywords: Vocational Education; Path to Rural Revitalization

QUOTE

Vocational education has unique advantages in cultivating versatile talents, inheriting skills, and entrepreneurship. the implementation of the rural revitalization strategy has brought new tasks and opportunities to vocational education. So, vocational education should adapt to the new trend of rural modernization, provide various types of skills for rural areas, and also cultivate new industries to add new development momentum to rural areas, so that it can achieve efficient development in helping rural revitalization.

1. IMPROVING THE CONSTRUCTION OF THE CORE OF VOCATIONAL EDUCATION

On the one hand, promoting the integration of vocational education and higher education, guiding the restructuring of vocational colleges, and establishing vocational colleges. Through school enterprise cooperation, the practical

nature of vocational education and the theoretical nature of universities can be organically integrated, achieving comprehensive development and laying a solid talent foundation for rural revitalization. After the reform, the social status of vocational colleges has undergone changes, thereby cultivating talents that are more in line with the requirements of the times. On the other hand, due to many people believing that education is a way out of rural areas, few people with higher education will return to rural areas to engage in labor. the key to rural revitalization lies in people. It is necessary to guide migrant workers in politics, culture, and other aspects, increase their publicity, encourage and attract more talented and innovative people to return to the countryside. Only by making the countryside popular can rural revitalization truly be achieved [1].

2. IMPROVING THE CONSTRUCTION OF VOCATIONAL EDUCATION SERVICE LEVEL

In the process of planning and designing education, for vocational schools, it is necessary to further reflect their strengths and advantages, continuously analyze and explore professional platforms for the integration of contemporary agriculture development, and thus build a talent cultivation site for rural revitalization. At the same time, according to the standards and requirements of regional agriculture and industry, different methods of training and education activities should be implemented, and the content of training and education must be purposeful and targeted. By closely integrating the content of agriculture, rural areas, and farmers to meet the needs of rural revitalization, we will improve the professional configuration and scientifically set up knowledge about agricultural specialties, thereby promoting mutual satisfaction between agricultural specialties and the construction of new rural

industries. In addition, expanding the training objectives of vocational education to meet the needs of various social classes. In terms of teaching methods, it is necessary to focus on theory, transform traditional teaching methods, and place more teaching content in practice, so that the teaching effect of schools can be better played. At the same time, it can also strengthen school enterprise cooperation, promote interaction between the government, schools, and enterprises, and allow high-quality resources from various departments to flow and share with each other. Through the joint efforts of schools and enterprises, a high-quality "dual teacher" teaching team can be established.

3. GUIDE THE SCIENTIFIC ALLOCATION OF VOCATIONAL EDUCATION RESOURCES

In promoting rural revitalization and the development of vocational education, social forces play an important role. Mobilizing more social forces to participate in vocational education is of great significance in finding new opportunities for the development of vocational education. To truly integrate vocational education into rural revitalization, it is necessary to fully leverage the active role of the government. While developing vocational education, appropriate financial transfer payments should be given to economically underdeveloped areas such as the central and western regions. On this basis, appropriate subsidies should be given to education funds in economically underdeveloped areas to reduce development problems caused by imbalanced educational resources. Guide vocational education to penetrate into rural areas, expand the school's location to counties and rural areas, provide tax incentives for enterprises that jointly cultivate agricultural majors, and increase the cultivation efforts for agricultural vocational colleges with local characteristics. Build them into model colleges, implement characteristic teaching activities, and cultivate characteristic talents for the local area [2].

4. IMPROVE THE CONSTRUCTION OF LEGAL MECHANISMS FOR PROFESSIONAL EDUCATION

On the one hand, with the introduction and implementation of the new Vocational Education Law as the direction, we will accelerate the promotion and improvement of the institutional framework for vocational education to serve rural revitalization, providing

legal guarantees for the development of vocational education itself and the implementation of rural revitalization goals. At the same time, we will strengthen the supply side reform of higher vocational education, determine the target position of higher vocational education from the perspective of the rule of law, and refine and specify the funding investment, professional development, teacher team construction, and joining subjects of higher vocational education. On the basis of determining the rights, responsibility areas, and corresponding obligations of the rich subjects in the development of vocational education, the rights of each intervention subject should be protected to the greatest extent possible. At the same time, it is also necessary to accelerate the establishment of a supporting system with the participation of multiple subjects as the main content. On the other hand, to enhance the coordination effect of vocational education in providing service system for rural revitalization, the formulation and implementation of each system must be closely linked to other systems, so as to fully utilize the advantages of various system combinations. Therefore, it is necessary to start from the top-level formulation, mechanism construction, and other aspects to do a good job in coordinating the development of vocational education and rural revitalization. At the same time, we need to break through the barrier of vocational education serving rural revitalization, enhance the connection between vocational education and farmers, rural areas, and agriculture, and combine vocational education with rural revitalization at multiple levels such as talent, ability, and projects, to enhance the ability and effectiveness of vocational education serving rural revitalization.

5. BUILDING A RURAL GOVERNANCE SYSTEM

In the new era, under the requirements of the national governance system, the construction of rural basic organizations is gradually receiving attention. To revitalize rural areas, governance is fundamental. the governance level of rural grassroots organizations directly affects the modernization of the national governance system. Therefore, strengthening the construction of rural grassroots organizations should be regarded as the foundation for consolidating and developing the rural social governance system. As the main path for social skilled talents, higher vocational schools have

expanded their enrollment targets to a large number of migrant workers with the implementation of the national "million enrollment expansion". With the support of this policy, migrant workers who want to study can enter schools and receive vocational education. Through school education, the political and cultural qualities of farmers, as well as agricultural technology, have been greatly improved, thus cultivating a group of professional farmers with strong political qualities, technical abilities, and management abilities, and having a certain development space. At the same time, in order to consolidate the achievements of poverty alleviation and promote rural revitalization, many vocational colleges have sent excellent management talents and professional teachers to rural areas to build and improve the rural governance service system through "village school interaction", promoting the organic integration of rural rule of law, autonomy, and so on [3].

6. CONCLUSION

Vocational education, with its unique educational characteristics, plays a crucial role in rural revitalization. It can provide a large number of skilled talents for rural economic construction and promote the development of rural industry. Vocational education focuses on practicality and can cultivate talents that better meet the needs of rural industrial development. Therefore, it is necessary to continuously explore a new way for

vocational education to serve rural revitalization, while also making vocational education better serve rural revitalization and providing strong talent guarantee and technical support for the implementation of the rural revitalization strategy.

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Strategies and Research on Student Management by Vocational Counselors

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Abstract: The work of counselors in vocational colleges focuses on managing students from a daily perspective and conducting education in their daily life. Although counselors do not educate students in the classroom, they are the closest companions and the maintainer of school stability. Due to the current personality differences and complex sources of vocational college students, student Managements need to be carried out from two aspects: psychological counseling and attention to life, which brings challenges to counselor.

Keywords: Vocational Counselor; Vocational Students; Student Management

Vocational education focuses on cultivating technical professionals. Vocational students come from various types such as regular high schools and vocational high schools, which have significant differences in learning attitudes among different types of students. Therefore, Student management is different from Undergraduate universities.

1. CHALLENGES BROUGHT BY THE SOURCE OF VOCATIONAL STUDENTS TO STUDENT MANAGEMENT

The main sources of students in vocational education are ordinary high school students and vocational high school students, which have significant differences in learning attitudes and family education. Students in ordinary high schools are selected through the middle school entrance examination and enter the general high school. Their initial goal is to enter undergraduate universities. While, entering vocational education is a choice made in the state of failing the college entrance examination. This type of student has autonomy in learning and has high requirements for themselves. Even when studying in higher vocational colleges, they still have a greater ideal and are prepared to improve through the promotion from college to undergraduate or even postgraduate entrance

examination. In terms of learning content, students from General High School have a wider range of basic knowledge.

Most students from vocational high schools fail in the middle school entrance examination due to academic biases and other reasons, and then enter vocational high schools for specialized learning. These students' future plans are all aimed at seeking job positions with professional skills, whose interest in improving their educational level is low. They started learning specialized knowledge in vocational high school with a relatively narrow level of basic knowledge.

In addition to the complex source of students, their family background also poses challenges to student management. At present, vocational college have students from both affluent urban families and impoverished rural families; Different family environments have different impacts on students' personality formation. Different family backgrounds and learning experiences can easily affect students' learning and life in vocational colleges, and these phenomena also affect student management.

2. STRATEGIES FOR STUDENT MANAGEMENT OF VOCATIONAL COUNSELORS

The main responsibility of vocational counselors is to manage students on in daily life. Based on the characteristics of vocational students' sources and families, it is necessary to understand students and teach them according to their aptitude in management.

2.1 Understanding students' learning attitudes and family background.

After accepting student management, counselors first need to use multiple means to understand students' family background. Understanding the source of students is easy and can be found in their files. But understanding students' family life requires observation and conversation to gain a deeper understanding [1]. Many students

have strong self-esteem and do not want to actively reveal their family background. In daily life, understanding should be achieved through students' interpersonal communication, daily consumption, learning attitude, and other aspects. Those born into impoverished or single parent families generally have feelings of inferiority, are not good at actively chatting with others, and do not actively participate in group activities. They are full of vigilance when they are not familiar with their classmates' situation. This type of student often alone at school for a long time. While, others enter vocational schools but have not forgotten their original intention of studying. They study diligently and have plans to strive for higher education in the future. Different family backgrounds require counselors to observe through their interpersonal communication, life performance, and learning attitude.

2.2 Teaching students according to their aptitude in management

After understanding the basic situation of students, counselors should conduct different management for different types of students. In terms of learning, it is necessary to provide advice and a learning environment for students who are motivated and preparing to graduate from college, allowing them to achieve a balance of work and rest, find the most suitable way for themselves, encourage them to work hard, and fulfill their goals [2]. For those students who believe that having a diploma can help them break into society. And it is necessary to establish a correct learning concept and develop a lifelong learning concept by themselves. Educating them not to waste a lot of time in school, they should learn solidly, master skills, and at the same time, cultivate good moral values. They should not waste their good time in school, but should study solidly, master skills, and at the same time, master humanistic knowledge and cultivate good moral values in order to establish a foothold in society. Counselors also need to guide student who lack hands-on skills from a young age, learn to take care of themselves, develop from managing themselves to managing dormitories to cultivate good living habits.

In addition to daily care, attention should also be paid to students' mental health. Guiding students to correctly analyze the personality characteristics of others, learn to view changes from the perspective of others, and cannot make subjective conclusions. For students who spend

money without restraint, counselors should also provide guidance to them

2.3 Using network tools for management

Counselors can organize students to gather and discuss their views on learning, online shopping, and online lending. During the process of discussion, social hot topics can be used for discussion to achieve educational goals. Individual conversations are mainly aimed at students with individual problems. Counselors should use individual conversations to understand the reasons behind them and help them analyze their own shortcomings.

Some mental health education for individual contact can be achieved through online means, such as WeChat or QQ. Students can individually confide in their counselors. In the other hand counselors can provide effective advice to students and also keep them confidential. For students' psychological problems, counselors can gain a deeper understanding through their QQ space and WeChat Moments, and then use comments to guide them. After discovering students' psychological problems, counselors can help them by pushing relevant materials through WeChat.

3. PROBLEMS AND MEASURES FOR VOCATIONAL COUNSELORS IN STUDENT MANAGEMENT

At present, there are two main problems in students management --excessive burden and insufficient professional abilities. Only by improving this problem can Counselors better manage students.

3.1 Firstly, the main problem in the work of a counselor is its broad scope of work and multiple management objectives. However, one counselor is responsible for dozens of students. the problems faced by students vary, often making counselors feel inadequate and unable to meet their needs. the part-time job of a counselor includes life, moral education, and psychological counseling, but student management is also these three main aspects. Therefore, many counselors are busy all day, but the effect may not be good. This can easily cause problems for students in vocational colleges that have been affecting their learning and even their life after entering society.

Secondly, counselors have not been received in professional education [3]. Most of them come from different majors, although they all have a master's degree, there is only one specialty.

Student management need counselors to have a comprehensive competence, requiring knowledge in various aspects such as moral literacy, humanistic cultivation, and psychological counseling. Another disadvantage is that counselors usually serve directly after graduating from college or graduate school, and do not have much social life experience, thus lacking observation and mediation skills in their work.

3.2 Measures for improving the work of college counselors

Firstly, Strengthen personnel allocation and equip multiple counselors in a profession, who manage different aspects separately. For example, life counselors are responsible for managing guidance in life. Learning counselors are responsible for promoting students' correction of learning concepts. Psychological counselors are responsible for mental health, and counselors perform their respective duties and liaise with each other to jointly manage the same group of students.

Secondly, It is necessary to improve the professional skills of counselors, establish a counselor program in university education, and cultivate multifunctional counselor professionals. In the process of recruiting

counselors, attention should also be paid to their language expression and communication skills. Counselors should have a plenty of social experience, allowing them to go to enterprises for internship exercises, understand social phenomena, and manage employment in enterprises. Through this way, counselors can educate themselves based on their own experience in work and avoid talking about things perfunctorily. On the other hand, improving the social status and job benefits of counselors can also promote their self-improvement.

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Research on the Reconstruction of Higher Vocational English Curriculum System Under the Background of "1+x" Certificate

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Abstract: Based on the reform of the "1+X" certificate development system, this article analyzes the shortcomings of the English curriculum system in vocational colleges in the development and reform process. Through a comprehensive exploration of the system, it proposes to fully optimize the guarantee mechanism of relevant academic certificates and vocational skill level certificates, promote students to meet the needs of the employment market and policy guidance requirements, and truly become comprehensive talents with higher vocational skill levels. Therefore, the development and reform of English courses in vocational colleges can. To establish an effective collaborative training platform between schools and enterprises, in order to provide students with new development ideas and opportunities

Keywords: Vocational Education Teaching; English Courses; 1+X Certificate; Course Optimization

1 PREFACE

In the curriculum education system of vocational colleges, English curriculum is an important component, therefore, research on English curriculum is relatively diverse and diverse. After analyzing the structure of the English curriculum in the vast majority of vocational colleges, it was found that "Basic English+Industry English" is the most common course structure. However, using this course structure will to some extent increase the solid characteristics of teaching content and course combinations, making it difficult to adapt to the diverse construction needs in the new era and effectively meet the background of the "1+X" certificate system, the targeted and matching requirements for the course. At present, the vast

majority of vocational colleges still only focus on promoting the reform of teaching models when carrying out English curriculum teaching. In order to further optimize the English curriculum system, vocational colleges must actively explore the construction of a diversified curriculum system in combination with the new requirements of economic forms and institutional models.

2 THE CORE OF ESTABLISHING AND IMPROVING THE ENGLISH CURRICULUM SYSTEM

According to the "Opinions of the Ministry of Education on Strengthening the Training of Talents in Higher Vocational Education", a series of requirements are proposed, such as "focusing on technical application ability", "basic theoretical teaching is aimed at application, with necessity and sufficiency as the degree", and "practical teaching should occupy a large proportion in teaching plans". In actual English curriculum design, it is necessary to meet the requirements of vocational English positions for international English related professionals in English knowledge Higher abilities and comprehensive English professional qualities in various aspects.

The requirement is to position the overall English knowledge and ability structure of students in this position for three years as "business operation and management talents who can use English as the working language". the specific job requirements must be proficient in English, with communication skills, professional knowledge, and a basic work ability with business operation ability.

2.1 Training module for professional English foundation courses in school.

Mainly used to cultivate the basic language expression ability and English communication application ability of students in school, students can achieve comprehensive and synchronous development in basic skills such as English listening, speaking, reading, and writing. the main content of the course includes comprehensive practical English, extensive reading of English short articles, listening and speaking of English watching TV, reading and writing in English, etc.

2.2 Compulsory Course Module for English Professional Skills

Through various course formats such as international English (including business content such as international English correspondence), students can quickly acquire basic international English knowledge and professional skills, and organically integrate their language learning and professional knowledge to further consolidate and expand their language abilities.

2.3 Learning modules for elective courses in vocational English major knowledge

Mainly used by students to consolidate and continuously expand their new English knowledge and practical skills, broaden their knowledge base, and continuously improve their comprehensive ability and quality.

2.4 Vocational Practice Training Course Module

The main content is a vocational training course specifically designed to cultivate students' practical and practical abilities in both practical and theoretical aspects in the future.

3 THE PRACTICE STATUS OF ENGLISH TEACHING IN VOCATIONAL COLLEGES

3.1 Backward teaching concepts

From the current situation of vocational English practice, there is a problem of outdated teaching concepts. the existence of this problem not only affects the integration of needs analysis, but also hinders the construction of a diversified curriculum system for vocational English.

3.2 Fuzzy setting of teaching objectives

In vocational English teaching, the setting of teaching objectives can provide guidance for the design of English teaching activities and teaching modes for teachers. Based on English teaching modes and activities, students should strengthen their guidance and be guided by their English learning needs. Through specific English activity practices, students can obtain English target information and help cultivate their core English literacy.

3.3 Single teaching methods

In vocational English teaching, teaching methods are the key content of overall teaching. By using diverse teaching methods, targeted English teaching activities can be carried out for students based on needs analysis concepts. Through effective guidance from teachers and interaction with students, students can achieve teaching goals.

3.4 Separation of teaching content from reality

As another key aspect of vocational English teaching, effective and contemporary English teaching content can stimulate students' interest in learning English and promote their absorption of English content under the guidance of teachers.

4 THE OPTIMIZATION PATH OF HIGHER VOCATIONAL ENGLISH CURRICULUM SYSTEM UNDER THE "1+X" CERTIFICATE SYSTEM

4.1 Updating the Concept of Curriculum Construction

Based on the specific guidance requirements of the EOP teaching philosophy, vocational colleges take the "1+X" certificate system as an opportunity to promote the creation of a public English ternary curriculum system with "basic English+industry English+characteristic English" as the main body. Combined with the above three specific English teaching modules, it promotes the realization of the curriculum goals of collaborative training between vocational colleges and universities, enabling vocational colleges to cultivate strong language skills and professional abilities Comprehensive talents with cultural literacy level.

4.2 Optimizing course content

To promote the completion of curriculum reform in vocational colleges, the first step is to carry out specific reforms and optimizations targeting the course content. Therefore, in the actual process of curriculum reform, the goal of selecting "Basic English" course content should be to comprehensively enhance students' language foundation and fully promote their academic development; In order to reform the content of the "Industry English" course, it is necessary to select based on the "1+X" certificate system and the new economic background, and effectively meet the requirements of students to apply English knowledge to specific job requirements.

4.3 Building a Multidimensional Teacher Team

To promote the implementation of the "three education" reform in vocational colleges, it is necessary to attach importance to the main role of teachers as implementers. Therefore, in the process of promoting the reform and optimization of the ternary curriculum system in practice, it is necessary to establish a multi-dimensional teaching staff force as a guarantee. Considering the positioning of English public course teachers in vocational colleges, it is required that teachers must be able to serve professional teaching, explain relevant professional English courses, and master the customs and cultures of multiple countries. This to some extent indicates that vocational colleges mainly recruit diversified teachers in the process of recruiting teachers.

4.4 Building a ternary curriculum system

A reasonable and scientific curriculum system helps to further ensure and improve the quality of internal education and teaching in vocational colleges, and is also the main carrier for achieving talent cultivation goals. After the country proposed that the teaching system of vocational colleges should be combined with the "1+X" certificate system, the new teaching system and social demands are high. In the actual English teaching process, vocational colleges can break through the limitations of language and culture, and establish educational and teaching activities mainly focused on improving students' professional skills.

5 CONCLUSIONS

In summary, with the "1+X" certificate system as the teaching guidance, vocational colleges should follow the principle of mutual influence

and penetration between teaching and practice when developing English courses, fundamentally promote the cultivation of composite education talents, and use school enterprise cooperation as the training path to comprehensively improve the teaching ability and practical level of the teaching team, so that vocational college students can have a good competitive advantage after graduation, Ensure the long-term development of China's vocational education system.

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An Improved Secret Sharing Aggregation Scheme for Secure Data Aggregation

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Abstract: The continuous advancement of wireless communication technology and microelectronics has facilitated the development of Wireless Sensor Networks (WSNs), which are widely used in all aspects of life, military and production. However, nodes in WSNs are usually deployed in unattended or harsh or even dangerous environments, and at the same time, these nodes usually have only limited battery, storage, computation, and communication resources. Therefore, securing WSNs without degrading the network performance is a challenge. In this paper, a novel secure data aggregation framework called Improved Secret Sharing Aggregation (ISSA) is designed to improve the security and accuracy of cluster head node data in WSNs. ISSA can improve the data by using the Improved Shamir Secret Sharing Secure Data Aggregation Algorithm security and accuracy, ISSA supports homomorphic encryption which reduces the amount of communication in the network and saves energy in data energy transfer. Simulation experiments and analysis verify the effectiveness and correctness of the proposed framework.

Keywords: Wireless sensor networks, Secure data aggregation, Homomorphic encryption

1. NETWORK TOPOLOGY

Due to limited energy of nodes in wireless sensor networks, it is necessary to focus on energy consumption while protecting the security of cluster head nodes (CH) [1]. In this paper, cluster topology is used to divide the sensor nodes into several clusters based on distance, energy and other factors, and the CH is elected, and the other nodes in the cluster are cluster member nodes (CN). CH summarizes the information from CN nodes in the cluster, the summarized data is not directly transmitted to other CHs, but slices the data after calculation, the sliced information distributes its own sliced information to the

nodes around the cluster, and the other nodes forward the information to the base station (BS), as shown in Fig. 1.

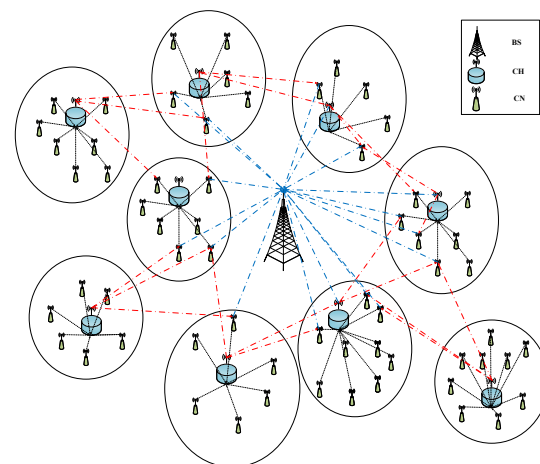


Fig. 1 ISSA network topology

2. ISSA PROGRAM STEPS

In this section, the improved secret sharing aggregation (ISSA) scheme for secure data aggregation is described in detail. It mainly consists of six steps: network topology construction, CN data encryption, aggregation, CH data slicing, forwarding node aggregation and decryption.

2.1 Construction of network topology

BS sends query message to select the CH. When a node receives the query message, it sends the node's own energy and distance from the BS to the BS. the BS will cluster the whole network based on the information from each node and determine the cluster head node and then sends the clustering information to each node.

2.2 Data Encryption

The BS distributes the public key to each node, the CN encrypts the sensed data, and finally the encrypted information is sent to the CH.

2.3 Data aggregation

CH nodes encrypt their sensing information and then additively aggregate all the information to get the aggregated ciphertext.

2.4 Data Slicing

The traditional Shamir secret sharing scheme when applied to wireless sensor network communication is difficult to deploy in wireless sensor networks due to high computational overhead. In order to conserve the energy of sensor nodes, it is modified in this paper, where the shared secret no longer consists of the zero order coefficient terms of the polynomial. the aggregated data will be sliced into multiple segments which will be used as coefficients of the polynomial.

The user defines the number of data slices sent by the CH, n , and the threshold value, t . the data slices received by the BS must be greater than or equal to t in order to recover the data. the key set generated by the BS for CH slicing is $key_{CH} = \{\tau_1, \tau_2, \dots, \tau_m\} (\tau_1, \tau_2, \dots, \tau_m \in F_p)$, and the key is sent in the form of broadcast.

After the CH receives the key, it divides the aggregated data into j slices, each of which should be smaller than $|p|$. the aggregated data can be represented as $C_{agg} = [\alpha_1 | \alpha_2 | \dots | \alpha_j]$, where $j = \lfloor m/2 \rfloor$. CH generates a random number $a_0 (a_0 \in F_p)$ as the constant term of the polynomial and $\alpha_1 \dots \alpha_j$ as coefficients of the other terms.

When performing exponential calculations, the computational complexity increases with the size of the exponent. the computational complexity can be reduced by controlling the number of terms in the polynomial. Add the key tag tag_i before the data encrypted by different keys, and finally add the message authentication code at the end of the cypher.

2.5 Forwarding Node Aggregation

The CH sends these pieces of information to other nodes which send these pieces of information to the base station, other forwarding nodes can additively aggregate the data with the same tag.

2.6 Declassification

After BS receives all the messages, it verifies that the MAC is correct and then decrypts the aggregated data of CH according to the nonlinear regression equation. BS checks whether it has received a sufficient number of shared secrets (i. e., it has received at least t shared messages). the BS obtains the resultant polynomial, and the coefficients of the polynomial are the

transmitted messages. BS randomly selects $j+1$ data slices and substitutes them into the resultant polynomial to obtain the aggregated encrypted information of CH.

3. SIMULATION AND EXPERIMENTAL ANALYSIS

In this section the ISSA proposed in this chapter will be evaluated. ISSA requires multi-node collaboration to send messages and is compared with the classical multi-node collaborative data aggregation schemes CPDA [2] and SMART [3]. Simulation experiments are performed using the OMNet++ simulator. A network with 120 sensor nodes is used and the nodes are randomly deployed in an area of 100m x 100m. The transmission range of CH is 50m and the data rate is 1mbps, each node sends data 100 times.

3.1 Communications consumption

ISSA, SMART and CPDA schemes are added to the cluster based network. Fig. 2 shows the communication overhead of ISSA, CPDA, and SMART when m is a different value.

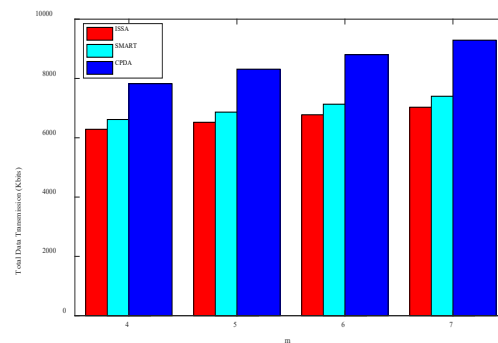


Fig. 2 Comparison of communication volume

In the simulation experiments, the total communication volume of the three schemes does not differ much because only the cluster head nodes are sliced for transmission. The ISSA scheme slices the data for transmission, if there is a data error or loss, only t slices of data need to be kept correct to recover the original data, so the data transmission volume is the least, and the data transmission volume of SMART is higher than that of SMART, which is due to the fact that at that time data can only be retransmitted in data slices when there is an error in the data, CPDA requires multiple nodes to interact in addition to the problem of slice retransmission, and has the highest amount of data transmission. Moreover, CPDA and SMART cannot support the unique properties of ISSA. If some data is lost during data transmission, ISSA has the best robustness

and BS can recover the original data as long as it receives some data slices. Moreover, ISSA is able to protect the sensed data in case of key leakage, as long as the attacker cannot collect a specified threshold number of data slices to recover the data out of the cluster head. Moreover, the decryption operation is not essential in relay nodes and end-to-end privacy protection is guaranteed. Thus, ISSA is a good trade-off between security and communication cost.

3.2 Comparative accuracy

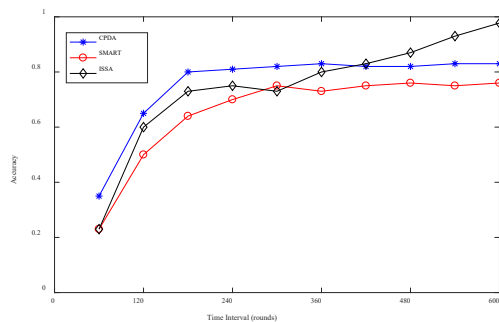


Fig. 3 Accuracy Comparison

A higher accuracy value means that the data collected by the aggregation scheme used is more accurate. An accuracy value of 1.0 represents the ideal case. Fig. 3 shows the comparison of accuracy of CPDA, SMART and ISSA when $m=5$. It can be observed that the accuracy increases with increasing time. This is because over a larger period of time, as the average packet transmission interval increases, there is less chance of conflict for packets sent within this duration. In addition, as the duration

increases, there is a greater chance that the packets will be delivered before the deadline. It can also be observed that the accuracy of ISSA is better than the other three solutions as time increases.

4. CONCLUSION

In this paper, a novel data aggregation scheme ISSA scheme is proposed. A hybrid tree-cluster topology is used, which focuses on secondary encryption of the information of the cluster head nodes for the problem of insufficient security of the cluster head nodes, which improves the security of the cluster head nodes with low computational consumption and will be able to improve the accuracy of the cluster head information. Based on the above analysis, this solution is more suitable for wireless sensor networks that focus on cluster head security and accuracy.

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Low Surface Energy Organosilicon Marine Antifouling Coatings

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Abstract: The progress of antifouling coatings prepared with organosilicon and new technique synthesizing organosilicon have been summarized in this paper.

Keywords: Organosilicon; Low Surface Energy; Antifouling Coatings

The parts below the waterline of a ship are constantly immersed in seawater, which not only subjects them to corrosion but also leads to the attachment of marine organisms on their surfaces. This increases the roughness of the hull surface, reduces ship speed, and increases fuel consumption. Coating the bottom of ships with antifouling paint is the most direct and effective method.

Traditional anti-fouling coatings achieve their purpose by the leaching of anti-fouling agents (such as copper, arsenic, cadmium, lead, mercury, and tin compounds). However, these substances can stably exist in seawater and gradually accumulate, causing deformities in organisms and potentially entering the food chain to harm human health. As we entered the 21st century, people's environmental awareness has been increasing gradually and corresponding policies and regulations have been introduced with strict requirements for the environmental friendliness of coatings. In 1999, during the International Maritime Organization (IMO) meeting on marine environment protection held at the MEPC conference for the 21st century, a draft proposal was put forward regarding the final deadline for using organotin-based anti-fouling agents in anti-fouling coatings. It stated that the final deadline for using organotin-based anti-fouling agents would be January 1st, 2003; while for coatings containing organotin compounds it would be January 1st, 2008 [1]. Therefore, it is urgent to develop environmentally friendly varieties of anti-fouling coatings that meet these requirements.

Currently, the development of environmentally friendly anti-fouling coatings mainly adopts the following approaches [2]: natural marine biofouling prevention, conductive coating anti-fouling, self-polishing anti-fouling of coatings, and reducing the surface energy of coatings to prevent fouling. Among them, low surface energy anti-fouling coatings (i. e., foulant-releasing type) primarily refer to low surface energy anti-fouling coatings based on fluorocarbon resin and organic silicon resin. From an environmental perspective, low surface energy anti-fouling coatings undoubtedly represent one of the most promising types of anti-fouling coatings.

1 THE ANTI-FOULING MECHANISM OF LOW SURFACE ENERGY COATINGS.

Low surface energy anti-fouling coatings utilize the low surface energy of the coating and its non-stick properties to prevent marine organisms from adhering easily. Even if they do attach, their adhesion is not strong, and they are eventually removed from the hull surface due to water flow, vessel movement, and gravity. Research has shown that when the contact angle between the coating and seawater exceeds 98° (surface energy less than $2.5 \times 10^{-4} \text{N/m}$), fouling organisms find it difficult to adhere to the coating's surface [3].

Resins with low surface energy characteristics mainly include fluororesins and organosilicon resins. Due to their high price, fluororesins are rarely used in anti-fouling coatings, and current research focuses on organosilicon resins

2 SYNTHESIS OF MODIFIED ORGANOSILICON LOW SURFACE ENERGY ANTI-FOULING COATING RESIN

Due to the high covalent bond energy of Si-O bonds in organosilicon polymers, which can reach up to 425 kJ/mol, much higher than the covalent bond energies of C-C bonds (345

kJ/mol) and C-O bonds (351 kJ/mol) in general organic polymers [4], combined with the high polarity of Si-O bonds, it enhances the stability of alkyl groups connected to silicon atoms against oxidation and increases the chemical inertness of organosilicon polymers. Furthermore, unlike general organic polymers where C-C bonds are easily oxidized and break into low molecular weight compounds when heated, organosilicon polymers form stable Si-O-Si bonds upon thermal oxidation. Therefore, organic silicone coatings formulated mainly with organosilicone resins exhibit excellent resistance to high and low temperatures, moisture, water, chemicals, as well as outstanding weatherability.

Although silicone resin has many advantages, it is relatively expensive and has poor adhesion to substrates. When used alone as an anti-fouling coating film, its effectiveness is not satisfactory. Currently, researchers are exploring the use of organosilane-modified resins to combine the excellent properties of silicone with modified resins, in order to develop anti-fouling coatings with outstanding performance.

2.1 Organosilicon modified acrylic resin

silicone modified acrylic resin can be made into two types of coatings: water-soluble coatings and solvent coatings. Using the seed emulsion polymerization method, A series of water-soluble silica propylene latex [5-7] with interpenetration network structure can be synthesized, the coating prepared with this latex as the film formation has good weather resistance and water resistance, At the same time, the adhesion, solvent resistance and strength of the film can be improved [8]; silicone modified acrylic emulsion synthesized by post-crosslinking techniques with controlled process conditions and hydrolysis inhibition, With good stability and application [9, 10]; the high-performance silicone modified acrylic emulsion was prepared by Fanxiao [11], the results showed that, the silicon propylene emulsion introduced into the acrylate chain can obviously improve the water resistance of the coating film, Heat resistance to aging performance. Zhangli [12] discussed the synthesis process, monomer dosage and type of silicon-C modified emulsion. the results showed that when the mass ratio of methyl methacrylate (MMA) to butyl acrylate (BA) is 55:43, the amount of silicone is 8%~ 16% of the total monomer mass fraction, methacrylic acid (MAA) about 2%, emulsifier about 3%, and

initiator about 0.15%, such a formula can produce a coating emulsion with good comprehensive performance. Analysis of FTIR and DSC profiles showed that self-aggregation, hydrolysis and condensation of silicone monomer did not occur during the reaction.

However, due to the special environment used by ship coatings, the research progress of water-based coatings is quite slow, and solvent-type anti-fouling coatings are still the main direction of research at home and abroad.

Chen [13] prepared silicone modified acrylic resin using unsaturated double bond silicone monomer (γ -methacryloxypropyl trimethoxysilane, γ -methacryloxyxymethyl dimethoxysilane) under the condition of peroxide tertiary butyl initiator and acrylate monomer copolymer, coating made of silicone modified acrylic resin has the advantages of stable storage, water resistance, weather resistance, etc. With copolymerization of 3-methacryloxypropyl trimethoxysilane (MPTS) and an acrylate, methyl methacrylate and butyl methacrylate, a vitrification temperature of 30°C resin can be obtained, when the content of the resin (MPTS) is 30% coating weather resistance, water resistance, stain resistance are excellent [14]. Kenneth R et al. [15] developed a block copolymer with the water-soluble molecular segments and water-soluble molecular chains with low surface energy. Among them, styrene or polymethacrylate is not suitable for water, the water-soluble molecular chain is polymethoxytriethylene glycol acrylate (PMTGA), block copolymers in the air after a very low surface energy. This block copolymer has strong anti-fouling properties and does not decrease when the block copolymer is removed from the liquid environment and exposed to air. This is because PMTGA is extremely soluble in water and has a very low surface energy. Huang Guangfo et al. [16] Using vinyl-containing silicone monomer and acrylate monomer in toluene, toluene/ketone, xylene/butanol, xylene, isobutanol and other solvents or mixed solvents, in perzoyl or azodiisobutyronitrile (AIBN) and other initiators, block copolymerization reaction occurred at about 100°C. Add certain additives, make silicone-acrylate coating. the results show that the coating flat film model formed by using the xylene/butanol mixed solvent has fast drying and low cost.

In addition, Kawakami [17] used silicone and methyl methacrylate, and copolymer, and

studied the surface characteristics of copolymers, pointed out that silicone and acrylic ester copolymer as the main film coating, acrylate coating and silicone coating is long, with super weather resistance, excellent water resistance, pollution resistance and other characteristics.

The coating made of silicone modified acrylic resin as the main film forming material combines silicone excellent moisture resistance, water resistance, chemical resistance and weather resistance with excellent acid and alkali resistance of acrylic resin, and can be made into an antifouling coating with excellent performance.

2.2 Organic silicon modified epoxy resin class

Epoxy resin has excellent adhesion, good mechanical properties, excellent corrosion resistance and high solid content, and can be made into excellent antifouling coating.

Tian Jun [18] with polydimethylsiloxane and epoxy resin as the base material, tetrafluoroethylene and paraffin oil as the filler, titanium dioxide and magnesium oxide as pigments, polyamide as the curing agent, developed a non-toxic low surface energy antifouling coating. This kind of coating is solidified at room temperature, and can firmly adhere to the anti-rust paint, with strong antifouling property, and non-toxic effect to Marine organisms.

Wagner [19] Three block copolymers, the performance of silicone resin and R/Si value (R is the average number of alkyl substituent on silicon atoms), by R/Si value can estimate the curing speed of branches, coating flexibility, generally control between 1.1 and 1.7, this kind of reaction condition mild, raw material economy easy to get, synthetic coating resin comprehensive performance is good, suitable for mass production.

2.3 Silica-modified polyurethane

Polyurethane resin has excellent elasticity, good water resistance, wear resistance and drug resistance, silicone modified polyurethane as the main film coating preparation, the most suitable application is in the need to withstand repeated deformation of sea waves.

James [20] used the reactive hydrogen in aminosilicone oil and isocyanate in polyurethane to introduce the silicone chain into the polyurethane, and made the silicone modified polyurethane anti-fouling coating resin. It takes polyurethane chain as the main chain segment, and polysiloxane chain segment (PDMS) is

located on the side chain, easy to migrate to the surface and make the film has low surface energy, so as to have better anti-fouling performance.

Tian Jun [21] used silicone modified polyurethane as the base material, and made low-surface energy PE, graphite interlayer compound (GIC) and powders such as fluoride carbonate as additives. the results of the one-year solid sea test show that there are only a small amount of barnacle, green algae, bryozoans and hydra attached to the coating surface, and the coverage area of Marine life is only about 15%, which is significantly better than the anti-fouling effect of the test surface comparison samples not coated with the coating.

2.4 Silica-modified polyamides

Polyamide (PA) is a polymer with high strength and high modulus. the introduction of PDMS chain segment can improve its aging resistance and moisture absorption deformation and other aspects, and make high strength anti-fouling coating.

Grath [22] prepared an anti-fouling coating with high antifouling ability with the help of dehydration condensation or HCl condensation of two prepolymer functional groups.

The polymerization of PDMS containing caprolactam ends with caprolactom monomer by Owens [23].

2.5 Other types of silicone modified resin

Milne [24] is a non-toxic antifouling coating made of room temperature curing rubber and silicone oil compounds, and is proven to last ten years. Room-temperature curing rubber is cured by catalyst reaction or wet to form a cross-linked structure. the curing process is greatly affected by the environmental temperature and humidity, and the quality of the coating is difficult to guarantee. In addition, there are many inconveniences in the construction and storage process.

Slater et al. [25] developed a silicone rubber system of low-surface energy anti-fouling coating, which consists of polydiorganic siloxane with a functional hydroxyl group and its cross-linking agent. Polybiosiloxane with a hydroxyl group is cured by the hydroxyl group. They found that the increase in the content of the silica permeable substrate provided by the cured coating caused the reduction of the curing of the hydroxy poly but less than a certain value.

3 APPLICATION OF NEW TECHNOLOGY IN SILICONE COATINGS

3.1 Nanomaterials and their surface modification technology

In the silicone coating, adding nanoscale packing particles can further improve their compatibility, increased strength, stability, service life and antifouling performance. If adding the appropriate amount of polyTetrafluoroethylene can further reduce the surface energy of the coating, enhance the anti-fouling performance of the coating [26, 27]] adding nano silica can improve the strength of silicone coating [28].

However, due to the poor miscibility of organic and inorganic materials, chemical modification is needed to increase the phase solubility and dispersion of organic polymers and inorganic materials. Green et al. [29] used surface grafting technology to surface modify nano-silica and prepare inorganic nanoparticle-organic polymer hybrid composite by blending method.

3.2 Application of plasma technology

Christine V [30] Hexamethyldisiloxane and epoxy mixed, placed in the microwave reactor, the reaction of plasma and precipitation coated on the metal, get good performance coating, this research will have a broader prospect.

4. CONCLUSION

The development direction of Marine coatings in the 21st century is to develop environmentally friendly anti-fouling coatings, and low surface anti-fouling coatings is the focus of future development. With the continuous development of new varieties with excellent performance, the wide application of silicone low surface energy antifouling coating is not far away.

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The Application of Flipped Classroom in The Teaching of Aerobics Teaching in Colleges and Universities

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Abstract: This study is based on the core accomplishment, and the research of the problem of solving problems is studied by the application of the flipped classroom in the teaching of aerobics teaching in taian city. This paper analyzes the role of the classroom teaching mode in the teaching of aerobics teaching in the university of taian city, and analyzes the effects of traditional sports teaching mode on students' learning attitude, learning performance and learning ability, and confirms whether the flipped classroom is applicable to the teaching of aerobics teaching, and puts forward Suggestions for the problem of flipped classroom application in aerobics course.

Keywords: Universities; Flip the classroom; Aerobics teaching

1. RESEARCH BACKGROUND

1.1 The problem of the teaching of aerobics

Since the introduction of Chinese aerobics in China in the 1980s, the characteristics of the students, such as the characteristics of the students, have been popular with the students' attitude, the beauty of the students, the beautiful and healthy posture of the students. In order to enhance the basic quality of students' bodies and improve the comprehensive ability of China, relevant experts and scholars have been exploring the practice of aerobics teaching, such as discovery type of sports teaching mode and small group teaching mode. the problems of the teaching of aerobics teaching are not settled, the current aerobics curriculum is simple, the teachers are the main leader, the student is not active, the cultivation of the students' ability to learn and the ability to practice innovation, should be based on the learning activities of the students, strengthen the ability of students' skills, strengthen the skills training, and strengthen the

professional foundation and ability of college students.

The teaching process and teaching methods of university are required to seek breakthroughs in teaching, teaching, teaching methods, respect the development of college students, design and practice activities of their characteristics, and cultivate exploration ability, cooperation spirit and independent innovation in the course of specific teaching. According to the requirements of the new guidelines, the students can develop the comprehensive ability of the students, and give full play to the advantages of information technology, cultivate the physical and mental health, the high quality talents of the ability, explore the teaching mode applicable to the aerobics course, this is not only the urgent task of the reform of the college sports teaching in China, but also the inevitable trend of the long-term development of the aerobics movement in the university.

1.2 the extensive application of multimedia teaching methods such as flipped classroom

Education focuses on cultivating the comprehensive talents of the society and the ability to be able to do the job, the university teaching mode is constantly exploring, the data show that the teaching application study in the university of the college is increasing year by year, especially the translation of the classroom in the university of 2015 to 2016. the flexibility and flexibility of the flipped classroom can combine the characteristics of the course and the practical teaching strategy. There is a significant effect on the cultivation of students' individuality and ability. Nowadays, the application of multimedia in classroom teaching is extensive, and the research of moococon and microclass is also on the rise, and its application in various disciplines is also very hot.

Based on this, this study will integrate the flipped classroom teaching method into the teaching methods and methods of the university's aerobics classroom teaching, which will develop the ability and quality of the sports core quality of college students, and form a lifelong sports thought.

2. RESEARCH RESULTS

This study took four classes, Two classes are control classes and two classes are experiment classes. In this paper, the teaching method of the same teaching content is adopted in the traditional teaching mode, and the teaching method of the flipped classroom is carried out for an 18-week teaching experiment. This paper analyzes the students' interest, learning attitude, learning ability, learning ability, and students' ability to change classroom teaching mode. In conclusion:

2.1 Flipped classroom teaching is better than traditional teaching.

2.2 The flipped classroom can better cultivate the students' comprehensive ability.

2.3 Flipped classroom is better for students to learn more about interest.

2.4 Turning over the classroom is better for teachers to improve the teaching efficiency of teachers.

3. RESEARCH SEGGESTIONS

According to the research process and research results of this project, the following Suggestions are summarized:

3.1 The flipped classroom is applied to the classroom teaching before the basic work is strengthened

In the course of learning, the students' learning process is more helpful than the translation classroom teaching mode, which can help arouse students' interest in learning, arouse the motivation, initiative and creativity of the students, and the show rate can be seen that in the case of weak students, the lower space of the students who are less likely to ascend, in the process of applying the translation of the teaching process should strengthen the basic skills of the students, and the strong basic work determines the space of the rise.

3.2 To focus on the cultivation of students' self-study ability

In the individual, the decision is made to the teacher's quality and ability, and the teacher can guide the role of the students, the people who know are better than the good, the good are less than the people, the cultivation of the students'

interest and ability in each learning stage, improve their physical quality, teach their sports skills and cultivate the comprehensive ability to complement each other and develop together.

3.3 The flip classroom focuses on process control

Before turning over the teaching class, considering the students' existing basis, according to the students' actual situation, choose. And the production of the teaching video that meets the students' current development stage. In the course, as much as possible. The teaching progress of the original set is consistent, and the reasonable teaching method is chosen to ensure the integrity of the teaching task

At the time, it should be strictly objective to ensure that the students are able to complete the goal of the class and to ensure the completion of the mission. The number of people who have worked hard to obtain as many guarantees as possible; Under class, urge students to study and practice, set upIn the course of the "clock card" system, the process control of all parts of the class is concerned, and the number of students uploading video is recorded. In the course of the class, the students should be involved in psychological intervention, and the individual situation is different.

3.4 To ensure the training of basic teaching facilities and teacher information technology

Complete basic teaching facilities can give students better platform and guarantee, in the guarantee of complete foundation teaching. At the same time, teachers' skills are promoted especially with the use of network information technology to students. There is an important support. "The teacher is the guide of the student, the teacher's personality teacher and the academic attitude are the standard of teaching a large number of innovative knowledge youth, which is the foundation of a group of" learning "talents.

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Building a Modern University System to Promote the Connotation Development of Universities

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Abstract: The construction of modern university system is a key element in promoting the modernization of university construction, and also a driving force for modern university characteristic education and the realization of connotation development, playing a decisive role to a certain extent. As a guiding document for universities to carry out teaching and education, the articles of association occupy a significant position in the construction of modern university systems, fully reflecting their importance. Based on this, this article elaborates on the current situation and strategies of building a modern university system, and conducts in-depth research on how to promote the connotation development of universities for reference.

Keywords: Modern university system; Promotion; Connotation development of universities

The modern university system is a localized concept proposed by the research community in China for the current development of universities. In the continuous development of educational modernization, many researchers have conducted dynamic research from multiple perspectives, focusing on exploring how to build a modern university system and promote the development of the connotation of universities. Nowadays, with the increase in research and reform efforts, the modern university system is gradually inclined towards specific construction, university regulations, teaching governance, and other aspects. Due to the accelerated development of China's education industry, investing some attention in universities has become a key focus of modern university system construction in many universities. But from the perspective of the overall situation, can the

modern university system truly be implemented, provide guidance for the education development and construction of universities, and play a certain role in promoting the connotation development of universities.

1. HIGHLIGHT POLITICAL STATUS AND COMPREHENSIVELY LEAD UNIVERSITIES

On the path of education, universities strictly follow the guidance of the Party, clarify the direction of education according to the talent needs of the industry, strengthen the reform and development model, comprehensively manage leading cadres and talents, and fully implement the Party's leadership ideology into the entire process of university governance, teaching and education [1]. Under the strong guidance of the Party Committee, a principal responsibility system has been formulated to play an assisting role in meeting the Party's educational policies, always adhering to the socialist essentials of running a school, resolutely following the Party's command in ideology and action, and continuously adjusting according to social conditions. Always grasp the party building work in universities, strictly follow all arrangements of the party organization, pay more attention to the quality and effectiveness of party building work, and when necessary, play the leading and exemplary role of the party branch, organize teachers, students, and party members to jointly assist universities in achieving connotation development. Marxist ideology, as an important ideology in the construction of socialist core, occupies an important position in ideology and effectively highlights its importance. Therefore, under the correct guidance of this ideology, we should focus on comprehensive management of the main propaganda platforms such as educational

classrooms, lectures, and the internet in universities, create a vivid and enjoyable teaching atmosphere, attract the attention of teachers and students, and have a profound impact on their core values.

2. IMPROVE THE LEADERSHIP SYSTEM OF UNIVERSITIES

As a public education institution under the supervision and management of the Party Committee, public universities implement the system of president responsibility, laying the foundation for the construction of a modern university system with Chinese characteristics, and effectively playing its auxiliary role. the party committee organizes school leaders and party members to optimize and improve the principal responsibility system, clearly dividing the responsibilities and obligations of the party committee and the principal from the institutional level, optimizing and improving the rules of procedure of the university party committee and administration, continuously sorting out the key points of the system, and adjusting the content of the system. There is a gap in management between private and public universities, which is a principal responsibility system jointly formulated by the school board of directors. the most crucial aspect is how to coordinate the cooperative relationship between the board of directors and whether it can be reasonably adjusted with other roles. But from a practical perspective, regardless of the leadership system, it is necessary to ensure clear and clear division of responsibilities, sound and complete system content, and precise sorting of rules and processes. Only in this way can personnel at all levels unite, work together to exert cohesion, provide support for university management and decision-making, highlight democracy, and truly help universities achieve development strategies and achieve expected goals.

3. OPTIMIZING THE ORGANIZATIONAL STRUCTURE OF UNIVERSITIES

The organizational structure of universities is an important component of building a modern socialist university system with Chinese characteristics, and is of great significance for the internal organizational work of universities. the adjustment and optimization of university organizational structure must first take into account comprehensively, especially the characteristics and operating conditions of the university organization, and observe the various

changes in teaching and research activities. Only in this way can we ensure the idealization of organizational structure adjustment and demonstrate the functional advantages of optimization. Firstly, the adjustment of academic institutions can effectively promote interdisciplinary integration, comply with disciplinary development trends, and continuously innovate academic and research concepts [2]. Secondly, the optimization of functional departments helps to strengthen the management functions of universities, requiring the personnel engaged in functional departments to have a serious work attitude, capable work actions, professional work abilities, and maintain a high degree of concentration with high intensity; Based on the continuous reform of the education industry, we advocate that teachers serve as assistants and students as guides, highlighting the dominant position of students, and allowing teachers to provide high-quality educational services for students, as well as teaching and research services; Encourage managers to always conduct in-depth analysis around the school's development strategy, comprehensive goals, and key issues of functional departments. This not only expands the scope of work, but also reduces work pressure and resolves negative work emotions. Finally, integrated management should be implemented for grassroots teaching and research units to effectively improve administrative efficiency and ensure the quality of their work. Nowadays, the secondary entity units for teaching and research in Chinese universities are located relatively close and the number is constantly increasing. However, the wide scope of management has led to complex and diverse management contents, which has led to a strong conflict between the role of academic power itself and the initiative of secondary departments and teachers, making it impossible for these entities to maximize their abilities. Some universities are actively promoting the reform of the departmental system, with the goal still focused on unified management, gradually focusing on grassroots management work, further stimulating the participation enthusiasm of departments and teachers, and resulting in many unexpected situations.

4. EMPHASIZING DEMOCRATIC MANAGEMENT IN UNIVERSITIES

The promotion of democratic management is a top priority in the construction of modern

university systems, with the aim of adopting management opinions at different levels and highlighting the characteristics of democracy and comprehensiveness. With the growth of China's socio-economic level and the continuous reform of the education industry, the number of stakeholders in higher education has greatly increased. However, it is necessary to pay attention to how to play the role of student unions, parent associations, and other organizations in practice, with a focus on paying attention to their main parties and collecting their rights and interests, which has become one of the inevitable difficulties in the current development process of universities. Rights and interests demands can fully reflect the value orientations of different interest groups. Although they cannot be completely consistent and reasonable, they are the best way to timely understand demands and are of great significance for the construction of democratic management systems in universities [3].

SUMMARIZE:

In summary, as the main battlefield of education, universities develop steadily in silence, advance rapidly in stability, and continuously innovate educational concepts in a harmonious and peaceful environment, generating innovative spirit in conservative culture. Society is developing and the times are advancing. In order to keep up with the pace of the times, various industries have put forward high requirements for talent cultivation, and pay special attention to innovative talents, which can truly make significant contributions to the construction of a harmonious society in the country. From this, it can be seen that the purpose of building a

modern university system is to guide universities to move forward according to a clear development direction, and to play a significant guiding role in achieving connotative development.

TOPIC

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Correlation Analysis of Green Building Industry Development and Technological Innovation Based on Var Modeling

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Abstract: Based on the VAR model, the data of the relevant indicators of the development level of the green building industry and the Technological innovation capacity in China from 2008 to 2018 are analyzed. the number of green building projects is used as an indicator to measure the development level of green building industry, and R&D capital investment and technology R&D efficiency are used as indicators to measure the Technological innovation capacity. Among them, the R&D expenditure was selected to measure the R&D capital investment, and the number of patents per employee was selected to measure the technology R&D efficiency. the results show that science and technology innovation ability has a significant impact on the development level of China's green building industry, and both R&D capital investment and technology R&D efficiency are the main causes of changes in the development level of the green building industry. In the long run, technology R&D efficiency is the main cause of the changes in the level of green building development, and the predicted variance contribution of technology R&D efficiency to the level of green building industry development is about five times that of R&D capital investment.

Keywords: Green Building; VAR Model; Industrial Development; Correlation Analysis

1 INTRODUCTION

As a pillar industry in China, the healthy development of the construction industry is closely related to the national economy and residents' lives. However, as one of the three basic industries that consume huge amounts of energy, the construction industry has brought about a series of increasingly serious problems such as energy waste and environmental

pollution. As green buildings are effective in energy saving and carbon reduction as well as alleviating the global energy crisis, they have been popularized across the country in recent years. At the policy level, the government has enacted numerous policies to support the development of the green building industry, and in 2006, the Ministry of Housing and Construction issued the Green Building Evaluation Standard, which was the first time that green buildings were labeled in China. In the "13th Five-Year Plan for the Development of the Construction Industry" issued in 2017, the government explicitly requires that by 2020, the proportion of green building area in new buildings exceeds 50%, the proportion of projects with more than two-star labels in green buildings exceeds 80%, and the proportion of green building projects that have obtained operational labels exceeds 30%; meanwhile, the national new green building area reaches more than 2 billion square meters. At the research level, green building has become the focus of academic research in recent years, and many scholars have put forward a series of suggestions and countermeasures to the current problems of green building development. Li et al. point out that efforts can be made to accelerate the promotion of technology, optimize the management system, deepen government supervision, and take incentives to promote the development of green buildings. To [6] and others, it is pointed out that the growth of green total factor productivity in the construction industry can be promoted by optimizing the energy consumption structure, improving the quality of the workforce and promoting the marketization of the construction industry.

In general, the current research results on green building development factors are rich, but the

existing results are mostly qualitative analysis, which has certain limitations. In addition, the existing research results seldom study the impact of R&D capital investment and technology R&D efficiency on the development level of green building industry. In terms of research methodology, vector autoregressive model is also rarely applied to study the dynamic association between variables. This paper analyzes and demonstrates the development level of China's green building industry by constructing a VAR model that includes variables such as the development level of green building, R&D capital investment, and technology R&D efficiency, and finds the dynamic relationship between the development level of the green building industry in order to bring certain insights into the current development of green building.

2. VAR MODELING

In order to be able to have a macro judgment of the development of the construction industry, this paper adopts the number of green building projects as an indicator to measure the development level of the green building industry. the R&D capital investment and technology R&D efficiency are utilized to measure the Technological innovation ability. Among them, the R&D expenditure is selected to measure the R&D capital investment, and the number of patents per employee is selected to measure the technology R&D efficiency.

Since the object data used in this study are multivariate time series, in order to facilitate the portrayal of the dynamic correlations between the variables interacting with each other, this paper uses the EViews tool to build a vector autoregressive model. the vector autoregressive model is a function constructed by using the lagged values of all endogenous variables of the model with other variables in order to realize the prediction of the internal relationship of the time series.

3 EMPIRICAL STUDIES

3.1 Unit Root Test

The data used in this paper are all derived from the official data published by the Chinese government from 2008 to 2018. In order to eliminate the unnecessary influence of potential heteroskedasticity on the results, this study logarizes all the indicators: LnX1 is chosen to represent the level of development of the green building industry, LnX2 is chosen to represent the R&D expenditure, and LnX3 represents the

number of patents per practitioner. Current scholars mainly use the frequency conversion method to solve the problem of small data sample size. Considering that there are fewer annual data on the number of green building projects published in China at present, this paper converts the annual data from 2008 to 2018 into quarterly data.

Firstly, the ADF root test is used to test the smoothness of the time series, and it can be seen that the time series of the original variables, LnX1, LnX2, and LnX3, are all non-smooth; however, after the first-order differencing, D(LnX1), D(LnX2), and D(LnX3) are all characterized by obvious stability. According to the cointegration theory, there is a higher possibility of stable proportionality between variables after a long period of time.

3.2 Cointegration Test

In order to prove whether there is a long-term stable equilibrium relationship between the three variables and to avoid pseudo-regression, Johanson cointegration test was performed on the variables. According to the results, the original hypothesis is rejected in all three cases by the discriminant relationship between the trace statistic and the size of the critical value of 5% at 5% level of significance. This shows that there is a long-term stable equilibrium relationship between the variables.

3.3 Causality Test

Granger causality test was conducted as a way to test whether the lagged values of the three variables have predictive power for the explained information. According to the results, it can be seen that at the 5% significance level, the level of green building industry development is the Granger cause of R&D expenditure; the number of patents per employee is the Granger cause of the level of green building industry development. the results show that the level of green building development has unidirectional predictive ability for R&D expenditure; the number of patents per employee has unidirectional predictive ability for the level of green building development.

3.4 Variance Decomposition

Based on this VAR model, the level of green building development is decomposed into variance, which is used to reflect the relative importance of R&D expenditure and number of patents per employee in the dynamic change of the level of green building development. It is concluded that the level of green building

development is only affected by the variables themselves in the first period; from the second period onwards, the contribution of R&D expenditure and patents per employee to the impact of the level of green building development rapidly emerges.

4 CONCLUSION

This paper selects China's statistical data from 2008 to 2018, and analyzes the dynamic associations among the factors constraining the influence of China's green building development level in recent years by using EViews tool to build a VAR model that includes the green building development level, R&D capital investment, and technology R&D efficiency. Conclusions are drawn from the empirical analysis as follows:

4.1 There is a long-term stable equilibrium relationship between the level of green building development, R&D capital investment and technology R&D efficiency. the growth of R&D capital investment and technology R&D efficiency will promote the improvement of green building development level.

4.2 In the process of long-term development of the industry, R&D capital investment and technology R&D efficiency have an important impact on the development level of green building industry. From the results of variance decomposition, it seems that the efficiency of technology research and development in the long term has a very obvious effect on improving the development level of green building industry,

and the impact is about 5 times of the investment in R&D funds.

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The Value Connotation and Implementation Path of Rural Community Education under the Background of Rural Revitalization

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Abstract: In the context of rural revitalization, rural community education has profound significance and value. It not only helps to improve the cultural quality and skill level of farmers, promote rural economic development, but also promotes rural social harmony and stability, and enhances the cohesion of rural communities. However, achieving the goal of rural community education requires adopting effective paths, further increasing investment, improving the rural community education system, innovating education content and forms to meet the needs of the times and farmers. At the same time, it is necessary to actively guide social forces to participate in rural community education, forming a pattern of joint participation by the government, schools, and society, in order to promote the implementation of the rural revitalization strategy.

Keywords: Rural revitalization; Rural community education; Value implications; Implementation path

1. THE VALUE CONNOTATION OF RURAL COMMUNITY EDUCATION UNDER THE BACKGROUND OF RURAL REVITALIZATION

1.1 The Value of Services

Rural community education is an activity that provides educational services for rural community residents, with the basic goal of improving their knowledge, skills, and overall quality, and promoting the development of rural communities. the value of this service is reflected in the following aspects: rural community education can provide diverse educational services for rural community residents, meeting the needs of different groups of people. For example, various forms of educational services such as compulsory

education, extracurricular tutoring, and interest classes can be provided to meet the educational needs of children and adolescents; We can provide various forms of educational services, such as skill training, career development, and cultural exchange, to meet the educational needs of adults. In addition, rural community education can improve the quality of life of rural community residents. By providing educational services, it can help rural community residents improve their knowledge and skills, enhance their employability and entrepreneurial ability, and thus improve their economic situation and quality of life [1].

1.2 The value of results or outputs

The results or outputs of rural community education refer to the improvement of knowledge, skills, and qualities obtained through educational activities. the value of these results or outputs is reflected in the following aspects: rural community education can improve the comprehensive quality of rural community residents. By receiving various forms of educational services such as compulsory education, extracurricular tutoring, and interest classes, rural community residents can receive more comprehensive and systematic education, thereby enhancing their overall quality; Rural community education can enhance the employment and entrepreneurial abilities of rural community residents. By receiving various forms of educational services such as skill training and career development, rural community residents can acquire more practical and effective skills and knowledge, thereby enhancing their employability and entrepreneurial ability; Rural community education can improve the economic development of rural communities. By improving the comprehensive quality and

employment ability of rural community residents, it can promote the economic development of rural communities, increase local fiscal revenue, and improve the living standards of residents.

1.3 The value of trust and legitimacy

The trust and legitimacy value of rural community education refers to the degree of trust and recognition of educational activities by rural community residents. This trust and legitimacy value is reflected in the following aspects: rural community education can enhance the trust and recognition of rural community residents. By providing high-quality educational services, rural community residents can better understand and adapt to social development and changes, enhance their sense of social responsibility, belonging, and trust and recognition of educational activities; Rural community education can enhance the legitimacy status of rural communities. In the context of rural revitalization, the development of rural communities requires support and recognition from the government and society. By carrying out rural community education activities, it is possible to demonstrate the importance and investment of rural community residents in education, thereby enhancing the legitimacy and status of rural communities; Rural community education can promote the democratization process of rural communities. In educational activities, residents can express their opinions and suggestions, participate in decision-making and supervision processes, and thus promote the development of democratization. This democratization process is of great help in enhancing the trust and recognition of residents in educational activities.

2. THE VALUE IMPLEMENTATION PATH OF RURAL COMMUNITY EDUCATION UNDER THE BACKGROUND OF RURAL REVITALIZATION

2.1 Integrated development, improving the top-level design of rural community education for urban-rural integration

Firstly, it is necessary to break the traditional development model of urban-rural separation and achieve integrated urban-rural development. In order to achieve this goal, it is necessary to change our mindset, view urban and rural areas as a whole, with the goal of optimizing resource allocation and improving efficiency, and promote the overall planning and development

of urban and rural community education. In addition, it is also necessary to improve the top-level design of rural community education, which includes formulating relevant policies and regulations to provide legal protection for the development of rural community education. Subsequently, a scientific development plan should be formulated to clarify development goals, steps, and measures to ensure the orderly development of rural community education.

2.2 Diversified cooperation to build a foundation for networked governance of rural community education

The development of rural community education requires the cooperation of multiple entities such as government, enterprises, social organizations, and families, because society is a whole, and only through the joint efforts of all sectors can satisfactory results be achieved. In this regard, the government should play a leading role by providing policy support and financial guarantees; Enterprises should actively participate, provide practical experience and resource support; Social organizations should leverage their professional advantages and provide volunteer services and training support; Families should play a fundamental role and actively participate in and support community education activities. At the same time, it is necessary to build a foundation for networked governance, which means establishing a diversified governance system that achieves effective participation and collaborative governance of multiple stakeholders through cooperation, negotiation, consensus, and other means. Subsequently, we will strengthen information sharing, resource integration, and interest coordination to achieve a win-win situation for multiple stakeholders and sustainable development of community education [2].

2.3 Accurate delivery to enhance the efficiency of rural community education public service supply

In order to meet the needs of rural community education, it is necessary to accurately deliver public service supply. Specifically, this requires relevant departments to have a deep understanding of the current situation and needs of rural community education, and provide personalized public service supply plans based on the characteristics of different regions and groups. At the same time, it is necessary to strengthen the supply efficiency of public

services, improve the effectiveness and sustainability of public services through optimizing service processes and improving service quality, and meet the personalized needs of rural community residents. In addition, it is necessary to strengthen the monitoring and evaluation of rural community education. By regularly collecting and analyzing relevant data and information, understanding the actual effectiveness and development trends of rural community education, timely identifying problems and taking measures to solve them, and then providing decision-making support and reference basis for the government and other stakeholders through monitoring and evaluation.

2.4 Innovative models to enhance the attractiveness and effectiveness of rural community education

In order to enhance the attractiveness and effectiveness of rural community education, relevant departments must innovate educational models and content, which can adopt diversified educational forms and methods, such as online education, interactive learning, practical experience, etc., to meet the needs and learning styles of different learners and improve the quality of education. At the same time, it is necessary to always pay attention to the practicality and pertinence of educational content, adjust and optimize it in real time according to the actual needs and development needs of rural communities, design educational courses and learning content that meet the needs

of learners, and make education more targeted and efficient.

3 CONCLUSION

In summary, the value implications and implementation paths of rural community education in the context of rural revitalization are important issues in the current development of rural education in China. Rural community education is of great significance in improving rural quality, promoting rural economic development, and inheriting rural culture. Realizing rural community education requires the joint efforts of the government, social organizations, and rural areas, establishing and improving the rural community education system, improving the quality of rural education, innovating rural education methods, and cultivating talents who can adapt to the development of rural areas in the new era.

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"Polarization Phenomenon" In the Reception Process of "Yuli Soul"

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Abstract: Xu Zhenya's creation contains a strong sense of sorrow, especially the Jade Pear Soul, which is known as the first work of the "Yuanyang Butterfly School". Since the novel was serialized in the Civil Rights Newspaper, it has attracted wide attention from the society. On the one hand, based on the practical response to readers' psychology, the development of mass media and other reasons to promote its "phenomenon" sales; But at the same time, because of the "gamification", "entertainment" and other reasons, the creation of the work has attracted a lot of criticism. This paper takes the phenomenon of "polarization" in the process of acceptance of "Yuli Soul" as the starting point, and tries to explore the dissemination and acceptance of "Yuli Soul" after publication, and the historical causes of forming different acceptance situations.

Keywords: Jade Pear Soul; Polarization; Selling; Criticism

1. THE PUBLICATION AND DISSEMINATION OF "YU LI SOUL"

Xu Zinduya's novel "The Soul of Jade Pear" has been published for more than 100 years. Among all Xu Zinduya's works, "The Soul of Jade Pear" has aroused the most controversy and had the most far-reaching influence. It is generally recognized as the first work of the "Mandarin Duck and butterfly School". However, in general, since "Yu Li Soul" was serialized in the first year of the Republic of China (1912) in the supplement of the Civil Rights Newspaper, there has been a phenomenon of "polarization" in the process of acceptance and evaluation. On the one hand, "Jade Pear Soul" was published, popular, "reprinted dozens of times, sold hundreds of thousands of copies, as far as Singapore, Hong Kong has been reprinted many times", and won the love of the general public readers; But on the other hand, "Jade Pear Soul" has also received a lot of criticism and accusations, such as being

regarded as a "tears and snot" novel, in the eyes of new writers, it is regarded as "only writing some detailed cries and fake smiles unnatural evil", Li Dazhao, Liu Banong, Shen Yanbing and other people have attacked this article, or the article of this school. Under the pressure of society, Xu Zhongya, the author, had to rewrite Yu Li Soul in 1914 in "diary style" and serialized it in the "Novel Cluster Newspaper", which contributed to the creation of the first Chinese novel "Xue Hong Tears History".

In the process of acceptance of "Yu Li Soul", the adaptation of film and television and drama is also an important link in the communication. "Yu Li Soul" was adapted into a film in 1924, and was adapted into a drama in 1926, which once again caused a heated discussion and won the attention of the public. Undoubtedly, in the complex social state of the early Republic of China, the publication of "Yu Li Soul" can represent a successful attempt of commercial romance novels during this period, but the historical reality of its criticism and criticism is also worthy of attention.

"In the early years of the Republic of China, the most popular type of novels began to change from 'condemnation novels' to 'love novels'. During this period, the creation of love novels was filled with a sad atmosphere of 'heartbreaking and tragic'. Therefore, 'pity novels' became a hot trend in the literary world of the early Republic of China, with unique ideological and artistic characteristics, and closely integrated with the social and cultural psychology at that time. " Xu Zhongya and his work Yu Li Soul, as a role that cannot be ignored in the history of "sentimental novels", is also recognized as the founding work of "Yuanyang butterfly school".

After the publication of "Jade Pear Soul", on the one hand, it caused hot discussion among citizens, but with the arrival of the "May Fourth" new culture movement, "Jade Pear Soul", as the

first work of "Yuanyang butterfly school", was attacked by radical literary creators. Li Dazhao, Liu Bannong, Shen Yanbing, Lu Xun and others all criticized the work, or the "Mandarin duck and butterfly school" to which it belonged, which formed a sharp contrast with the reading reception of the majority of public readers, and constituted the "polarization" phenomenon of the current acceptance of "Jade Pear Soul". the criticism of "Yuli Soul" is not only limited to that time, after the founding of the People's Republic, the criticism of "Yuli Soul" is more systematic and extreme.

2. ANALYSIS OF THE SPREADING PHENOMENON OF "YU LI SOUL"

"At the end of the Qing Dynasty and the beginning of the Republic of China, during the period from 1912 to 1919 when there was no famous purpose in the literary history, the "Mandarin Duck and butterfly School" won the market and readers with its unique creative purpose and writing attitude. In order to attract readers, it considers popularization, secularization and story from content to form. As its first work, "Yu Li Soul", the recipients of the novel, there are higher cultural levels, there are more ordinary readers, and even some illiterate and semi-illiterate people have generated enthusiasm for communication and acceptance. Subject to different cultural and educational levels, as well as social and historical environments, the acceptance of "Yu Li Soul" naturally appears different voices. the best-selling of "Yu Li Soul", Xu's style can be popular, "that is, his personality has a representative era, his personality contains contradictions, and the problems he faces are also representative, his style is like Liang Qichao's novels and Lin Shu's problems, are a kind of historical transition." His lingering and pompous decoration has the suffering of the people of that era, which is the precursor of China's modernization 'spiritual literature', which constantly reveals the information of modernization in this transitional era." But at the same time, it is inevitable that there will be dissension or contradiction in the process of acceptance. As Sartre said in *What Is Literature*: "Reading is an agreement between the writer's pride and the reader's pride; Each trusts the other, each commits itself to the other, demands of the other as much as it demands of itself, for this trust is in itself a pride, and no one can compel the author to believe that his reader will exercise his freedom; No one can force the

reader to believe that the author has used his freedom; it is a free decision made by both of them."

Behind the phenomenon of "polarization" in the reception process of "Yu Li Soul", it reflects the literary trend of thought and social trend of thought in the synchronic and diachronic state, and can also explore the public's reading acceptance psychology. However, as time goes on, the uneven acceptance of "Yuli Soul" in the process of acceptance, how the "polarization" phenomenon will evolve is also an unknown.

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Discussion on the Feasibility and Necessity of the Group Development of Maritime Vocational Education

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Abstract: The collectivization of vocational education has different understandings from different perspectives. From an economic perspective, it is the organic combination of dispersed entities in the form of groups, forming an operational mechanism that leverages group advantages, reflects comprehensive strength, and forms economies of scale. From an organizational perspective, it is a legal entity joint organization that is linked by assets, contracts, or contracts, with one or several well-developed schools as the core, based on industry (major), region, or existing organizational foundation, and jointly participates in the teaching and research activities of vocational education with schools, enterprises, governments, or other social organizations. From the perspective of system optimization, it is to gather several individual organizations or individuals into a "group", allowing them to leverage the advantages of the "group" and achieve the effect of "1+1>2".

Keywords: Navigation Vocational Education Group, Feasibility, Necessity

1. THE OBJECTIVE NECESSITY OF THE GROUP DEVELOPMENT OF MARITIME VOCATIONAL EDUCATION

According to the collectivization development of Jiangsu Maritime Vocational Education, the first step is to improve the quality of talents in Jiangsu Maritime Vocational Education in China and adapt to the objective requirements of the national marine development strategy; Secondly, it is necessary to comply with the reform of vocational education in China and innovate the development model of maritime vocational education; Finally, it is necessary to break through the "bottleneck" in the development of

traditional vocational education in China and achieve the practical requirement of "leapfrog" development of maritime vocational education.

1.1 Group development is an objective requirement to adapt to the national marine development strategy

With the process of global economic integration, ships are developing towards large-scale, rapid, specialized, and modern directions. the global protection of the marine environment is becoming more stringent, and the application of new technologies, including information technology (IT), is becoming increasingly widespread and in-depth. the demand for the quality of seafarers is becoming higher and higher. If shipping companies want to remain invincible in the fierce competition in the international market, the key is talent. the cultivation of high-quality maritime talents cannot be separated from a developed and effective maritime vocational education system. the development of Jiangsu Maritime Vocational Education Group is from the perspective of economic globalization competition, based on the overall national marine development strategy, "jumping out of education to see education", and from the perspective of improving talent quality to participate in international competition.

1.2 Group development is an inevitable requirement for innovative development models of maritime vocational education

For the current world shipping industry, the demand for talent mainly includes the following levels: firstly, ordinary crew members, such as mechanics, sailors, and ordinary attendants, generally require high school or vocational education, relevant professional training, and obtain relevant professional qualification certificates; Secondly, senior crew members,

such as ship drivers, engineers, and ship electronic and electrical personnel, generally require a college, applied undergraduate or undergraduate degree, and have received relevant professional training to obtain relevant professional qualification certificates; the third is senior management talents related to shipping, generally requiring a bachelor's degree or above, with relevant professional background or work experience.

1.3 Group development is a practical requirement for achieving the "leapfrog" development of maritime vocational education. The existing quality, scale, and structure of maritime talent cultivation in China can no longer fully meet the needs of the implementation of the national maritime power, seafarer power, maritime power strategy, and the rapid development of maritime science and technology. However, the establishment of Jiangsu Maritime Vocational Education Group, led by maritime colleges, with the participation of shipping enterprises, industries, and intermediary institutions, and coordinated by the government, will make beneficial explorations for China's maritime vocational education. At present, the shipping market is still at a low point due to the impact of the financial crisis, and the demand for graduates from various shipping enterprises has decreased. Therefore, the employment pressure for students in maritime colleges is unprecedented. How to leverage its own advantages, focus on improving the quality of education, and enhance the employment competitiveness of graduates is a practical problem that Jiangsu Maritime Vocational Education must seriously face.

2. THE REALISTIC FEASIBILITY OF THE GROUP DEVELOPMENT OF VOCATIONAL EDUCATION

The development of economy and society, the need for educational reform, and the reform of vocational education itself have put forward objective requirements for the development of vocational education collectivization; the development of Jiangsu maritime vocational education collectivization cannot be separated from macro environmental support, government policy support and guidance, as well as beneficial reference to the experience and lessons of foreign vocational education collectivization development, providing practical feasibility for the development of

maritime vocational education collectivization in China.

2.1 Macro Environment for the Development of Jiangsu Maritime Vocational Education Group
The experience of world economic development shows that vocational education plays an important role in a country's economic rise and mastering the initiative of economic development. Taking Germany as an example, the proportion of college graduates among their peers is only 20%, and nearly 80% of young people receive vocational education. Germany even claims that vocational and technical education is its "secret weapon" for economic development. The Chinese government attaches great importance to the development of vocational education, such as the "National Medium- and Long-Term Education Reform and Development Plan Outline (2010-2020)", which clearly states the need to "vigorously develop vocational education", highlighting the position of vocational education in economic and social development. Maritime vocational education is an important component of modern vocational education, playing an important role in providing society with specialized maritime talents in the development of China's shipping industry. From a national perspective, after the 18th National Congress of the Communist Party of China, the national will to develop the marine economy and build a strong maritime country has gradually been established and deeply implemented, endowing Jiangsu maritime vocational education with greater responsibility of the times and expanding policy space; From an industry perspective, the full implementation of the STCW Convention (Manila Amendment) in China has put forward new and higher requirements for the quantity, quality, and level of maritime vocational education talents in Jiangsu. It can be said that the high attention of the government and the objective requirements of economic and social development have created a good macro environment for the collectivization development of maritime vocational education in Jiangsu, China.

2.2 Policy Guidance for the Development of Jiangsu Maritime Vocational Education Group
The Outline of the National Medium - and Long Term Education Reform and Development Plan (2010-2020) clearly states that in the future, the country should vigorously develop vocational education. Vocational education should actively explore new mechanisms for the participation of

the government, industry enterprises, and intermediary institutions in running schools. the core of the new mechanism is the government's overall planning, school enterprise cooperation, and intermediary participation in group education. the government should formulate laws and regulations to promote school enterprise cooperation in education, and promote the institutionalization of school enterprise cooperation. According to the spirit of "Jiao Zhi Cheng (2011) No. 12" and "Jiao Gao (2012) No. 3", in the future, Jiangsu maritime vocational education in China should improve the education management system, promote innovation in talent cultivation models, and cultivate high-quality maritime specialized talents with international competitiveness that meet the needs of national economic and social development. According to the spirit of the "Jiao Gao (2012) No. 4" document, the government encourages local universities to establish university alliances, play a role in radiating high-quality resources of subordinate universities, and achieve resource sharing and complementary advantages of universities in the region.

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