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Exploration of Teacher Technology and Skill Enhancement for Construction of Teaching Staff in Higher Vocational Education

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Abstract: This article focuses on the current situation and problems of vocational education in China, especially the construction of the teaching staff in vocational colleges. By reviewing the development process of vocational education in China, we analyze the causes of the existing problems and propose to build schools into socially recognized project undertaking units in this paper. Professional course teachers can be divided into two types including professional theoretical teachers and professional practical teachers. By driving curriculum and teaching through practice and research, teachers' technical skills can be improved, further promoting high-quality development of vocational education with Chinese characteristics, and helping vocational education go global.

1. Introduction

In 2022, the Standing Committee of the National People's Congress deliberated and passed the newly revised *Vocational Education Law*. After 20 years of rapid development, higher vocational education has occupied the "half of the country" of higher education and become the backbone of vocational education. The country is increasingly attaching importance to vocational education, which has become an important support for national development and shoulders the responsibility of cultivating high skilled talents for society.

Teachers are the main body of educational and teaching activities, and their quality and ability directly affect the quality of education. Therefore, the construction of the teaching staff team is the key to improving the quality of higher vocational education, promoting educational reform, and cultivating high-quality technical and skilled talents. Exploring the strengthening of the construction of the teaching staff in higher vocational education and improving the overall quality of the teaching staff will be beneficial for the development of vocational education with Chinese characteristics.

2. The Concept of Vocational Education

Vocational education is a type of education that cultivates technical and skilled talents. The goal

of vocational education is to enable learners to acquire the professional knowledge, skills, and professional ethics necessary for engaging in a certain profession or productive labor. It focuses on the cultivation of practical skills and actual work abilities. Vocational school education in China is divided into the secondary and the higher. Higher vocational education is an important component of higher education, including vocational colleges, undergraduate education, and graduate level vocational education. The purpose of vocational education is to cultivate applied talents and workers with certain cultural level and professional knowledge and skills for the country.

2.1. The Difference Between Vocational Education and General Education

- Different educational goals

Vocational education aims to cultivate applied and technical talents, focusing 阿 on meeting the needs of vocational positions. General education aims to improve the basic cultural level and emphasizes comprehensive development.

- Different teaching content

Vocational education emphasizes practical operations and skill training related to the profession; General education places more emphasis on the learning of theoretical knowledge and the cultivation of cultural literacy.

- Different teaching methods

Vocational education often adopts methods such as case-based teaching and simulated training. General education focuses on teaching, discussion, and other aspects.

- Different employment direction

Vocational education graduates have clear employment directions and usually enter related industries for work. Graduates from general education have a wider range of employment options.

2.2. The Development History of Vocational Education in China

Vocational education education has a long history of development, from learning from the West in the late *Qing Dynasty*, to the heavy damage during the *Cultural Revolution*, to the recovery after the *Reform and Opening-up*, and the emphasis in the 21st century.

2.2.1. The Origin of Vocational Education

The development history of China's vocational education can be traced back to the late *Qing Dynasty*. In the face of the invasion of foreign powers, the late Qing government carried out the Westernization Movement, set up westernization education, and learned "Western language" and "Western arts", which was the beginning of China's modern school vocational education.

After the establishment of the People's Republic of China, vocational education began in the 1950s, in order to quickly fill the talent gap, the country attached great importance to vocational education and established a number of vocational education institutions such as secondary vocational schools, technical schools, and vocational high schools by transforming old China's vocational education and learning from the experience of the Soviet Union. At that time, vocational school teachers mainly come from outstanding graduates of vocational schools and are trained through practice. For example, the *Provisional Implementation Measures for Secondary Technical Schools* in 1952 pointed out that in order to cultivate technical course teachers, secondary technical schools must equip graduates with excellent grades as technical course assistant teachers. The first National Conference of Technical School Principals in 1955 also proposed that the cultivation of new teachers should mainly focus on selecting outstanding graduates from technical schools and systematically training them in practical work by staying on campus or sending them to factories.

During the Cultural Revolution, vocational education was severely damaged and in a state of decline. After the reform and opening up, vocational education was restored, and various fronts felt the shortage of talents, gradually establishing a vocational education system. At this time, vocational college teachers were still mainly selected from outstanding graduates of vocational schools and trained in practice to meet the development needs of vocational education, which practice continued after the reform and opening up.

2.2.2. The Rapid Development of Vocational Education

In the 21st century, the country has attached increasing importance to vocational education, and the vocational education system has been continuously improved, forming education models such as industry education integration and school enterprise cooperation. The sources of vocational college teachers have begun to diversify, mainly including outstanding graduates, technical personnel from enterprises, and dual teacher training.

The concept of *Dual Teacher* was first proposed in 1989 in policy documents, marking the government's recognition of this concept and its attempt to provide policy guidance for the construction of the "dual teacher" team in vocational education [1]. With the passage of time, the connotation of the dual teacher has been continuously enriched, including various aspects such as professional titles, abilities, and knowledge innovation, reflecting the effective integration of teachers' knowledge, abilities, and qualities.

In recent years, the government has introduced a series of policies aimed at promoting the construction and reform of a "dual teacher" teaching team [2].

The Central Committee of the Communist Party of China and the State Council put forward the *Decision on Deepening Education Reform and Comprehensively Promoting Quality Education*, which proposed to vigorously develop higher vocational education. At the same time, under the promotion of policies, higher education institutions across the country began to expand enrollment on a large scale [3]. In this context, vocational education in China has begun to develop rapidly, with significant changes in the number and level of vocational education institutions.

There were 22654 secondary vocational education institutions (excluding technical schools) and 104 vocational colleges in China. By 2023, the number of secondary vocational education institutions were reduced to 7085, a decrease of nearly two-thirds, while higher vocational education are expand to 1580, an increase of 15.19 times. Most of these vocational colleges come from the merger or upgrading of secondary vocational colleges and technical schools, as well as the overall planning of existing vocational, vocational, and adult colleges.

In order to serve *the Belt and Road*, promote international production capacity cooperation and enhance international influence, the *Ministry of Education released the Education Action to Promote the Joint Construction of the Belt and Road* in 2016, which proposed vocational education go to sea. Going global in vocational education means that China's vocational education will reach new heights. It is an opportunity and a challenge for Chinese vocational educators.

3. The Current Situation and Problems of Vocational Education in China

Looking back at the development of vocational education in China since the establishment of the People's Republic of China, as teachers in vocational colleges, we should have our own sense of pride, but we should also look insight the problems involved.

3.1. The Existing Problems

In recent years, the teaching staff of vocational colleges have made significant progress in terms

of quantity supplementation and structural optimization. The source of teachers is no longer limited to graduates from single colleges, but also includes engineers from enterprises. However, a certain proportion of teachers are still lack of practical experience in enterprises. The teachers from enterprises are easily homogenized under the existing teacher management system, especially in today's rapidly advancing industries and rapidly changing technologies.

The disconnect between the technical level of the teaching staff and enterprises can lead to a lag in classroom knowledge in schools compared to the industry [4]. Secondly, teachers without practical experience can lead to knowledge transmission being superficial. For example, a baker who has not steamed Mantou or baked bread teaches students to steam Mantou or bake bread based on the knowledge learned from books. The teaching effect can be imagined.

Therefore, among vocational college, that the shortage of teachers with theoretical and practical teaching abilities [5], the high proportion of teachers received higher education but lack practical experience and professional skills [6], are all very real problems we have to face.

In response to the above issues, the government and the vocational education industry have proposed a series of solutions, such as training dual qualified teachers, hiring part-time teachers, establishing industry education consortia, and creating industry education integration communities, so that narrow the gap between schools and enterprises by improving the practical skills of teachers and promoting the formation of a community among enterprises, schools, and industries to jointly build a curriculum system and curriculum. Although these initiatives have a certain promoting effect on vocational education, it still cannot meet the needs of vocational education going global and developing vocational education with Chinese characteristics.

3.2. Problem Analysis

Vocational college teachers have a heavy workload in teaching, so that they have no time to focus on improving their own abilities after finishing teaching work, which increases the difficulty of truly implementing teacher quality improvement. Despite school encouragement or requests that teachers should take advantage of their winter and summer vacations to work in enterprises for training, it is difficult for them to integrate into enterprise projects and achieve real quality improvement after one or two months of on-the-job training [7].

Hiring part-time teachers from enterprises can solve the problem of disconnection between schools and enterprises to some extent, but the main business of part-time teachers from enterprises is to create profits for the enterprise, and it is difficult to focus on teaching and educating students.

Although the target of industry education consortia and industry education integration communities is to achieve resource sharing and complementary advantages, promote industry education integration and innovation drive, enhance talent and skill training, and serve regional economic development, if the technical skills of vocational college teachers are not fundamentally improved, their ultimate effect will be greatly reduced. So these measures still cannot quickly improve teachers' abilities.

3.3. Exploration of Solutions

In response to the above issues, we believes that vocational colleges should consider how to build the school into a socially recognized project undertaking unit, rather than only introducing enterprise engineers and hiring part-time teachers. If society knows and recognizes that vocational colleges undertake projects, and each school has a dedicated liaison department, then there will definitely be companies entrusting projects to schools. At present, the quality of teachers in vocational colleges is not inferior to that of enterprise employees. What is lacking is only the opportunity to practice projects and the time and energy to participate in. The purpose of the

school's teacher innovation team undertaking projects is not profit, but to enhance technology and skills, keep up with the forefront of the industry, so that making it more competitive compared to peer enterprises.

For the cultivation of dual teacher quality teachers, we believes that the first to do is to make clear that not all teachers should have a one size fits all approach. Dual teacher quality teachers should be divided into two levels of professional theoretical teachers and professional practical teachers. The main task of professional practice teachers is to master new technologies in the industry, while the main task of professional theory teachers is to integrate new technologies into the curriculum and impart them to students.

The structure of the two types of teachers should be that practical teachers drive theoretical teachers, and theoretical teachers teach students. More precisely, the professional practice teachers complete enterprise projects provided by the school's project undertaking department, enhance technical skills in project promotion, and ultimately achieve technological innovation and research and development. Further, help professional theory teachers to develop talent training plans, revise curriculum standards, and guide students in comprehensive project practice.

Based on the above analysis, we can implement the construction of the teaching staff and the improvement of teachers' technical skills from the following three aspects.

3.3.1. Establishing Dedicated Project Undertaking Department

The project undertaking department can collaborate with enterprises and local governments to introduce some real projects for teachers, while also being able to coordinate and utilize school resources, and output them to the teacher innovation team in the form of campus projects.

In the early stages of project construction, when the teacher innovation team does not have successful project cases, it can be achieved through school enterprise cooperation in four steps:

Step 1: Coordinate school resource planning and campus projects for innovative teacher teams to test and enhance teachers' technical skills.

Step 2: The project undertaking department collaborates with local governments, enterprises, and school enterprise cooperation to participate in the actual project undertaking tasks of the enterprise, in order to enhance the enterprise's trust in teacher technology.

Step 3: The teacher innovation team independently undertakes enterprise projects.

Step 4: The teacher innovation team has the ability to innovate and develop new technologies, leading the forefront of the industry.

3.3.2. Reforming the Professional Title Evaluation and Appointment System and Teacher Assessment System

Divide dual qualified teachers into two levels, and use different assessment and appointment systems for them.

The main task of professional theory teachers is to complete classroom teaching, while the main task of professional practice teachers is not teaching, but to master new technologies in the industry. Professional practice teachers are the teachers of professional theory teachers, and are the guides and leaders of technological updates in schools [8].

Two types of teachers can be evaluated and hired according to the job system, and their positions can be adjusted based on their situation and performance. Newly hired enterprise engineers must work as professional practice teachers for 5-10 years.

3.3.3. Establishing Teacher Innovation Team

Professional practice teachers should establish teacher innovation teams, form job teams similar

to enterprise operations, undertake projects, research and develop technologies, and continuously improve their technical skills [9-10].

This is also a relatively difficult step in the early stages of construction. What project will we undertake? Where did the project come from, has it been completed? Therefore, we believes that the teacher innovation team should first start with small projects on campus, form a teacher-student working group, complete small projects in the school or focus on things in the school environment, such as computer science, where all information systems on campus are led by the teacher innovation team. In the field of automobiles, a car repair workshop is established, and the teachers in the school only bear the cost of parts when repairing cars. Even if it is not possible to undertake large-scale information system development projects at the beginning, the teacher innovation team can fully participate in school enterprise cooperation projects, with the aim of improving teacher skills and accumulating practical experience.

3.4. Exploration of the Construction of Our School's Teaching Staff

The teacher innovation team established by the School of Computer Science at our university focuses on campus digital construction projects, forming a teacher-student work team to develop projects such as the campus sports meet data display screen, student comprehensive quality analysis system, campus smart electricity management system, and student electricity behavior analysis system.

The teacher innovation team first started with the student activity data display and analysis system of the college, undertook the development of the college's student sports meet data big screen, and developed the college's student comprehensive quality data analysis system to exercise teachers' technical skills, accumulating certain practical development experience. Later, they also undertook the school's campus smart electricity management and student electricity behavior analysis system, promoting digital campus within the campus, accumulating rich practical experience in the project development process, improving teachers' technical skills level, and making certain achievements in exploring and cultivating dual teacher technical skill teachers.

4. Conclusions

This article focuses on the construction of the teaching staff in vocational colleges. By reviewing the development process of vocational education in China, we analyze the problems existing in the current teaching staff in vocational colleges, then proposes a series of solutions to these problems, and explores reforms based on the proposed solutions. The aim is to create a teaching staff with theoretical and practical teaching abilities, and promote the high-quality development of vocational education.

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