

Research on Collaborative Education Innovation Model in Vocational and Technical Colleges

Huanhuan Wang¹, Lin Zhang²

¹Henan Vocational College of Mechanical and Electrical Engineering, Zhengzhou, Henan, China,

²State Grid Jiaozuo Power Supply Company, Jiaozuo, Henan, China

Abstract: Vocational education is facing the talent cultivation for the construction and service of the front line of social production. In the context of the integration of industry and education, vocational colleges have established industrial colleges to meet the needs of social development. As a new mode of education, it is crucial to fully leverage the advantages of schools and enterprises and cultivate technical and skilled talents. This article provides new methods and paths for collaborative education between schools and enterprises through teaching reform methods such as the construction of an innovative talent training system and innovative talent training models.

Keywords: Integration of Industry and Education; Industrial College; Training Model; Training System

The "List of National Ordinary Higher Education Institutions" released by the Ministry of Education in 2024 clearly shows that as of June 20, 2024, there are a total of 3117 higher education institutions in China, including 2868 ordinary higher education institutions, including 1308 undergraduate schools and 1560 vocational (specialized) schools; Adult higher education institutions play an important role in overall talent cultivation as evidenced by the 249 institutions. Vocational education aims to cultivate technical and skilled talents, with a focus on practicality. It is supported by theoretical knowledge to cultivate comprehensive, practical, and applied talents. The current teaching mechanism is: traditional on campus teaching, indoor teaching, stagnant and inflexible teaching without innovation, ultimately leading to a mismatch between the output of talents and the needs of society, resulting in an extreme phenomenon of urgent shortage of technical talents and no available talents.

In recent years, many vocational colleges have also explored teaching reforms. In terms of the positioning of vocational education, most of them are planned and set up based on professional needs[1]. The vast majority still remain at the level of empty conceptual expressions such as "cultivating innovative thinking" and "strengthening theoretical construction", without establishing a systematic talent cultivation mechanism in actual teaching. The new changes in the demand for cultivating vocational talents in the information age make traditional single teaching based on vocational skills unable to meet this huge market gap. Even traditional education and training have higher quality requirements for talents, requiring them to have flexible thinking abilities and better guide and expand students' thinking[2]. The need for professional skills is also limited to a few special teaching needs, which further exposes the shortcomings of current vocational education. It is necessary for vocational education to transform its training methods to change this trend. Therefore, it is urgent to reform the teaching mode of vocational colleges. Breaking the old rules and innovating teaching will have profound and important significance for the development of society and the promotion of the economy.

1. Creating an Innovative Online Classroom based on the Online Field Model

General Secretary Xi Jinping delivered an important speech on vocational education at the National Education Conference, proposing to promote the characteristics and level of type education in vocational colleges[3]. The State Council has issued the "Implementation Plan for National Vocational Education Reform" (referred to as the "20 Measures for Vocational Education"), proposing 20 measures for vocational education reform to elevate the modernization of vocational education to a strategic level. Based on this, in order to

accelerate the high-quality development of vocational education in the new era and effectively improve the quality and service capabilities of vocational education, vocational colleges must continuously enrich their educational concepts and upgrade their educational models. After deep consideration of type education, vocational colleges have developed a systematic reform with the characteristics of type education: the online field model[4]. Line refers to the front line of enterprise production, line field is based on the construction of educational scenes in the front line of enterprise production, and line field mode refers to the talent training mode that fully utilizes enterprise resources and cultivates technical and skilled talents for enterprises based on their production lines. In the context of the integration of industry and education in vocational education, the production scene is taken as the educational environment, and teaching activities are guided by solving real problems and completing real tasks. Learning and working in the workplace cultivate high-quality and versatile technical and skilled talents. Simply put, vocational colleges utilize enterprise resources to cultivate talents for enterprises and industries. Under the guidance of the online mode, by integrating and rebuilding the production site of enterprises, online teaching points that can eat, live, learn, train, and create are formed. Online classrooms are carried out, online courses are operated, and online teaching is implemented. That is to say, the online classroom is a battlefield, shooting range, and dojo constructed from online teaching points that can produce, train, and teach.

Compared with traditional classrooms, online classrooms not only enable enterprise engineers and on campus teachers to jointly teach and cultivate in both directions, but also superimpose and transform enterprise resources (equipment, processes, technology, products, etc.), teaching resources (integrated training and development), and human resources (on-the-job, talent reserve, tailor-made). Through learning and exercise in dojo, shooting range, and battlefield, students gradually transform from novice to proficient and skilled. In the real scenarios provided by enterprises, comprehensive abilities such as theoretical knowledge, skill training, and job literacy are cultivated and shaped through job selection, rotation, and positioning.

2. Establish a Talent Cultivation System Guided by Job Requirements

The Ministry of Education has issued the "Guiding Opinions on the Formulation and Implementation of Professional Talent Training Plans for Vocational Colleges", which states that professional talent training plans are normative documents for vocational colleges to implement the overall requirements of the Party and the state for the training of technical and skilled talents, organize and carry out teaching activities, and arrange teaching tasks. They are the basic basis for implementing professional talent training and conducting quality evaluations. Since the 18th National Congress of the Communist Party of China, the reform of vocational education and teaching has been continuously deepened, and the framework of the national teaching standard system with Chinese characteristics has been continuously improved. Vocational colleges actively connect with national teaching standards, optimize the professional talent training system, innovate talent training models, and continuously improve the level and quality of education and training. Through the exploration and reform of a vocational college, a talent training program guided by job demands has been formed. The professional talent training program is jointly formulated by schools and enterprises, with clear training objectives. The course content is aligned with professional standards, typical positions and tasks, and the teaching process is aligned with the real tasks and production processes of enterprises[5]. New technologies, new processes, and new norms are incorporated into the teaching standards and content, and the corresponding action oriented online course system planning logic is clear and well constructed, and integrated into the online credit implementation plan.

2.1 Clearly Define the Training Objectives and Standards

Keeping up with the trend of industrial development and the demand for talents in the industry, we will explore typical positions in high-quality enterprises, condense the skills and qualities required for the positions, and combine professional characteristics to integrate job courses, competitions, and certificates. We will pay attention to the integration of learning and application, and strive to cultivate students' innovative spirit and practical ability, enhance

their vocational adaptability and sustainable development ability, strengthen the cultivation of students' professional qualities and professional technical accumulation, and integrate innovative spirit, professional spirit, and craftsmanship spirit into the entire process of talent cultivation.

2.2 Establish a Curriculum System and Teaching Schedule

Collaboration between schools and enterprises to jointly develop training and training courses that reflect new technologies, processes, and standards in the industry. A task-based action course system is established, dividing the courses into three modules: general course module (dojo), specialized course module (shooting range), and specialized course module (battlefield). The three modules correspond to the novice stage, proficient stage, and expert stage respectively; The beginner's course, also known as the general module course, focuses on cultivating students' basic literacy and abilities. Basic literacy mainly includes political literacy, humanistic literacy, etc; Basic abilities mainly include professional (occupational) cognitive ability, professional (occupational) development ability, etc. The learning content includes courses on Marxist theory, Party history and national history, excellent traditional Chinese culture, career development and employment guidance, innovation and entrepreneurship education, information technology, Chinese language, mathematics, foreign language, health education, aesthetic education courses, professional foundations, etc. The focus of vocational module courses is to cultivate students' line field skills and techniques. Line field technology mainly refers to the techniques required for line field operations; Professional skills mainly refer to personal skills formed through repeated training of line field techniques. Line field technology generates line field skills, which support line field technology. The specialization module courses focus on cultivating students' innovation and entrepreneurship. Innovation is a broad concept, and innovative industries, academia, and research are all forms of innovation; Entrepreneurship is also a broad concept that is related to career development, including line performance, line employment, line entrepreneurship, as well as off line employment and entrepreneurship.

Students can choose courses based on their own abilities and development directions within the prescribed academic scope, without the need to select courses in the order of novice, proficient, and skilled. Teachers should provide timely evaluations of students after the courses are completed. Based on the total number of students in this round of learning, there are 5 levels: A, B, C, D, and E. Among them, A generally accounts for no more than 15%, and DE generally accounts for no more than 5%. Students who evaluate ABC will receive course credits, while students who evaluate DE will not receive credits.

2.3 Improve the Method of Credit Recognition and Exchange

Credit exchange can be divided into credit storage, credit lending, credit mutual recognition, and credit warning. Under the overall requirements of the school, students can independently choose major categories, course categories, and learning methods according to their career planning trends, and the credits obtained from studying are deposited into the credit bank. Courses with similar learning tasks can be exchanged, stored, borrowed, and mutually recognized. Based on the big data of the online teaching operation platform, accurately assess students' learning status, and provide timely and accurate guidance and evaluation to students.

2.4 Develop Graduation Standards and Requirements

Students are required to complete the required credits as stipulated in the professional talent training program through a specified number of years of study, as well as the required qualities, knowledge, and abilities upon graduation, such as credit requirements, skill requirements, performance requirements, etc.

3. Develop Online Courses that are in Line with Production Reality and the Latest Industry Trends

At present, most vocational colleges have many problems, such as the disconnect between the training and training materials construction of vocational colleges and the actual production of enterprises, outdated and untimely content, non-standard selection of teaching materials, lack of real work tasks for enterprises, all of which are virtual tasks, and lack of

"three-dimensional" teaching materials suitable for the combination of online and offline applications. These issues directly affect the improvement of teaching quality. Developing online courses that are in line with production reality and the latest industry trends will greatly improve the teaching quality of vocational colleges and the employment quality of students. Based on the typical positions of the enterprise, analyze the human resource needs of the enterprise, gradually sort out the ability list to meet the requirements of the position, reorganize the ability objectives according to the teaching laws of vocational education, clarify the nature, objectives and requirements of the courses, list three module courses, select typical tasks, incorporate ideological and political elements, list teaching tasks, allocate reasonable credits, write the curriculum outline, develop three-dimensional resources such as handouts, work pages, videos, teaching aids, animations, etc., form the post course resource package and continue to improve in the training and cultivation.

Guided by the construction of online courses, accelerating teaching reform and innovation requires the integration of eight truths and five reflections. Eight Truths: Real cooperative enterprises and human resources, real enterprise production positions, real enterprise job scenarios, real work and job tasks, real job task construction, real enterprise job demand skills, real enterprise, industry, and university training and development needs, and real applications (applications of enterprises, industries, and universities). Five manifestations: embodying the teaching philosophy that always revolves around enterprise employees and students, and targeting the learning psychology and habits of vocational college students; Reflecting the thinking methods for cultivating enterprise employees and vocational college students: discovering problems in practice, analyzing problems, solving problems, and elevating to theory; Reflecting the cultivation of learning and hands-on thinking abilities for enterprise employees and vocational college students; Reflecting the cultivation of team spirit among vocational college students: awareness of communication, interaction, friendliness, collectivism, cooperation, innovation, etc; Reflect training and development courses based on real work tasks.

4. Cultivate Professional Ethics and Innovative Consciousness

Throughout the entire teaching and training process, emphasis is placed on exploring professional qualities and innovative spirit from real enterprises, integrating them into daily teaching and curriculum development, actively building a "ideological and political curriculum+curriculum ideological and political education" framework, promoting the all-round "three in one education" of all staff, and achieving the organic unity of ideological and political education and technical skills training. Innovate the teaching mode of ideological and political courses based on the characteristics of vocational college students. Strengthen the awareness of moral education and talent cultivation among professional course teachers, combine the characteristics of talent cultivation and professional ability requirements of different majors, sort out the ideological and political education elements contained in each course, give full play to the ideological and political education function carried by professional courses, and promote the close integration of professional course teaching and ideological and political theory course teaching, walking in the same direction.

5. Summary

This study is mainly aimed at vocational college students, based on the line field model, taking the integration of vocational education industry and education as the path, solving real problems and completing real tasks as the learning carrier in real situations, learning in work, and working in learning as the method, to cultivate composite technical and technical talents in the form of teaching activities. Teachers and students go deep into the front line of their positions, condense the list of job skills and professional qualities, and develop a curriculum system and talent cultivation plan that seamlessly connects job and education; Explore the use of "task completion, problem solving" in teaching and learning at work. The evaluation of students' professional abilities should comprehensively consider the completion of tasks, the achievement of job standards, benchmark professional standards, utilize platform data, and adopt a combination of process and results in a field teaching model. Develop courses that are suitable for vocational college students based on real job lists, project lists, task lists, and ability

lists, and jointly developed by schools and enterprises to cultivate job vocational abilities. Explore innovative and entrepreneurial projects, create benchmarks for innovation and entrepreneurship, promote a new wave of innovation and entrepreneurship, and ultimately achieve the cultivation method of students' learning meeting the needs of society and employment upon graduation.

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