

## *Original Paper*

# Research on the Path of Teaching Reform in Vocational Colleges under the Comprehensive Education Mechanism of "Position-Course-Competition-Certificate"

Hao Wang<sup>1\*</sup>

<sup>1\*</sup> Wang Hao (1990-), Digital Business School, Sichuan University of Science and Technology, Chengdu, Sichuan 610000, China; 1018480247@qq.com

Received: February 29, 2025

Accepted: March 21, 2025

Online Published: April 14, 2025

doi:10.22158/wjer.v12n2p88

URL: <http://dx.doi.org/10.22158/wjer.v12n2p88>

### ***Abstract***

*China's vocational education is currently moving towards a high - quality development stage. The state has issued policy texts such as the "Opinions on Promoting the High-quality Development of Modern Vocational Education", with the focus on deepening the integration of industry and education and enhancing the flexibility of vocational education to meet industrial development. However, in traditional vocational colleges, there has long been a phenomenon of disconnection between teaching and industrial needs. Curriculum design often deviates from the actual requirements of positions, and the knowledge and skills acquired by students are difficult to meet the needs of employment positions. As a result, the quality of talent cultivation fails to keep up with the pace of industrial upgrading in a timely manner. Against this background, this study focuses on exploring the teaching reform methods in vocational colleges under the integrated education system of "position-based courses, practical training, competitions and certificates", and constructs a new "four-dimensional cooperation" framework: including disassembling the elements of post capabilities, reformulating curriculum standards, integrating the competition evaluation mechanism, and ensuring the seamless connection of skill certificate examinations, so that these four aspects can work together in a coordinated manner.*

### ***Keywords***

*"Position-Course-Competition-Certificate", Teaching Reform, Path Research*

## **1. Introduction**

China's vocational education is booming. Against this background, teaching reform has become a key topic for vocational colleges to improve human resources and quality. The comprehensive education

mechanism of "position-based courses, practical training, competitions and certificates" is an important measure in vocational education reform, which points out a new direction for the teaching reform of vocational colleges.

The National Vocational Education Conference held in 2021 emphasized strengthening the integration of industry and education, promoting school-enterprise cooperation, promoting the vertical connection of vocational education at all levels, enhancing the horizontal integration among different types of education, and promoting the establishment of a modern vocational education system. The comprehensive education mechanism of "position-based courses, practical training, competitions and certificates" is exactly a specific manifestation of implementing this spirit. It requires the effective combination of post requirements, curriculum systems, skill competitions, and vocational certificates to develop high-level technical and skilled talents that meet the needs of industrial development.

Currently, there are many problems in the teaching of vocational colleges. It is urgent to rely on the comprehensive education system of "Position-Course-Competition-Certificate" to solve them. Firstly, the situation of "disconnection between courses and working posts" is quite serious. There are differences between the course content and the real needs of the work posts. The knowledge and skills students learn cannot be directly applied to the work posts, resulting in an extended employment adaptation period and increased employment costs for enterprises. Secondly, the problem of "separation between courses and certificates" is prominent. The course teaching does not match the assessment content of professional qualification certificates. Students spend a lot of time and energy preparing for the certificate exams, but their practical operation ability has not been effectively improved. These problems not only hinder the professional development of students but also limit the long-term development of vocational colleges.

Theoretically speaking, exploring the direction of teaching reform in vocational colleges under the integrated education framework of "Position-Course-Competition-Certificate" helps to improve the education structure of vocational education and enrich the teaching concept of vocational education. Through in-depth analysis of the essential relationship and operating principle of "Position-Course-Competition-Certificate", a more scientific and appropriate vocational education curriculum system and teaching form can be established, providing theoretical support for the innovation of vocational education. From an operational perspective, this research can enhance students' professional competitiveness. By integrating post requirements into course teaching, stimulating with skill competitions, and guiding with professional qualification certificates, students' practical ability and innovation awareness can be cultivated, enabling them to quickly adapt to the workplace environment after graduation and meet the employment standards of enterprises.

To verify the effectiveness of the comprehensive education mechanism of "Position-Course-Competition-Certificate", this article selects representative vocational colleges for case studies. By carefully analyzing the implementation experience and results of the case colleges in

teaching reform, an operational model that can be promoted is summarized, providing reference for other vocational colleges.

Generally speaking, in the context of promoting the integrated education of "Position-Course-Competition-Certificate" in the field of vocational education, a detailed analysis of the ways of teaching reform in vocational colleges has significant policy guidance significance, meets the current actual needs, and has positive operational value. This article will conduct a detailed analysis on this topic, hoping to provide some effective ideas and measures for the teaching reform of vocational colleges.

This paper takes the Big Data and Accounting major of Sichuan Vocational College of Science and Technology as a case study object, aiming to verify the actual effectiveness of this mechanism. Through the observation and analysis of practical applications, it shows that the integration mechanism of "Position-Course-Competition-Certificate" not only effectively improves students' practical operation ability and employment competitiveness, but also makes the teaching content more in line with the actual needs of the industry. Based on the above results, a specific measure that can be promoted is refined, providing new ideas and practical operation plans for vocational colleges to promote educational reform. The positive impact of this on vocational education in promoting social and economic development cannot be underestimated.

## **2. Research Status**

### *2.1 Domestic Research Status*

In China, the development of the "Position-Course-Competition-Certificate" model has evolved from a fragmented state to a unified one. Initially, job requirements, curriculum arrangements, skills competitions, and vocational certificates were independent components. Job requirements were often led by enterprises, which set talent competency standards according to their own development needs. However, these standards were not effectively integrated into the curriculum framework of vocational colleges. Curriculum design relied more on the disciplinary knowledge system and was disconnected from actual job tasks. Skills competitions were merely platforms for a few students to showcase their skills and had little connection with regular teaching. Most students decided on their own whether to obtain vocational certificates, and schools lacked specific development plans in the teaching process to meet the requirements of these certificates.

As vocational education reform progresses, there is a growing emphasis on integrating job requirements into the curriculum to develop students' abilities to meet these requirements. Skills competitions and vocational qualification certificates have also been incorporated into the teaching system as the main means to evaluate students' learning performance and teaching quality. In recent years, the "Position-Course-Competition-Certificate" model has gradually become more integrated, forming a comprehensive education system that focuses on the natural combination of various elements to jointly promote the improvement of students' vocational abilities.

## 2.2 Research Status Abroad

Foreign vocational education started early in aligning job requirements with the curriculum. Some developed countries, such as Germany, implement the "dual-system" vocational education model, which deeply integrates enterprise applications with theoretical teaching in schools. Students alternate between enterprises and schools for learning, which can better meet job requirements. In terms of skills competitions and vocational certificates, foreign countries also have relatively mature systems. The content of competitions is highly consistent with vocational standards, and vocational certificates are highly authoritative and recognized. Compared with foreign countries, China's comprehensive education mechanism of the "Position-Course-Competition-Certificate" model has learned from foreign advanced experience while considering the national conditions and the actual situation of vocational education in China, and has its own characteristics and advantages.

## 3. Research Path

The innovation of this research path is reflected in the following aspects: methodological innovation, such as constructing original tools like the "four-dimensional competency decomposition model" and the "three-dimensional alignment model"; implementation path innovation, such as proposing systematic solutions like the "three-level progressive competition integration mechanism" and the "five-dimensional hybrid teaching model"; technological integration innovation, deeply integrating new technologies such as ai and vr into the design of teaching reform systems; and institutional design innovation, such as developing a new management mechanism like the blockchain certificate storage system for the credit bank.

### 3.1 Decomposition of Post Competencies and Curriculum Reconstruction: Construction of a Dynamic School-Enterprise Collaboration Mechanism

Based on the obe (outcome-based education) concept, this study proposes a "four-dimensional competency deconstruction model": through enterprise surveys to obtain job competency requirements (cognitive dimension), analysis of the curriculum system in vocational colleges (knowledge dimension), comparison of industry technical standards (skill dimension), and students' career development expectations (development dimension), a dynamic generation mechanism for the job competency map is formed. taking the financial shared business processing as an example, in collaboration with enterprises such as ufinda, a three-dimensional matrix of "business process-job role-competency indicator" is constructed, and the traditional curriculum modules are disassembled into four progressive competency units of "basic accounting-intelligent review-data analysis-decision support". the "competency radar chart" evaluation tool is innovatively introduced to achieve the visual matching of curriculum content and job requirements, and the curriculum modules are dynamically adjusted each semester according to the enterprise's technological iteration.

### *3.2 Alignment of Curriculum Standards with the "1+X Certificates": Innovation in the Dual Certification System*

Breaking through the simple superposition model of traditional certificate courses, a "three-dimensional alignment model" is constructed: in the knowledge dimension, a corresponding matrix between curriculum content and certificate standards is established (for example, the python data analysis ability required by the financial digitalization certificate corresponds to the teaching content of the "application of financial big data" course); in the skill dimension, an integration path of "embedding certificate tasks into curriculum projects" is designed (for example, it can integrate the vat declaration task in the certificate assessment into the practical training of the "tax declaration and practice" course); in the evaluation dimension, a dual-track evaluation system of "formative assessment + certificate certification" is developed. By developing the "certificate competency mapping table" and the "detailed rules for credit conversion implementation", the two-way mutual recognition of curriculum credits and certificate credits is achieved, and a replicable operation paradigm of "integration of courses and certificates" is formed.

### *3.3 Integration of Competition Standards into Teaching Design: Construction of an Ecosystem for the Integration of Competitions and Teaching*

An innovative "three-level progressive competition integration mechanism" is proposed: at the basic level, competition rules are transformed into curriculum assessment standards (for example, the decision timeliness requirement in the electronic sand table competition corresponds to the scoring indicators of the "enterprise simulation operation and management sand table" course); At the advanced level, modules of "transforming competition projects into courses" are developed (designing the algorithm optimization task in the financial big data analysis competition as a weekly challenge project in the "financial big data" course); At the high level, an integrated platform of "teaching-training-competition" is constructed. By developing the "competition task granular deconstruction tool", complex competition questions are decomposed into operable teaching units, and a three-library linkage mechanism of "competition question bank-teaching case bank-practical training project bank" is established, forming a normalized implementation path of promoting teaching through competitions.

### *3.4 Alignment of Curriculum Standards with the "1+X Certificates": Innovation in the Dual Certification System*

The course should break through the static storage mode of traditional resource libraries and construct a "four-dimensional resource matrix", which can make it by dividing the basic layer (micro-lecture videos), improvement layer (simulated test questions), expansion layer (real competition questions), and innovation layer (real enterprise cases) according to the ability level, and using knowledge graph technology to establish a resource association network. It can develop an "adaptive learning path recommendation system" to dynamically generate personalized learning plans by analyzing students' learning data through AI algorithms. It can innovatively design a "virtual competition environment" to

simulate the real-time data processing scenarios of financial big data analysis competitions, and construct a closed-loop learning system of "watch-practice-evaluate-correct", significantly improving the practicality and interactivity of the resource library.

### *3.4 Credit Bank and Outcome Conversion: Institutional Innovation and Practical Breakthrough*

The course should construct a "three-stage credit conversion mechanism", such as establishing a direct replacement list of certificate courses at the basic layer (for example, it can replace the "application of financial information system" course with a financial digital certificate), developing a conversion path of "certificate ability certification + supplementary training" at the advanced layer, and implementing "cross-field certificate combination certification" at the high-level layer (for example, it can convert the 1+X certificate and industry certification combination into innovation and entrepreneurship credits). The course should also establish a "credit conversion quality evaluation standard" and make continuous improvements from three dimensions: the standardization of the certification process, the degree of ability matching, and the teaching implementation effect.

## **4. Guarantee Mechanism**

### *4.1 Collaborative Training Mechanism for Teaching Staff*

Colleges and universities should focus on improving the abilities of "dual-qualified" teachers, construct a system of "dual employment and two-way flow between schools and enterprises", and promote teachers to participate in the research and development of real enterprise projects through carriers such as enterprise practice bases and technical skill master studios to strengthen their professional practical abilities. The university should establish a dual-track assessment system of "teaching ability + industry certification", and include teachers' participation in vocational skills competition guidance and the development of 1+X certificate standards in the indicators for professional title evaluation.

At the same time, the university should implement a dynamic management mechanism for enterprise tutors. The university should introduce the "project-based" cooperation model, hire industry technical backbones as enterprise tutors, and let them participate in teaching through the trinity of "technical lectures, on-the-job training, competition guidance". It should also establish an evaluation file for the teaching effect of enterprise tutors, implement a flexible working system and a teaching subsidy system to ensure the in-depth integration of school and enterprise teaching staff.

### *4.2 Construction of a Virtual - Real Integrated Resource Platform*

The university should enrich the functions of the virtual simulation center. Based on the needs of "Positions, Courses, Competitions, And Certificates", it should develop a modular training project library covering real job scenarios, standard competition processes, and key points of certificate assessment. The teachers should realize the connection of scenarios from "classroom training-enterprise training-competition preparation-certificate assessment". At the same time, the university should implement the school-enterprise data sharing system, establish a digital resource platform jointly developed by schools and enterprises, integrate resources such as enterprise production data,

competition question banks, and certificate standards, and form a dynamically updated "Positions, Courses, Competitions, And Certificates" resource matrix.

#### *4.3 Construction of a Multi-Dimensional Evaluation System*

The university should implement the digital transformation of process evaluation, develop an intelligent teaching management system, and record students' process data such as classroom performance, project completion, and participation in skills competitions. It should also establish a closed-loop feedback mechanism of "learning trajectory-ability short-board-improvement plan".

### **5. Implementation Suggestions**

It can be carried out in two stages. Pilot stage (1 - 2 years): it can select majors with strong alignment with industrial needs to carry out pilot projects on the integration of "Positions, Courses, Competitions, And Certificates", and establish monitoring indicators for the effectiveness of teaching reform. Promotion stage (3 - 5 years): it can form a replicable docking model of "professional group-industrial cluster", develop standard course packages for the integration of "Positions, Courses, Competitions, And Certificates" jointly built by schools and enterprises, and promote the radiation of teaching reform achievements to similar institutions.

In addition, the university should pay attention to the improvement of the quality monitoring system, introduce third-party evaluation institutions, and establish a "three-dimensional" quality evaluation mechanism: enterprise satisfaction (job matching degree), students' sense of gain (skill improvement degree), and social recognition (certificate value).

### **6. Case Analysis**

#### *6.1 Construction of the Knowledge System for the Docking of Posts and Courses*

The Big Data and Accounting major of Sichuan Vocational College of Science and Technology reshaped the course knowledge system according to the job requirements. For the course "Financial Big Data Analysis", after conducting research with enterprises, the skills and knowledge requirements of the big data analysis position were clarified. Skills such as data collection, cleaning, analysis, and visualization were incorporated into the course content. At the same time, in connection with the actual business of the accounting position, students are taught to use big data tools for financial analysis and provide support for decision - making.

The course "Application of Accounting Information System" is docked with the operation process of the enterprise financial information system. By simulating the enterprise financial information system environment, students get to know each module during the operation, such as accounting processing, report generation, and fixed-asset management. The docking of posts and courses organically combines the knowledge students have learned with job requirements and enhances their employment competitiveness.

## 6.2 Innovation in Practical Scenarios

To enable students to better adapt to the actual work environment, the school improved the teaching scenarios. In the course "Enterprise Financial Accounting", real-enterprise cases are used to simulate the entire process of enterprise financial calculation. Students can play different financial roles such as accountants, cashiers, and financial supervisors, and conduct practical operations on a series of affairs from the initial voucher verification, creation of accounting vouchers, and ledger registration to financial statement preparation.

The school and enterprises jointly establish off-campus internship bases, where students can operate in the actual enterprise environment. Through the transformation of practical scenarios, students not only improve their practical skills but also develop teamwork awareness and professional ethics.

## 6.3 Achievements of the Teaching Reform of "Positions, Courses, Competitions, and Certificates"

### (1) Improvement of Students' Professional Abilities

After the teaching reform of the "Position-Course-Competition-Certificate" model, the professional abilities of students have been significantly enhanced. In the Accounting Skills Competition of the National Vocational College Skills Competition, students majoring in Big Data and Accounting from this school have achieved excellent results multiple times. During the competition, the students demonstrated solid professional knowledge, proficient skills in operation, and good teamwork abilities. The award-winning rate in the competition has increased by 50% compared to before the reform.

Meanwhile, the employment quality of graduates has also improved, with an employment rate of over 95%. These graduates can quickly adapt to the corporate work atmosphere and take on specific jobs such as accounting and financial analysis. Enterprises are highly satisfied with the graduates from this school, as they possess strong operational skills and a sense of improvement.

### (2) Remarkable Achievements in Curriculum Construction

The teaching reform has provided impetus for the curriculum construction process. courses such as "analysis of financial big data" and "application of accounting information systems" have won the title of school-level high-quality courses. reforms have been carried out in aspects such as teaching content, methods, and materials. under the all-round reform, a unique curriculum framework has been formed.

The curriculum team has developed a large number of digital teaching materials, including online courses, teaching case collections, and simulation experiment platforms, providing richer materials for students' learning. The team has actively carried out teaching discussion activities and published several articles related to educational reform, promoting the continuous development of the courses.

### (3) In-depth Promotion of School-Enterprise Cooperation

The teaching reform of the "Position-Course-Competition-Certificate" model has deepened the cooperation between the school and Xindao Technology Co., Ltd., establishing a long-term and stable relationship. At the same time, they have started to work on matters such as human resource development, curriculum research and development, and practical teaching. The company has provided support for the school in terms of internship sites, teacher training, and teaching equipment. The school



has sent a large number of high-quality professionals to the company. Through school-enterprise cooperation, resource sharing and complementary advantages have been achieved, the in-depth integration of vocational education and the industry has become more profound, and the improvement of vocational colleges has also firmly supported the progress of relevant affairs.

The significance of this research lies in the specific manifestation ways of the characteristics of vocational education, providing theoretical basis and practical examples for shaping the modern vocational education system with Chinese characteristics. It is hoped that the "Position-Course-Competition-Certificate" four-in-one model will be adopted in broader fields and at a higher level of research, playing a supporting role in the level and logic of vocational education theory and making greater contributions to the cultivation of high-level technical and skilled talents.

## 7. Conclusion

Chinese vocational education is now facing unprecedented development opportunities. The innovative "Position-Course-Competition-Certificate" four-in-one talent cultivation model provides a new path for deepening educational reform. This mechanism constructs a new educational ecosystem integrating industry and education by integrating the four elements of post requirements, curriculum system, skills competition, and vocational certification.

From a practical perspective, the "Position-Course-Competition-Certificate" mechanism has significant advantages. First, it breaks the dilemma of the disconnection between traditional vocational education and industrial needs, achieving an accurate alignment between talent cultivation and job requirements. Second, through promoting learning via competitions and teaching via certificates, it effectively enhances students' practical abilities and professional qualities. Third, this mechanism provides an important reference for establishing a scientific quality evaluation system for vocational education.

Currently, China's vocational education is at a crucial stage of improving quality and excellence. In-depth research and improvement of the "Position-Course-Competition-Certificate" education model can not only resolve the structural contradictions in teaching practice but also provide institutional guarantees for cultivating high-quality technical and skilled talents. In the future, continuous efforts need to be made from multiple dimensions such as policy support, standard setting, and resource integration to enable this innovative mechanism to play a greater role.

## References

- Dou, F. (2022). (2022). "The Development Logic and Path of New-Type Vocational Education Textbooks Integrated with 'Job, Course, Competition, and Certificate'". *China Vocational Education*, (26), 65-71.
- Li, L., & Yang, Z. H. (2024). (2024). Exploration of Teaching Reform of 'Software Testing Technology' Course Oriented to 'Job, Course, Competition, and Certificate' Integration. *Education Theory and Practice*, 44(06), 57-60.

- Liu, X. j., & Shao, W. (2023). Construction of Evaluation Index System for New-Type Vocational Education Textbooks Integrated with 'Job, Course, Competition, and Certificate' Based on the Integration of 'Job, Course, Competition, and Certificate'. *Vocational Education*, 44(14), 75-79.
- Qi, R. Y., & Zhang, X. X. (2022). Research on Optimization of Performance Evaluation and Incentive Mechanism for Teachers in Higher Vocational Colleges from the Perspective of 'Job, Course, Competition, and Certificate' Integration. *China Vocational Education*, (24), 67-71.
- Suo, C. L. (2023). Characteristics and Construction Path of Digital Textbooks Integrated with Job, Course, Competition, and Certificate. *Education Theory and Practice*, 43(24), 19-24.
- Tang, D. M., Chen, J. H., & Liu, C. (2024). Construction and Practice Path of Practical Teaching System in Higher Vocational Colleges under the Background of 'Job, Course, Competition, and Certificate' Integration. *Vocational Education*, 45(26), 45-49.
- Ye, Y. X. (2024). Exploration and Practice of Comprehensive Education Model of Job, Course, Competition, and Certificate Creation—Taking International Economics and Trade Major as an Example. *Vocational Education*, 45(05), 33-37.