International Journal of Engineering Research and Development
e- ISSN: 2278-067X, p-ISSN: 2278-800X, www.ijerd.com
Volume 21, Issue 10 (October 2025), PP 86-89

The Solution to the Predicament and Innovative Practice of the "Post-Course-Competition-Certificate" Comprehensive Education Model in Higher Vocational Colleges under the Background of Deep Integration of industry and education

WANG Yingxin
Professor, Department of Cultural Tourism, Zibo Vocational and Technical University, Shandong China

Abstract: *Against the backdrop of the country's vigorous promotion of vocational education reform and emphasis on the deep integration of industry and education, the comprehensive education model of "job, course, competition and certificate" has become an important path for higher vocational colleges to enhance the quality of talent cultivation and meet the demands of industrial development. This article first elaborates on the intrinsic connection and research significance between the deep integration of industry and education and the "post-curricula-competition-certificate" model. Then, it deeply analyzes the practical predicaments faced by the current comprehensive education model of "post-curricula-competition-certificate" in higher vocational colleges from four dimensions: school-enterprise collaboration, curriculum system, competition-certificate integration, and evaluation mechanism. Finally, it puts forward targeted strategies for solving these predicaments and innovative practical paths. It aims to provide references for higher vocational colleges to optimize their education models and cultivate high-quality technical and skilled talents.*

Key words*: Deep integration of industry and education, Higher vocational colleges, Post-Course-Competition-Certificate, Education Model, The Solution to the Predicament*

Date of Submission: 02-10-2025 Date of acceptance: 11-10-2025

I. INTRODUCTION

The deep integration of industry and education is the core feature of vocational education. Its essence is to break down the barriers between education and industry, achieve the collaborative sharing of educational resources and industrial resources, and precisely match talent cultivation with job demands. The "Post-Course-Competition-Certificate" comprehensive education model is an integrated education paradigm that takes "job requirements" as the orientation, "curriculum system" as the carrier, "skills competition" as the driving force, and "professional certificates" as the standard. It is a specific implementation form of the deep integration of industry and education in the talent cultivation process.

II.THE INTRINSIC CONNECTION BETWEEN THE DEEP INTEGRATION OF INDUSTRY AND EDUCATION AND THE COMPREHENSIVE EDUCATION MODEL OF “POST-COURSE -COMPETITION-CERTIFICATE”

From an internal logical perspective, "position" is the starting point of the integration of industry and education, and the ability requirements of industrial positions determine the goals of talent cultivation. "Courses" serve as a bridge for the integration of industry and education. By aligning course content with job standards, industrial demands are transformed into educational and teaching materials. "Competition" serves as a booster for the integration of industry and education. The project design of skills competitions is based on actual industrial problems, which can test and enhance students' practical abilities, while promoting cooperation between schools and enterprises in terms of technological exchange and resource sharing. "Certificates" serve as the bond for the integration of industry and education. Professional certificates are the recognition of talents' capabilities by the industry. Incorporating certificate standards into the curriculum system can achieve the unification of educational evaluation and industry evaluation. Therefore, the construction and improvement of the comprehensive education model of "Post-Course-Competition-Certificate" is a key measure to promote the in-depth integration of industry and education and enhance the ability of vocational education to serve industrial development.[1]

III. PRACTICAL DILEMMAS OF THE "POST-COURSE-COMPETITION-CERTIFICATE" COMPREHENSIVE EDUCATION MODEL IN HIGHER VOCATIONAL COLLEEGES

3.1 Insufficient Collaboration Between Schools And Enterprises, And Ambiguous Rights And Responsibilities Of the Main Body Of Education

The deep integration of industry and education requires both schools and enterprises to participate in the entire process of talent cultivation based on the principle of "sharing benefits and risks". However, in the current "Post-Course-Competition-Certificate" education model of some higher vocational colleges, the collaboration between schools and enterprises is still at a "shallow level of cooperation" stage: on the one hand, the enthusiasm of enterprises to participate in education is not high. Most enterprises focus their cooperation on superficial links such as "order classes" and "co-construction of internship bases", and have low participation in core links such as course design, competition guidance, and the formulation of certificate standards, lacking a long-term and stable cooperation mechanism. On the other hand, the division of rights and responsibilities between the school and the enterprise is ambiguous. In terms of setting talent cultivation goals, investing in teaching resources, and evaluating student standards, schools often play a leading role, while enterprises have insufficient say. This results in the fact that although the students cultivated have certain theoretical knowledge, there is a gap between their job adaptability and practical skills and the demands of enterprises. In addition, some higher vocational colleges lack incentive mechanisms and guarantee systems for school-enterprise cooperation, making it difficult to motivate enterprises to take the initiative in participating in the "Post-Course-Competition-Certificate" education. [2]

3.2 The Curriculum System Is Disconnected From Post Demands, And The Integration Of Competitions And Certificates Is Low

The curriculum system is the core vehicle for the "Post-Course-Competition-Certificate" education model, and its soundness directly shapes the quality of talent development. Currently, the curriculum systems at some higher vocational colleges are plagued by two key issues:

First, curriculum content is misaligned with job requirements. Curriculum design still centers on disciplinary logic, with insufficient integration of the latest technologies, processes, and standards demanded by industry roles. This creates a sharp divide between what students learn and the actual needs of enterprises—a disconnect commonly described in Chinese vocational education as "two separate entities" (referring to the gulf between academic content and real-world application).

Second, competitions and certificates are poorly integrated into the curriculum. On one front, skill competition programs are not effectively adapted into curriculum content. Competition training is mostly delivered as "intensive crash courses," which not only fail to reach all students but also remain isolated from regular instruction. On the other front, vocational certificate standards are not deeply embedded in curriculum objectives or teaching assessment. In some courses, certificate exam content is treated merely as an "add-on module," falling short of achieving "curriculum-certificate integration." As a result, students' efforts to obtain certificates become divorced from genuine competence improvement, and the practical "value" (or "gold content," a common metaphor in Chinese education for a certificate's real-world utility) of these credentials is difficult to materialize.

3.3 The Evaluation Mechanism Is Single And Lacks Multi-party Collaborative Evaluation

The "Post-Course-Competition-Certificate" integrated education model requires a matching multi-dimensional evaluation mechanism to fully assess the effectiveness of talent development. However, the evaluation mechanisms of most higher vocational colleges currently suffer from two key issues: "overemphasizing results while neglecting processes" and "prioritizing school evaluation over enterprise evaluation." Specifically, there are three main problems:

First, the evaluation subjects are singular. Evaluation is mainly conducted by school teachers, while the participation of other subjects—such as enterprises, industry associations, and students themselves—remains low. This makes it difficult to objectively reflect students' adaptability to job roles and their recognition within the industry.

Second, the evaluation content is one-sided. It focuses on assessing theoretical knowledge and basic skills, while insufficiently evaluating students' key competencies such as innovation ability, teamwork skills, and professional ethics.

Third, the evaluation methods are rigid. Traditional approaches like written exams and practical operation assessments are mostly used, and there is a lack of dynamic evaluation of students' performance in real work scenarios, skill competitions, and project practices. As a result, the evaluation outcomes cannot fully reflect the actual effectiveness of the "Post-Course-Competition-Certificate" education model. [3].

3.4The Structure Of The Teaching Staff Is Unbalanced, And The Capabilities Of "Dual-Qualified" Teachers Are Insufficient

The "Post-Course-Competition-Certificate" integrated education model places higher demands on teachers' capabilities. It requires teachers to not only possess solid theoretical teaching skills but also have rich industry practical experience, enabling them to integrate job standards, competition technologies, and certificate requirements into the teaching process. However, the faculty teams of higher vocational colleges currently have obvious shortcomings:

First, the proportion of "dual-qualification" teachers (teachers with both academic expertise and industry experience) is insufficient. Most teachers enter higher vocational colleges directly after graduating from universities, lacking corporate work experience and having limited understanding of industrial development trends and actual job demands.

Second, teachers are inadequately equipped with the ability to guide skill competitions and provide certificate training. Some teachers lack in-depth research on skill competition rules and vocational certificate standards, making it difficult for them to effectively guide students in participating in competitions and obtaining certificates.

Third, the two-way mobility mechanism for faculty between colleges and enterprises is incomplete. It is difficult for corporate technical backbones to regularly take up part-time teaching positions in colleges, and college teachers also lack opportunities to gain practical experience in enterprises. As a result, the industry service capabilities of the faculty team do not match the educational needs of the "Post-Course-Competition-Certificate" model. [4]

IV. THE SOLUTION TO THE PREDICAMENT OF THE “POST--COURSE-COMPETITION-CERTIFICATE" COMPREHENSIVE EDUCATION MODEL IN IN HIGHER VOCATIONAL COLLEGES AND THE INNOVATIVE PRACTICAL PATH

4.1 Build A Cooperation Mechanism Featuring "School-Enterprise Collaboration And Clear Rights And Responsibilities"

Higher vocational colleges should sign long-term cooperation agreements with enterprises, clearly defining the rights, responsibilities and benefit distribution of both parties in talent cultivation. For instance, they can achieve shared benefits through measures such as "jointly building industrial colleges by schools and enterprises", "jointly developing teaching resources", and "jointly conducting technological research and development". Meanwhile, the government can introduce policies such as tax reduction and exemption, and financial subsidies to encourage enterprises to deeply participate in the "job, course, competition and certificate" education. For instance, it can provide certain financial support to enterprises involved in course design and competition guidance, and offer tax incentives to enterprises that accept students for internships.

During the stage of setting talent cultivation goals, both the school and the enterprise jointly investigate the job demands of the industry and formulate a talent cultivation plan covering knowledge, skills and qualities. During the teaching implementation stage, technical backbones from enterprises and school teachers jointly undertake teaching tasks. Enterprises provide practical training equipment and real projects, while schools are responsible for theoretical teaching and basic skills training. During the evaluation stage, enterprises participate in the internship assessment and skills competition review of students to ensure that the evaluation results are consistent with the job requirements.

4.2Build A Curriculum System Integrating The Integration Of "Post-Course-Competition-Certificate"

Reconstruct Curriculum Content with Job Demand Orientation: Higher vocational colleges should collaborate with enterprises and industry associations to conduct job competency analysis, identify the core positions and key competencies corresponding to each major, and transform the technical requirements and operational standards in job standards into curriculum teaching objectives and teaching content. Promote In-depth Integration of Competitions, Certificates and Curriculum: On one hand, transform skill competition projects into curriculum modules; on the other hand, integrate vocational certificate standards into curriculum evaluation. Students who pass the curriculum assessment should meet the basic requirements for certificate exams, thereby achieving "curriculum-certificate integration." [5]

4.3 Establish An Evaluation Mechanism Of "Multi-Subject Collaboration And Dynamic Process"

4.3.1 Build A Multi-Subject Evaluation System

Clarify the roles of schools, enterprises, industry associations, and students in the evaluation process. For instance, schools take charge of evaluating theoretical knowledge and basic skills; enterprises are responsible for assessing students’ internship performance and job adaptability; industry associations oversee vocational certificate examinations and skill competition reviews; and students reflect on their learning process through

self-evaluation and peer evaluation. This forms a "four-in-one" evaluation subject system.

4.3.2 Improve The Content And Methods Of Evaluation

The evaluation content should cover dimensions such as theoretical knowledge, practical operation skills, professional ethics, and innovative ability. For evaluation methods, a combination of "process-oriented assessment and summative assessment" should be adopted: process-oriented assessment includes elements like classroom performance, practical training reports, and participation in competitions; summative assessment covers written examinations, practical operation assessments, and corporate internship appraisals. This enables comprehensive and dynamic evaluation of students' capabilities.

4.4 Build A Faculty Team Featuring "Dual-Qualification Leadership And University-Enterprise Mobility"

4.4.1 Strengthen The Development Of "Dual-Qualification" Teachers

Higher vocational colleges should establish a system for teachers' corporate practice, requiring each teacher to have at least 6 months of practical experience in enterprises every five years to gain in-depth understanding of industrial development trends and job demands. Meanwhile, they should invite corporate technical backbones, skill competition judges, and vocational certificate training experts to provide training for teachers, so as to enhance teachers' capabilities in competition guidance and certificate training.

4.4.2 Promote Two-Way Mobility Of Faculty Between Colleges And Enterprises

On one hand, hire corporate technical backbones and industry experts as part-time teachers in colleges to undertake tasks such as practical training teaching and competition guidance; on the other hand, encourage college teachers to work as technical consultants in enterprises, participating in enterprises' technological research and development as well as project implementation, so as to realize the sharing and complementarity of faculty resources between colleges and enterprises. In addition, higher vocational colleges may establish an evaluation and incentive mechanism for "dual-qualification" teachers, integrating corporate practice experience, competition guidance achievements, and certificate training effects into the teacher assessment system to stimulate teachers' enthusiasm for improving their own capabilities. [6]

V. Conclusion

Against the backdrop of the in-depth integration of industry and education, the "Post-Course-Competition-Certificate" integrated education model is an inevitable choice for higher vocational colleges to improve the quality of talent cultivation and serve industrial development. Currently, this model still faces practical dilemmas such as insufficient university-enterprise collaboration, disconnected curriculum systems, simplistic evaluation mechanisms, and inadequate faculty capabilities. To address these practical challenges, higher vocational colleges should adopt approaches including building a university-enterprise interest community, developing a curriculum system integrating Post-Course-Competition-Certificate, establishing a multi-subject collaborative evaluation mechanism, and constructing a team of dual-qualification teachers—thereby driving the innovation and improvement of the "Post-Course-Competition-Certificate" education model. In the future, as the integration of industry and education continues to deepen, the "Post-Course-Competition-Certificate" education model will need to be continuously optimized to adapt to the needs of industrial upgrading and technological transformation. This will enable the cultivation of more high-quality technical and skilled talents for the country, and contribute to the high-quality development of vocational education.

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