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Innovation and Practice of the Curriculum System for Vocational Undergraduate E-Commerce Specialty Group under the "Three-Core Leadership"

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Abstract: With the implementation of the newly revised Vocational Education Law and the in-depth development of the digital economy, vocational undergraduate education, as a key link connecting junior college-level vocational education with high-end industrial demands, its curriculum system construction has become the core link of talent training quality. Taking the E-Commerce Specialty Group of Chongqing University of Electronic Science and Technology as the research object, this paper proposes a curriculum system construction framework led by the "three cores" of "basic support ability, professional ability, and innovative ability" based on the training orientation of "knowledge-based, skilled, and innovative" (referred to as "three types") high-level technical and skilled talents. Through industry research, inter-college comparison, industry-education integration and other paths, this paper systematically analyzes the connotation and implementation mechanism of this system, and verifies its feasibility with practical results, providing a practical paradigm for the construction of vocational undergraduate e-commerce specialty groups.

1. Introduction

The newly revised Vocational Education Law in 2022 clearly incorporated vocational education into the higher education system, establishing the legal status of undergraduate-level vocational education. By 2024, the number of vocational undergraduate students nationwide was 406,800, demonstrating the important role of vocational undergraduate education in cultivating high-level technical and skilled talents [1]. At the same time, the rapid development of the digital economy has promoted the transformation of the e-commerce industry towards intelligence and high-end, putting forward higher requirements for the knowledge systematicness, skill complexity and innovation sustainability of talents. However, current vocational education has three prominent problems: first, the junior college-level curriculum system is difficult to meet the knowledge integrity required for the continuous development of post technical skills; second, general undergraduate education focuses on academic nature, which is disconnected from the high-end technical skills needs of the

industry; third, there is a lack of knowledge integration ability and innovation ability in talent training [2].

Against this background, Chongqing University of Electronic Science and Technology took the e-commerce specialty group as a pilot to explore the "three-core leadership" curriculum system, aiming to construct a new curriculum model that combines professionalism and academic nature, and integrates theory and practice, providing a practical reference for the reform of vocational undergraduate education.

2. Connotation and Theoretical Framework of the "Three-Core Leadership" Curriculum System

2.1 Talent Training Orientation of "Three Types and One High"

The "three types and one high" talents refer to "knowledge-based, skilled, and innovative" high-level technical and skilled talents, whose orientation is different from traditional vocational education and general undergraduate education:

1) Knowledge-based emphasizes interdisciplinary knowledge integration ability, breaking through the single post focus of junior college education, and forming a multi-disciplinary integrated knowledge system;

2) Skilled points to the needs of high-end industrial posts, focusing on the application of complex technologies and on-site problem-solving abilities;

3) Innovative highlights the adaptability to technological iteration, cultivating creative labor ability based on digital technology [3].

The three together constitute the "high-level" characteristics, as shown in Figure 1.

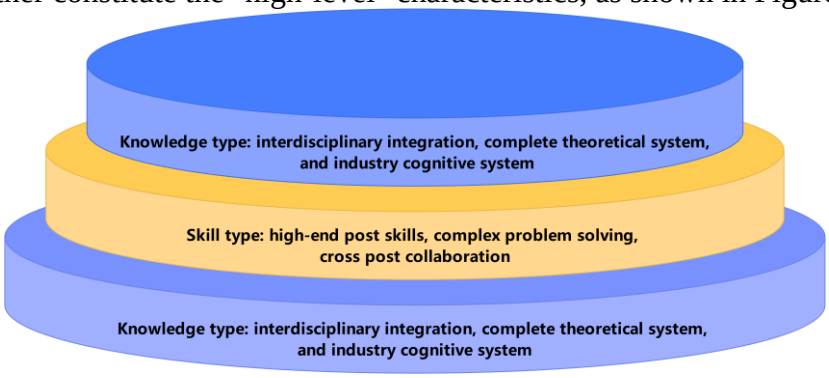

Figure 1: "Three Types and One High" Talent Capability Hierarchical Structure

2.2 Core Composition of the "Three-Core Leadership" Curriculum System

The "three-core leadership" curriculum system takes "basic support ability, professional ability, and innovative ability" as the three cores, constructing a multi-level and dynamic curriculum structure:

1) The core of basic support ability in talent cultivation: Including public basic courses and professional basic courses, focusing on ideological literacy, scientific and cultural knowledge, and basic disciplinary theories, laying the foundation for professional ability and innovative ability;

2) The core of professional ability in talent cultivation: Guided by the needs of post groups, setting up professional core courses and practical courses, strengthening the integration of "posts, courses, competitions, and certificates", and cultivating technical skills that meet industrial standards;

3) The core of innovative ability in talent cultivation: Cultivating technical application innovation and industrial service ability through extended courses, scientific research projects, and innovation and entrepreneurship practices[4].

The logical relationship among the three is shown in Figure 2.

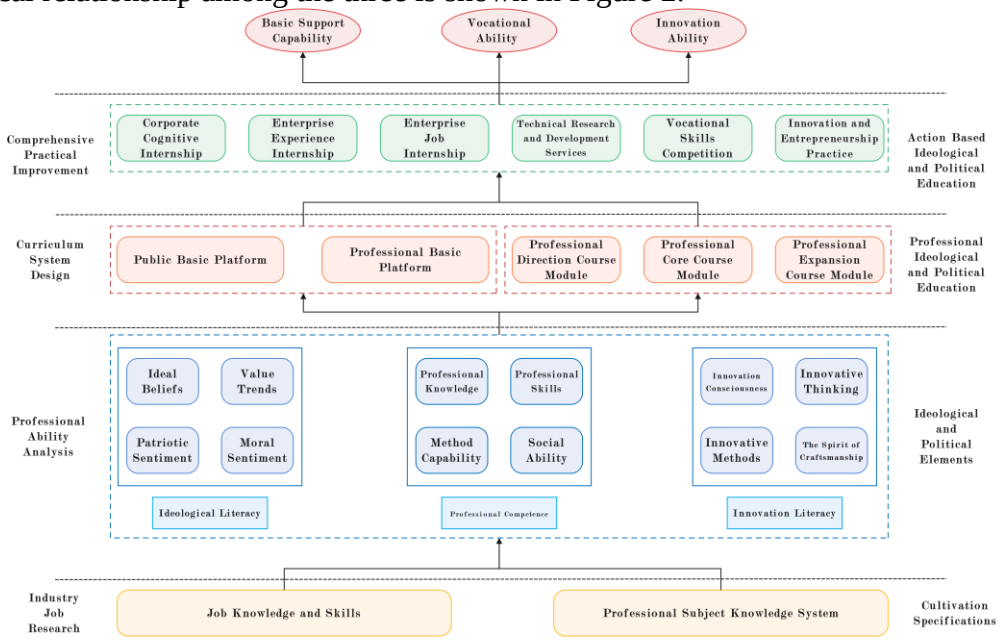

Figure 2: Logical framework of the "Three Core Leading" curriculum system

2.3 Differences from Curriculum Systems of Different Educational Levels

The differences between the vocational undergraduate "three-core leadership" curriculum system and general undergraduate and vocational junior college mainly lie in training objectives, curriculum content, and evaluation methods, as shown in Table 1[5].

Table 1 Comparison of Curriculum Systems at Different Educational Levels

Dimension	General Undergraduate Education	Vocational Undergraduate Education (Three-Core Leadership)	Vocational Junior College Education
Training Objectives	Academic research and theoretical innovation ability	High-end post technical application and innovation ability	Post operation skills
Curriculum Content	Complete disciplinary theoretical system	Interdisciplinary integration + industrial technology integration	Single post knowledge and skills
Practical Links	Mainly experimental practice	Enterprise project-driven + technical research and development services	Post simulation training
Evaluation Methods	Mainly theoretical assessment	1+X certificate + project results + competition performance	Mainly skill operation assessment
Typical Courses	E-commerce theory, model construction, etc.	Cross-border e-commerce operation, live e-commerce planning, etc.	E-commerce platform operation, customer service skills, etc.

3. Construction Path and Implementation Mechanism of the "Three-Core Leadership" Curriculum System

3.1 Anchoring Curriculum Objectives Based on the "Industrial Demand Map"

The primary link in constructing the curriculum system is to accurately grasp industrial demands, and draw a mapping map of "industrial demand - ability requirements - curriculum objectives" through the "four-dimensional research method":

1) The research team for industry trend research: Cooperating with Chongqing E-Commerce Association, analyzing authoritative data such as China Digital Economy Development Report (2023), identifying three trends of "cross-border e-commerce compliance", "e-commerce intelligence", and "live e-commerce industrialization", and predicting post evolution in the next 3 years (such as emerging posts like "cross-border e-commerce compliance officer" and "AI marketing engineer")[6];

2) The research group for in-depth enterprise interviews: Selecting 20 representative enterprises (including 3 Fortune 500 companies and 5 unicorn enterprises), adopting the "senior management - middle management - frontline" three-level interview method: senior management (such as e-commerce directors) interpreting strategic needs (such as "localized operation ability in global layout"), middle management (such as operation managers) sorting out process pain points (such as "collaboration problems caused by disconnected multi-platform data"), and frontline employees (such as senior operators) detailing operation details (such as "user emotion mobilization skills in live broadcast scripts");

3) The project team for post ability modeling: Using the "Behavioral Event Interview (BEI)" method, interviewing 50 excellent practitioners (with 3-5 years of work experience and top 20% performance), extracting ability elements behind "high-performance behaviors" (for example, "being able to locate the cause and formulate a remedy plan within 24 hours when traffic drops sharply" corresponds to "rapid problem diagnosis ability");

4) The project team for post ability modeling: Using the "Behavioral Event Interview (BEI)" method, interviewing 50 excellent practitioners (with 3-5 years of work experience and top 20% performance), extracting ability elements behind "high-performance behaviors" (for example, "being able to locate the cause and formulate a remedy plan within 24 hours when traffic drops sharply" corresponds to "rapid problem diagnosis ability").

3.2 "School-Enterprise-Government" Collaborative Curriculum Development Mechanism

To ensure the "advanced nature" and "practicality" of curriculum content, a "trinity" development team (school teachers + enterprise experts + industry associations) is constructed, and the "four-step iteration method" is implemented:

1) Joint development stage: Enterprise experts (such as JD operation directors) and teachers jointly compile curriculum standards, transforming enterprise SOP (Standard Operating Procedures) into teaching cases (for example, adapting JD's "618 promotion" emergency plan into the teaching scenario of E-Commerce Operation Risk Management);

2) The curriculum optimization team in the trial teaching feedback stage: Selecting 3 classes for trial teaching, inviting enterprise mentors (such as Pinduoduo category operators) to participate in listening to classes, and identifying curriculum shortcomings through "student operation video analysis + enterprise mentor comments" (for example, "insufficient explanation of 'RCEP rules of origin' in cross-border logistics courses");

3) The course management team in the dynamic update stage: Establishing a "curriculum content update trigger mechanism", which is activated when the following situations occur: (1) revision of

industry standards (such as new clauses added to the E-Commerce Law); (2) enterprise technology iteration (such as Douyin launching "mall recommendation algorithm 2.0"); (3) feedback from student competitions (such as new question types appearing in skill competitions);

4) Certification and acceptance stage: The Chongqing E-Commerce Association organizes acceptance, evaluating through 10 indicators such as "matching degree between curriculum content and post needs" and "student skill compliance rate", and the curriculum can be included in the formal curriculum system only after passing the evaluation.

3.3 Teaching Implementation Path of Integrating "Posts, Courses, Competitions, and Certificates"

The school realizes the seamless connection between "learning content and career development" through "four integrations":

1) Integration of courses and posts: The school implements the "dual tutor system", where enterprise mentors (such as Alibaba gold medal operators) and school teachers co-teach, and classroom teaching takes "real enterprise projects" as the carrier (for example, operating Douyin accounts for local enterprises, with students grouped to be responsible for the whole process of "content planning - live broadcast execution - data review");

2) Integration of courses and certificates: The school decomposes the assessment content of the "1+X certificate" into "curriculum units - training projects - assessment indicators". For example, the course Cross-Border E-Commerce Practice corresponds to the "customs operation" module of the "cross-border e-commerce specialist" certificate, and students can be exempted from this module after passing the course assessment;

3) Integration of courses and competitions: The school establishes a "mechanism for transforming competition projects into courses", decomposing the "e-commerce data analysis" event of the National Vocational College Skills Competition into 6 training projects of the course Data-Driven Operation (such as "user portrait construction" and "repurchase rate improvement plan"), and adopting competition scoring standards as course assessment standards;

4) Integration of theory and practice: The school constructs a three-dimensional space of "classroom - training room - enterprise", and implements a "1:1:1" time allocation (1/3 time for theoretical learning, 1/3 time for on-campus training, and 1/3 time for enterprise practice). For example, during the study of the course Live E-Commerce, students need to complete a complete practice chain of "on-campus simulated live broadcast - enterprise real goods promotion - data report writing".

4. Practical Effects and Verification of the "Three-Core Leadership" Curriculum System

4.1 Quantitative Improvement of Talent Training Quality

Since its implementation in the autumn semester of 2023, the talent training quality of the e-commerce specialty group has achieved "three-dimensional breakthroughs":

1) Leap in skill competition results: Students won the first prize in the "Internet + International Economy and Trade" and "Enterprise Sandtable Simulation" events of the 2023 National Vocational College Skills Competition, and the second prize in the "Cross-Border E-Commerce" and "Internet + International Economy and Trade" events of the 2024 World Vocational College Skills Competition; they also won the second prize in the China International College Students' Innovation Competition.

2) Significant improvement in employment quality: Among the 2024 graduates, 35.8% entered top e-commerce enterprises, an increase of 18 percentage points compared with the previous year;

the average starting salary was 5,800 yuan, 22% higher than the average level of vocational undergraduates in Chongqing; among the post types, management positions such as "operation supervisor" and "cross-border project manager" accounted for 42%, a significant increase compared with the junior college stage (15%), confirming the achievement of the "high-level" orientation.

3) Expansion of enterprise evaluation dimensions: Employer evaluation has extended from "skill proficiency" to "innovative value". Among the 120 enterprise questionnaires collected, the satisfaction rates of "ability to solve complex problems" and "ability to apply technological innovation" reached 92% and 88% respectively, an increase of more than 30% compared with the traditional training model. An HR from a cross-border e-commerce enterprise commented: "Students can not only operate the platform but also put forward a plan of 'using blockchain to optimize cross-border traceability', which is rare among previous vocational education graduates."

4.2 Achievements in Curriculum Resources and Teaching Staff Construction

Radiation effect of curriculum resources

1) Our school's e-commerce teaching team has built 1 municipal-level high-quality online open course such as Live E-Commerce Operation, with a total of over 1,200 students enrolled, and adopted by 5 vocational colleges;

2) The curriculum development working group has developed an "e-commerce curriculum resource database", including 120 real enterprise cases and 30 virtual simulation projects.

"Dual-qualified" transformation of teaching staff

1) Among the team teachers, 80% have the dual qualifications of "enterprise project experience + 1+X certificate trainer", an increase of 55 percentage points compared with before the implementation;

2) Teachers presided over 8 provincial and ministerial-level education reform projects, published 12 high-level papers, obtained 15 national patents, and 12 software copyrights;

3) The school has built a "Excellent Craftsman Teachers" training base, co-built teacher practice workstations with 20 enterprises, and teachers' annual enterprise practice hours exceeded 60 days.

4.3 Achievements in Building an Industry-Education Integration Ecosystem

Through the implementation of the "three-core leadership" curriculum system, a benign "school-enterprise symbiosis" ecosystem has been formed:

1) Our school has cooperated with the Live E-Commerce Industry-Education Alliance in the Chengdu-Chongqing Twin-City Economic Circle to build a "talent co-education base", delivering more than 500 interns annually, cooperating in developing 23 projects, and driving enterprises' output value to increase by 120 million yuan;

2) Our school has taken the lead in formulating the Teaching Standards for Vocational Undergraduate E-Commerce Major in Chongqing, which was included in the promotion plan of the "Bashu Vocational Education Alliance", driving 12 colleges and universities in 5 provinces including Sichuan and Guizhou to carry out curriculum reforms.

5. Innovation Features and Future Prospects

5.1 Core Innovations: Breaking Three Bottlenecks of Vocational Undergraduate Curriculum System

1) "Fault breakthrough" between theory and practice: Traditional vocational education has the contradiction that "sufficient theoretical depth leads to insufficient practice, and strong practice

leads to shallow theory". The "three-core leadership" system realizes "theoretical depth supports practical innovation, and practical complexity feeds back theoretical deepening" through the design of "knowledge modularization - skill projectization - innovation scenarioization". Students first learn "system optimization theory", then practice "multi-platform collaborative operation" in enterprise projects, and deepen theoretical cognition through "optimization scheme defense", forming a "learning - doing - thinking" closed loop [7].

2) "Dynamic response mechanism" of curriculum content: In view of the rapid iteration of e-commerce technology (such as monthly updates of algorithm rules), a rapid response chain of "industrial demand - curriculum adjustment" is established: (1) industry associations release "technical hot spot briefings" monthly; (2) enterprise mentors participate in curriculum seminars quarterly; (3) feedback from student competitions/internships is incorporated into curriculum revision in real-time. This mechanism shortens the "time difference" between curriculum content and industrial frontiers to within 1 month (the traditional model averages 6 months) [8].

3) "Ability-oriented reconstruction" of evaluation system: Breaking the traditional evaluation of "a final exam paper", a "three-dimensional and five-level" evaluation model is constructed: the dimensions include "knowledge integration (30%), skill application (40%), and innovation value (30%)", and the levels range from "basic compliance" to "leading innovation", adopting a diversified method of "enterprise mentor scoring + quantitative project results + competition performance". For example, the evaluation of "cross-border e-commerce operation" ability not only depends on the order volume (skill) but also on "whether an innovative scheme to reduce logistics costs is designed" (innovation) [9].

5.2 Future Prospects: Iteration Direction Facing the Digital Economy

1) Our school will conduct in-depth expansion of technology integration: Plans to add cutting-edge modules such as "metaverse e-commerce" and "AIGC content creation", and co-build an "artificial intelligence e-commerce laboratory" with enterprises such as Huawei and Baidu to cultivate compound talents of "technology development - commercial application", such as introducing "digital human live broadcast" teaching into the course New Media Marketing, where students need to complete the whole process of "virtual anchor image design - script training - traffic conversion" to cope with the "full real internet" trend of e-commerce [10].

2) Our school will strengthen the function of regional services: Based on Chongqing's "Western Land-Sea New Corridor" construction, developing characteristic courses of Cross-Border E-Commerce Operation, and co-building a "cross-border e-commerce logistics training base" with Chongqing Port Group to cultivate "localized + international" talents serving the regional economy. It is planned to combine the curriculum system with projects such as the "Chongqing-Xinjiang-Europe Railway" to form a linkage mechanism of "vocational education - industrial services - regional development".

3) Our school will expand the radiation of standard output: Relying on the "Yangtze River Economic Belt Industry-Education Integration Alliance", transforming the curriculum system into a "replicable standard package" (including curriculum standards, training manuals, and evaluation tools), planning to promote it to 50 vocational colleges nationwide within 3 years, and cooperating with vocational colleges in countries along the "Belt and Road" (such as Thailand and Malaysia) to export the "Chinese vocational undergraduate e-commerce education program".

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