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THE CONSTRUCTION OF E-COMMERCE VIRTUAL TEACHING ROOM AND THE INNOVATION OF TEACHING MANAGEMENT MODE —— BASED ON THE PRACTICE EXPLORATION OF JIANGXI INSTITUTE OF APPLIED TECHNOLOGY

Hui Wang*, Lei Zha
School of International Business, Jiangxi University of Applied Science and Technology, Nanchang 330000, Jiangxi, China.
Corresponding Author: Hui Wang, Email: 27059009@qq.com

Abstract: This study focuses on the E-commerce Virtual Teaching and Research Room at Jiangxi Applied Science and Technology College (No. XNJYS-23-01), exploring innovative approaches to e-commerce teaching management in the digital economy era. By analyzing the core issues of the current e-commerce program, such as outdated curriculum systems, weak practical components, and a monolithic faculty structure, the study leverages the organizational advantages and technical features of the virtual teaching and research room to develop a "four-dimensional linkage" model for e-commerce teaching management innovation. The research employs methods such as literature analysis, field research, case studies, and action research to systematically outline the theoretical framework and practical experiences in e-commerce teaching management. It highlights the college's initiatives in curriculum restructuring, school-enterprise collaborative education, practical teaching innovation, and quality assessment. The findings indicate that the construction of the virtual teaching and research room has effectively integrated high-quality teaching resources both within and outside the campus, forming an integrated talent development model of teaching, competition, practice, and entrepreneurship, significantly enhancing students' e-commerce operational skills and innovation capabilities. This study provides valuable insights for similar institutions in e-commerce teaching reform and is crucial for cultivating high-quality e-commerce professionals who can meet the demands of regional economic development.
Keywords: E-commerce; Virtual teaching and research room; Teaching management; School-enterprise cooperation; Practical teaching

1 INTRODUCTION

With the rapid development of the digital economy, e-commerce has become a key driver of economic growth in our country. According to data from the Ministry of Commerce, China's e-commerce transaction volume surpassed 50 trillion yuan in 2024, with online retail sales accounting for over 30% of total retail sales of consumer goods. The rapid expansion of the industry has led to a sharp increase in demand for e-commerce talent, and it is projected that by 2025, the shortage of professionals in e-commerce-related fields will reach the million level. However, this surge in demand contrasts sharply with the uneven employment quality of graduates from e-commerce programs at universities, highlighting a significant structural mismatch between supply and demand. This phenomenon reflects a series of deep-seated issues in the current management of e-commerce education, including a disconnect between the curriculum and industry needs, weak practical teaching components, insufficient practical experience among faculty, and superficial cooperation between schools and enterprises.

Jiangxi Applied Science and Technology University, representing the applied undergraduate institutions in Jiangxi Province, has been focusing on the e-commerce major since the establishment of its Business School in 2010. In 2020, the university signed an agreement with Alibaba (China) Network Technology Co., Ltd., establishing the first such institute in Jiangxi and the second in China, marking a new chapter in deep collaboration between the school and industry. In 2023, the university was approved to establish the E-commerce Virtual Teaching and Research Office (No. XNJYS-23-01), aiming to overcome time and space constraints through information technology, integrate high-quality teaching resources both within and outside the campus, and explore innovative models for e-commerce teaching management.

This study is grounded in the practical experience of building an e-commerce virtual teaching and research room at Jiangxi Applied Science and Technology College. It systematically analyzes the real challenges faced in e-commerce teaching management, outlines the theoretical foundation and functional positioning of the virtual teaching and research room, and summarizes the practical experiences of innovating teaching management models. The aim is to provide a reference for similar institutions in their e-commerce program development. The study employs methods such as literature review, field research, case analysis, and action research, focusing on three key questions: (1) What are the core issues currently facing e-commerce teaching management? (2) How can the virtual teaching and research room facilitate innovation in e-commerce teaching management? (3) What achievements have been made by Jiangxi Applied Science and Technology College's practical explorations, and what insights do these offer to other universities?

2 ANALYSIS OF THE CURRENT SITUATION AND PROBLEMS OF TEACHING MANAGEMENT IN E-COMMERCE MAJOR

As an interdisciplinary and highly applied subject, e-commerce faces special challenges in its professional construction and teaching management. Through the investigation of e-commerce majors in Jiangxi Institute of Applied Technology and similar colleges, it is found that there are several problems in the current teaching management of e-commerce:

2.1 The Curriculum System Lags Behind the Development Trend of the Industry

The pace of technological innovation and model iteration in the e-commerce sector is remarkable, evolving from early B2B and B2C models to today's social commerce, live-streaming commerce, and cross-border e-commerce. The industry's form and operational methods are constantly changing. However, the curriculum updates for e-commerce majors in universities lag far behind the industry's rapid development. Most institutions still focus on traditional courses like “Introduction to E-commerce”, “Online Marketing” and “E-commerce Logistics”, lacking coverage in emerging areas such as live-streaming e-commerce operations, cross-border e-commerce data analysis, and new media content creation. A survey by Jiangxi Applied Science and Technology University found that over 60% of students believe their course content is disconnected from actual job requirements, particularly in areas like short video platform operations, private domain traffic building, and AI tool applications[1]. Outdated course content directly results in a monolithic knowledge structure and insufficient skill reserves among students, making it difficult to meet the demand for versatile e-commerce professionals in the industry[2].

2.2 The Practical Teaching Link is Weak and the Resources are Scattered

E-commerce is fundamentally a highly practical discipline, and the development of students' e-commerce operational skills relies heavily on real-world project training and hands-on experience. However, most universities' e-commerce practical teaching remains at a basic level, focusing on simulated software operations and case studies, lacking real e-commerce environments and project-driven learning experiences. While some institutions have set up e-commerce labs, these often suffer from slow equipment updates, outdated software systems, and low usage efficiency. A 2024 survey by the E-commerce Teaching and Research Office of Jiangxi Applied Science and Technology University found that among the 23 participating universities, only 4 had established practical teaching systems that are synchronized with mainstream e-commerce platforms, and very few offered live-streaming training environments. The scarcity and dispersion of practical teaching resources severely hinder the development of students' practical operational and problem-solving skills[3].

2.3 The Structure of the Teaching Staff is Single and the Practical Experience is Insufficient

The interdisciplinary nature of e-commerce requires teachers to have a solid theoretical foundation and extensive industry experience. However, in reality, most e-commerce teachers in universities come from backgrounds in management, economics, or computer science, with less than 20% having practical work experience in e-commerce companies or entrepreneurial experience. This structural shortage in the teaching staff leads to a classroom focus on theoretical instruction, making it difficult to provide students with practical guidance. This issue is particularly pronounced in rapidly evolving fields like live-streaming e-commerce and cross-border e-commerce, where teachers often lack the latest industry knowledge, tools, and methods, hindering their ability to effectively guide students in addressing real-world challenges[4].

2.4 The Depth of School-Enterprise Cooperation is Insufficient and the Sustainability is Poor

School-enterprise cooperation is a crucial approach to addressing the shortage of educational resources in universities and enhancing students' practical skills. Currently, most e-commerce programs at universities have established school-enterprise cooperation mechanisms, but these often suffer from shallow cooperation levels, short durations, and low enterprise participation. The cooperation mainly consists of loose activities such as company visits and expert lectures, lacking deeper collaboration like joint course development, faculty training, and project research[5]. Before Jiangxi Applied Science and Technology University collaborated with Alibaba to establish the Digital Trade College, it also faced similar challenges. Enterprises, considering factors such as commercial confidentiality and operational efficiency, are often reluctant to share core business data and workflows with students, leading to superficial internships and practical training that fail to delve into the essence of e-commerce operations.

2.5 The Teaching Evaluation Mechanism is Single and the Feedback is Lagging Behind

The scientific teaching evaluation system is a critical component in ensuring the quality of education. Currently, the evaluation of e-commerce majors primarily relies on traditional methods such as exams and assignments, focusing on assessing students' knowledge retention while overlooking the assessment of core professional competencies like operational skills, innovative thinking, and teamwork. The evaluation process is predominantly teacher-led, lacking input from industry mentors and experts. The application of evaluation results often remains at the level of score

assessment, failing to establish a closed-loop mechanism of “evaluation-feedback-improvement”. This single and lagging evaluation method fails to accurately reflect students' comprehensive abilities and hinders teachers from promptly identifying and addressing issues in their teaching.

3 THE THEORETICAL BASIS AND OVERALL DESIGN OF VIRTUAL TEACHING AND RESEARCH ROOM CONSTRUCTION

3.1 The Concept and Connotation of Virtual Teaching and Research Room

The virtual teaching and research room represents a significant innovation in the organizational model of teaching in the information age. By leveraging modern information technology, it overcomes the limitations of traditional teaching and research rooms in terms of time, space, subject, and institutional structure, forming a collaborative community for teaching and research that spans disciplines, institutions, and fields[6]. Compared to traditional teaching and research rooms, the virtual teaching and research room is characterized by its networked organizational structure, efficient resource allocation, coordinated teaching and research activities, and broad dissemination of outcomes. For highly applied and interdisciplinary fields like e-commerce, the construction of a virtual teaching and research room holds special value: on one hand, it can integrate high-quality teaching resources from various institutions and enterprises, achieving complementary strengths; on the other hand, it can promote the deep integration of industry and education, incorporating the latest industry developments and practical experiences into the teaching process[7].

3.2 The Theoretical Basis of Virtual Teaching and Research Room Construction

Collaborative theory highlights that the synergy among various elements within a system can produce an overall effect where “1+1>2”. Virtual teaching and research rooms integrate resources and strengths from multiple stakeholders, including universities, enterprises, and industries, to foster a collaborative educational synergy. Research indicates that a vocational education model involving collaboration among multiple stakeholders can significantly enhance the adaptability and relevance of talent cultivation[8].

Connectivism posits that learning involves connecting specialized nodes or information sources. Virtual teaching and research rooms leverage information technology to create a vast network of teaching resources and a learning community, enabling teachers and students to easily access the latest knowledge and experiences. This open and interconnected learning environment is particularly well-suited for the rapidly evolving field of e-commerce.

A practice community is a group of individuals who share common interests and goals in a specific field. By participating in community activities, members can gain a sense of identity and enhance their skills. The virtual teaching and research room essentially forms a practice community comprising university teachers, industry experts, and students. Through joint participation in teaching and research activities and project implementation, this community promotes professional development.

3.3 The Architecture Design of the Virtual Teaching and Research Room

The virtual teaching and research office of e-commerce in Jiangxi Institute of Applied Technology adopts a "three-dimensional integration" organizational structure:

Management decision-making level: the virtual teaching and research room council is composed of school leaders in charge of teaching, dean of business school and enterprise leaders. The council is responsible for development planning, major decision-making and resource coordination. The council has an office under it to coordinate daily affairs[9].

Teaching implementation layer: According to the requirements of core competencies of e-commerce major, four course groups are set up, including online store operation, network marketing, e-commerce data analysis and cross-border e-commerce. Each group is jointly responsible by 1-2 professional teachers and 1 enterprise tutor for course construction and teaching implementation.

Support service layer: including technical support group and quality monitoring group. Technical support group is responsible for the construction and maintenance of virtual teaching and research room information platform; quality monitoring group is responsible for teaching quality evaluation and feedback improvement[10].

4 THE PRACTICE PATH OF INNOVATION IN E-COMMERCE TEACHING MANAGEMENT MODE

The E-commerce Virtual Teaching and Research Office of Jiangxi Institute of Applied Technology (No. XNJYS-23-01) is based on the needs of regional economic development and the school's applied talent training orientation, and systematically promotes the innovation of teaching management mode from five dimensions: curriculum system, teacher construction, practical teaching, school-enterprise cooperation and quality evaluation, forming a distinctive reform path.

4.1 Reconstruct the Modular Curriculum System of “Ability-Oriented and Dynamically Updated”

In response to the rapid changes and strong interdisciplinarity in the e-commerce industry, the virtual teaching and research room has broken down traditional disciplinary boundaries to create a flexible curriculum system that integrates

"platform + module + direction". This system focuses on developing core e-commerce operational skills, dividing courses into three levels: public foundational platform, professional core modules, and direction expansion modules. A dynamic content update mechanism has been established for the course content.

In the design of the core professional modules, the virtual teaching and research office organizes a team of teachers to conduct in-depth analysis at partner companies such as Alibaba and JD Technology. This analysis focuses on the job responsibilities and skill requirements for e-commerce roles, such as operations specialists, promotion managers, and data analysts. The analysis identifies four key capability modules: product management, traffic acquisition, user operations, and data analysis. Based on these findings, 12 core courses have been designed, including "Online Store Operations and Management", "New Media Operations", "E-commerce Data Analysis and Application" and "Electronic Payments". Each course is structured around a "theory + case study + practical operation" model, ensuring a seamless integration of theory and practice.

In the direction expansion module, the virtual teaching and research room closely follows industry trends by offering two specialized tracks: cross-border e-commerce and live-streaming e-commerce. The cross-border e-commerce track includes courses such as "Introduction to Cross-border E-commerce", "Cross-border E-commerce English" and "International Logistics and Payment", which enhance students' foreign language skills and knowledge of international trade. The live-streaming e-commerce track offers advanced courses like "Short Video Creation and Operation", "Live-streaming E-commerce Practice" and "Content Marketing", aimed at developing students' digital content creation and live-streaming sales skills. The course modules are designed in a "building-block" style, allowing students to flexibly choose based on their interests and career plans, thus forming a personalized skill set.

To ensure the timeliness and forward-looking nature of course content, the virtual teaching and research office has established a dynamic update mechanism for courses. This includes organizing an annual enterprise survey and graduate tracking survey, as well as holding a course content update seminar each semester to integrate the latest industry technologies, methods, and case studies into the curriculum. For instance, in the spring semester of 2024, the virtual teaching and research office added practical components such as "AIGC content generation" and "intelligent customer service systems" to the "E-commerce Data Analysis and Application" course, based on the trend of AI technology in e-commerce. These additions were widely praised by students.

4.2 Build a "School-Enterprise Communication, Full-Time and Part-Time Combination" of Dual-Teacher Teaching Team

The faculty is the cornerstone of teaching quality. The virtual teaching and research office adopts a "bringing in and going out" strategy to build a dual-qualified teaching team that is both theoretically sound and practically skilled. On one hand, it recruits over 10 technical experts and managers with extensive practical experience from partner organizations like the Alibaba Digital Trade Academy and the Jiangxi Cross-border E-commerce Industrial Park as part-time teachers, who directly engage in course instruction and graduation project guidance. On the other hand, it implements a system for teachers to gain practical experience in enterprises, requiring professional teachers to accumulate at least 6 months of enterprise practice over five years, and new young teachers to complete at least one month of on-the-job training in enterprises each year during their first three years.

To promote the professional development of teachers, the virtual teaching and research office has established a "three-tier" teacher training system: for newly hired teachers, the "Blue-Green Project" is implemented, where each young teacher is paired with a teaching mentor and an industry mentor to help them grow rapidly; for core teachers, their teaching and research skills are enhanced through teaching competitions, research projects, and textbook writing; for professional leaders, their industry vision and influence are expanded through domestic and international academic visits, participation in industry summits, and serving as corporate consultants. In 2024, the e-commerce teaching team was recognized as a high-level faculty team in Jiangxi Province, and two teachers were honored as provincial "dual-qualified" teaching masters.

The virtual teaching and research office has established a regular mechanism for teaching and research activities, including monthly collective lesson planning sessions, two teaching demonstration classes per semester, and an annual teaching skills competition. These activities emphasize interaction between schools and enterprises, regularly inviting industry experts to participate in teaching discussions and share the latest industry trends and practical experiences. For instance, during the "Live E-commerce Teaching Seminar" in the autumn semester of 2024, the virtual teaching and research office invited the Operations Director from TikTok E-commerce Jiangxi Operation Center to demonstrate live streaming room setup and operation techniques on-site, providing teachers with first-hand materials to update their teaching content.

4.3 Build a Three-Stage Progressive Practical Teaching System of "Simulation, Practice and Entrepreneurship"

Practical ability is the core of e-commerce talent training. The virtual teaching and research room breaks the traditional mode of theoretical teaching, and builds a three-stage progressive practical teaching system of "simulation training, project practice and entrepreneurship incubation", increasing the proportion of practical teaching to more than 40% of the total class hours.

During the simulation training phase, the primary resources are the school's e-commerce laboratory and virtual simulation platform. Through simulation software and virtual environments, students learn the basic processes and

operational skills of e-commerce operations. The Virtual Teaching and Research Room has collaborated with Shanghai Minxue Information Technology Co., Ltd. to develop the “E-commerce Practical Teaching System”. This system simulates the backend operation environments of major e-commerce platforms like Taobao and JD.com, allowing students to complete the entire process of product listing, store decoration, promotional setup, and order processing in a simulated environment. The system also includes multiple experimental projects and typical cases, supporting students in conducting market research, competitive analysis, marketing planning, and other specialized training.

During the practical phase of the project, the virtual teaching and research office actively incorporates real-world projects from enterprises, using a “task-driven, real problem-solving” approach to develop students' skills in tackling practical issues. In collaboration with the Jiangxi Gannan Navel Orange Association, students are organized to participate in the “Gannan Navel Orange E-commerce Promotion” project. This project covers market analysis, product packaging, marketing planning, and live-streaming sales, all managed by student teams under the guidance of enterprise mentors and professional teachers. After the project concludes, evaluations are based on actual sales performance and customer feedback, with outstanding students receiving direct employment opportunities from the company. Additionally, the virtual teaching and research office encourages students to participate in various e-commerce competitions, promoting learning and practice through competition. In the 2024 “Bridge of Youth” Public Welfare Action and Internet Marketing Short Video E-commerce Challenge, Jiangxi Applied Science and Technology University sent five teams to compete, with the “Ganpu Youpin” team winning the silver award for their “Jiangxi Agricultural Products Short Video Marketing” project.

During the incubation phase of entrepreneurship, the virtual teaching and research room, in collaboration with the school's innovation and entrepreneurship college and the university science park, provides project incubation support to students interested in starting their own businesses. An “E-commerce Entrepreneurship Fund” has been established, selecting 10-15 outstanding projects each year for financial and technical support. A team of professional teachers, industry mentors, and successful alumni serves as a mentor for entrepreneurial students, offering comprehensive guidance throughout their journey. In 2024, the e-commerce major student project “Cross-border Children's Wear Selection” successfully moved into the school's science park and received 500,000 yuan in angel investment. Three members of the project team have since dedicated themselves full-time to their entrepreneurial ventures after graduation.

4.4 Deepen the "Eight-to-Eight Linkage" School-Enterprise Collaborative Education Mechanism

School-enterprise cooperation is a key pathway for cultivating applied talents. Based on years of experience in school-enterprise collaboration, the virtual teaching and research office has innovatively proposed an “eight co-operations and eight linkages” mechanism for school-enterprise collaborative talent development: “eight co-operations” include joint professional development, joint teaching implementation, joint curriculum design, joint textbook compilation, joint base construction, joint faculty training, joint employment support, and shared outcomes; “eight linkages” involve jointly setting standards, forming teams, developing courses, implementing teaching, building bases, conducting R&D, evaluating quality, and promoting employment.

Under this framework, the virtual teaching and research office collaborated with Alibaba Group to establish Jiangxi's first Alibaba Digital Trade College, jointly cultivating cross-border e-commerce talent. Both the school and the company jointly developed a talent development plan, co-developed six courses including |Cross-border E-commerce Operations” and “E-commerce Data-driven Operations”, and established the “Cross-border E-commerce Training Center” and the “E-commerce Entrepreneurship Incubation Base”. The company not only participated in the design of the courses and the writing of textbooks but also directly dispatched technical experts to teach over 30% of the professional courses, achieving deep collaboration in the educational process.

The virtual teaching and research room has innovated the form of school-enterprise cooperation by collaborating with the Jiangxi Cross-border E-commerce Industrial Park to establish a “park workstation”. Outstanding students are selected to intern and practice in park enterprises, guided by both enterprise mentors and professional teachers. The workstation operates on a “rotational system”, allowing students to rotate through various positions such as operations, customer service, and logistics, thus gaining a comprehensive understanding of e-commerce company operations. This not only provides students with a realistic learning environment but also serves as a talent reserve for enterprises, achieving a win-win situation for both schools and enterprises. By June 2025, five batches totaling over 120 students have completed their internships through the park workstation, with more than 60% of them staying to work directly in the park enterprises after graduation.

4.5 Establish a Teaching Quality Evaluation System of “Multiple Participation and Continuous Improvement”

Scientific teaching evaluation is an important means to ensure the quality of talent training. The virtual teaching and research room breaks the traditional single evaluation mode which focuses on examination, and constructs a teaching quality evaluation system with "multi-participation, multi-dimensional indicators and whole-process monitoring".

In terms of the evaluation subjects, a combination of teacher evaluations, student self-assessments, enterprise evaluations, and third-party evaluations is implemented. In particular, during practical teaching, an enterprise mentor evaluation mechanism is introduced, where enterprise mentors assess students' abilities based on their performance in project simulations. For graduation projects, the “dual mentor system” between schools and enterprises is promoted,

requiring topics to be derived from real-world issues faced by enterprises, with enterprise experts invited to participate in the defense. In the 2024 graduation design for the e-commerce major, over 70% of the topics were directly derived from the actual needs of partner enterprises, such as “Research on Marketing Strategies for Jiangxi Agricultural Products Based on Live Streaming E-commerce” and “Research on SEO Optimization for Cross-border E-commerce Independent Sites”. The research findings have been adopted and applied by multiple enterprises.

In terms of evaluation criteria, a comprehensive standard integrating knowledge, skills, and qualities has been established. This standard not only assesses students' mastery of professional knowledge but also emphasizes the development of their operational skills, innovative thinking, and professional ethics. The virtual teaching and research office has developed a “Professional Student Ability Growth Record” for e-commerce majors, which comprehensively documents students' performance and achievements in simulation training, project practice, and entrepreneurial activities, forming a three-dimensional and process-oriented evaluation system. In particular, for core courses such as “Online Store Operation and Management”, an “performance-oriented” evaluation method is adopted, with the actual operational effectiveness of the store (such as traffic, conversion rate, customer satisfaction, etc.) serving as a key assessment indicator, significantly boosting students' motivation to learn.

In the application of evaluation results, a closed-loop mechanism of "evaluation-feedback-improvement" has been established. The virtual teaching and research office has developed a big data-based teaching quality monitoring platform that collects and analyzes real-time data on teaching operations, student learning, and enterprise feedback. This platform regularly generates teaching quality reports to support teaching reforms with data. At the end of each semester, a teaching quality analysis meeting is held, inviting representatives from enterprises, teachers, and students to participate. They work together to identify issues in teaching, develop improvement measures, and implement these measures in the next round of teaching, thereby achieving a continuous improvement in teaching quality.

5 THE EFFECT AND REFLECTION OF THE CONSTRUCTION OF E-COMMERCE VIRTUAL TEACHING AND RESEARCH ROOM

5.1 Analysis of Construction Results

After more than two years of exploration and practice, the Virtual Teaching and Research Office of E-commerce (No. XNJYS-23-01) of Jiangxi Institute of Applied Technology has made a series of remarkable achievements in personnel training, teaching reform and social service, which are embodied in the following aspects[11].

5.1.1 The quality of personnel training has been significantly improved

The construction of virtual teaching rooms and the innovation in teaching management models have directly led to a significant improvement in the quality of talent cultivation. Over the past three years, the number and quality of awards won by students majoring in e-commerce have significantly increased: In the 2024 Jiangxi Province College Students “E-commerce” Innovation, Creativity, and Entrepreneurship “Challenge, they won one grand prize and two first prizes; in the 2025” Challenge Cup “Jiangxi Province College Students' Extracurricular Academic Science and Technology Works Competition”, the project “New Farmers: How Digital Marketing of Xinjiang Agricultural Products Empowers the Rural Revitalization Strategy”, which was participated in by e-commerce students, won second prize. This project, based on an in-depth survey of 57 e-commerce service stations in 19 towns of the Kizilsu Kirghiz Autonomous Prefecture in Xinjiang, proposed innovative solutions for digital marketing of agricultural products. The practical and entrepreneurial skills of students have also been recognized by society, with the employment rate of graduates from the 2024 cohort of e-commerce majors reaching 98.5%, a 85% match rate for their majors, a 30% increase in starting salaries compared to the previous three years, and employer satisfaction reaching 92%[12].

5.1.2 Rich achievements in the construction of teaching resources

The virtual teaching and research room has developed a range of high-quality teaching resources through resource integration and collaborative sharing. It has launched six school-enterprise cooperative courses, including “Online Store Operation and Management” and “E-commerce Data Analysis and Application”, two of which have been recognized as provincial first-class courses. Additionally, it has compiled four new-form textbooks, such as “Cross-border E-commerce Operation Practice” and “Live Streaming E-commerce Practice”. The room has also established an e-commerce case library, featuring over 200 various teaching cases. Furthermore, it has partnered with Alibaba Group to establish the “Cross-border E-commerce Training Center” and the “E-commerce Entrepreneurship Incubation Base”, significantly enhancing practical training conditions. These teaching resources not only support the school's educational activities but are also shared with member units via the virtual teaching and research room platform, serving as a positive model and example.

5.1.3 The structure of the teaching staff has been significantly optimized

Through the strategy of “inter-school-enterprise collaboration and a combination of full-time and part-time faculty”, the structure of the e-commerce faculty has been significantly optimized. Currently, the professional teaching team consists of 12 full-time teachers, including 2 professors, 4 associate professors, and 3 with doctoral degrees. Additionally, there are 8 part-time teachers from companies such as Alibaba and JD Technology, all of whom have over 5 years of industry experience. The proportion of “dual-qualified” teachers has reached 75%, an increase of 40 percentage points since the project's inception. Teachers' teaching and research capabilities have also improved. Since the establishment of the virtual teaching and research room, teachers have secured 4 provincial-level or higher educational reform projects, published over 20 teaching and research papers, and won 3 awards in provincial teaching competitions. This has led to

the formation of a well-structured, highly skilled, and dynamic teaching team.

5.1.4 The level of school-enterprise cooperation is constantly deepening

The establishment of the virtual teaching and research room provides organizational support and operational mechanisms for deep cooperation between schools and enterprises. Currently, the e-commerce major has established stable cooperative relationships with over 20 companies. Initially, these collaborations focused on activities such as company visits and expert lectures, but have since expanded to include joint course development, faculty training, project research, and employment assistance. Notably, the Digital Trade College, a collaboration with Alibaba Group, has become a model for industry-education integration in Jiangxi Province. It annually trains over 120 students in cross-border e-commerce, with 30% of them securing jobs in Alibaba's ecosystem. Furthermore, school-enterprise cooperation has extended into the research domain, with teachers and enterprises jointly applying for five horizontal projects, securing over 2 million yuan in funding, thus fostering a positive interaction among industry, academia, and research.

5.1.5 Social service capacity continues to increase

The virtual teaching and research room not only excels in talent cultivation but also actively leverages its professional strengths to support regional economic and social development. It organizes faculty and student teams to provide e-commerce operations services for Jiangxi agricultural product companies, helping to open online sales channels for specialty products like Gan Nan navel oranges and Jinggang Mountain honey pomelos. In 2024, it served over 50 enterprises, generating economic benefits exceeding 10 million yuan. The team also undertook the “E-commerce into Rural Areas” training project of the Jiangxi Provincial Department of Commerce, providing professional skills training for over 600 rural e-commerce service station managers across the province. Additionally, it co-hosted the “Cross-border E-commerce High-Level Forum” with the Jiangxi Cross-border E-commerce Industrial Park, attracting more than 200 enterprises from within and outside the province, fostering industry exchange and cooperation. These social service activities have not only expanded the professional influence but also provided valuable practical opportunities for teachers and students, achieving mutual growth in teaching.

5.2 Experience Summary and Reflection

The construction practice of the virtual teaching and research office of e-commerce in Jiangxi Institute of Applied Technology has accumulated valuable experience for applied universities to carry out the innovation of teaching organization mode and the construction of e-commerce major, but also exposed some problems that need to be solved urgently[13].

5.2.1 Successful experience

(1) Organizational innovation is the guarantee

As a new teaching organization model, the virtual teaching and research room has broken the time and space constraints and institutional barriers of traditional teaching and research rooms. It has achieved the integration of resources among schools and deep collaboration between schools and enterprises, providing organizational support for the development of application-oriented majors like e-commerce. Practical experience has shown that the virtual teaching and research room has unique advantages in promoting teacher exchanges, resource sharing, and school-enterprise cooperation.

(2) School-enterprise cooperation is the key

The cultivation of e-commerce talents cannot be separated from the deep involvement of industry enterprises. The virtual teaching and research room, through the “eight co-operations and eight linkages” mechanism, integrates enterprise resources into the entire talent development process, achieving an organic connection between the education chain, talent chain, industrial chain, and innovation chain. Enterprises are not only the demand side for talents but also become participants in education and evaluators of quality. This deep collaboration is crucial for enhancing the adaptability of talent cultivation.

(3) Practical innovation is the core

The practical nature of the e-commerce major dictates that teaching must be closely aligned with real-world applications and emphasize practical skills. The virtual teaching and research room has developed a three-tier progressive practical teaching system: “simulation, practice, and entrepreneurship”. This system integrates real projects, environments, and evaluations into the curriculum, effectively enhancing students' practical skills and fostering an innovative mindset. In particular, methods such as integrating competition and education and project-driven learning have significantly boosted students' motivation to learn.

(4) Dynamic adjustment is vitality

The e-commerce industry changes rapidly, and professional construction must maintain a keen sense of the industry and a rapid response mechanism. The dynamic update mechanism of courses established by the virtual teaching and research office, the faculty enterprise practice system, etc., ensure that the teaching content and methods are in sync with the development of the industry, which is an important basis for maintaining the vitality of the profession.

5.2.2 Problems

(1) The long-term mechanism of school-enterprise cooperation needs to be improved

Although the virtual teaching and research room promotes the in-depth cooperation between schools and enterprises, the enthusiasm and sustainability of enterprises' participation in talent training are still facing challenges. In particular, there is a lack of institutional guarantee in terms of resource sharing and profit distribution, and some cooperation remains at the level of project-based and short-term.

(2) The operation efficiency of the virtual teaching and research room needs to be improved
Due to the fact that members come from different units and departments, the coordination cost is high; the depth and effect of online teaching and research activities are not as good as offline activities; the breadth and depth of resource sharing need to be expanded, especially the cross-regional and cross-institutional resource sharing still has barriers.
(3) The structural contradiction of the teaching staff still exists
Although the proportion of "double-qualified" teachers has increased, there are still insufficient teachers with rich industry experience and teaching ability; the teaching ability and time input of part-time teachers from enterprises are uneven, which affects the teaching effect; the evaluation and incentive mechanism of teachers is not perfect enough, which is not conducive to guiding teachers to apply-oriented transformation.
(4) The scientificity of teaching quality evaluation needs to be enhanced
Although the current evaluation system has realized multi-participation, there is still room for improvement in the scientificity of evaluation standards, the diversity of evaluation methods and the application of evaluation results. In particular, there is a lack of effective means to evaluate students' comprehensive quality and long-term development ability.
(3) Future improvement direction
Based on the above problems and challenges, the next step of e-commerce virtual teaching and research office of Jiangxi University of Applied Science will focus on the following improvements.
Improve the institutional guarantee for school-enterprise collaboration. Encourage the government to introduce policies and measures to encourage enterprises to participate in education, such as tax incentives and subsidies; establish a long-term mechanism for school-enterprise cooperation, such as the council system of industrial colleges and school-enterprise cooperation funds, to ensure the continuity and stability of enterprise participation at the institutional level.
Optimize the operation mode of virtual teaching and research room. Strengthen the construction of information platform to improve the effect of online teaching and research activities; establish a flexible and efficient coordination mechanism to reduce the cost of organization and operation; expand the scope of resource sharing, and promote the formation of regional and national e-commerce teaching resource alliance.
Strengthen the development of a “dual-qualified” teacher team. Improve the system for teachers to gain practical experience in enterprises, linking their enterprise experience to professional title evaluations and job promotions; establish a training and certification system for part-time teachers from enterprises to enhance their teaching skills; introduce flexible positions such as “industry professors” to attract high-end industry professionals to join the teaching team.
Improve the teaching quality evaluation system. Introduce internationally recognized standards for e-commerce professional competence certification, and develop more scientific tools for evaluating these competencies; establish a graduate tracking survey mechanism, incorporating long-term development capabilities into the evaluation system; enhance the analysis and application of evaluation data to create a more comprehensive continuous improvement mechanism.
Deepen the application of artificial intelligence technology. Actively explore the use of AI in e-commerce education, including intelligent teaching systems, virtual simulation experiments, and learning data analysis, to enhance the intelligence and personalization of teaching. Over the next two years, we plan to establish an intelligent e-commerce training platform that will enable precise delivery of teaching resources and intelligent assessment of learning outcomes.

6 CONCLUSION

This study takes the e-commerce virtual teaching and research office of Jiangxi Institute of Applied Technology (No. XNJYS-23-01) as the research object, systematically discusses the theoretical and practical problems of innovation in e-commerce teaching management mode in the era of digital economy, and draws the following main conclusions[14]:
First, the virtual teaching and research room represents a significant innovation in the organizational model of teaching in the information age, particularly suitable for the development of applied and interdisciplinary disciplines like e-commerce. By leveraging this virtual platform, it is possible to effectively integrate high-quality teaching resources from various institutions and enterprises, overcoming the limitations of traditional teaching and research rooms in terms of time, space, discipline, and institutional structure. This approach forms an integrated talent development model that combines teaching, competition, practical training, and entrepreneurship. The experience at Jiangxi Applied Science and Technology University demonstrates that the virtual teaching and research room offers unique advantages in promoting teacher interaction, resource sharing, and school-enterprise collaboration, making it an effective pathway to enhance the level of e-commerce program development[15].
Second, e-commerce teaching management faces common issues such as a lagging curriculum system, weak practical components, a monolithic faculty structure, and insufficient depth in school-enterprise cooperation. These issues need to be addressed through systematic reform. The establishment of virtual teaching and research rooms offers solutions to these problems: by restructuring the curriculum to ensure that teaching content aligns with industry needs; by jointly building faculty teams to create a “school-enterprise interconnected, full-time and part-time combined” teaching team; by innovating practical teaching to establish a three-tier progressive training path of “simulation-practice-entrepreneurship”; and by fostering collaborative education between schools and enterprises to

achieve an organic connection between the education chain and the industrial chain. This systematic reform plan is valuable for reference in the construction of e-commerce programs at similar institutions.

Third, the construction of an e-commerce virtual teaching and research room is a comprehensive project that requires coordinated efforts in organizational structure, operational mechanisms, and support measures. Jiangxi Applied Science and Technology University has developed a "three-dimensional integration" organizational framework, a "four-dimensional linkage" innovation model, and an "eight-part collaboration" coordination mechanism, which provide a practical framework for the construction of the virtual teaching and research room. In particular, the approach of integrating the construction of the virtual teaching and research room with the development of industrial colleges and regional economic growth highlights the distinctive features and direction of professional development in applied universities.

Fourth, the construction of e-commerce virtual teaching and research rooms has achieved significant results. However, there are still shortcomings in the long-term mechanism for school-enterprise cooperation, operational efficiency, faculty structure, and evaluation systems, which need to be addressed through institutional innovation and technology application. In the future, efforts should focus on strengthening the institutional design for school-enterprise collaboration, optimizing the operation model of virtual teaching and research rooms, improving the development mechanism for dual-qualified teachers, enhancing the quality evaluation system, and actively exploring the application of new technologies such as artificial intelligence.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

REFERENCES

[1] Zhong L, Li J, Li W. Research on the co-construction and sharing of teaching resources for the construction of virtual teaching and research section. Curriculum and Teaching Methodology, 2024, 7(10): 22-29.

[2] Li Xue, Zhang Jiaqiong. The Connotation, Challenges and Promotion Path of Virtual Teaching and Research Room Construction in Colleges and Universities. Education Theory and Practice, 2024, 44(33): 9-13.

[3] Liu Huaijin, Xie Quanfeng, Dong Yan. The Practical Predicaments and Breakthrough Paths of Virtual Teaching and Research Room Construction in the Digital Transformation Period. Heilongjiang Higher Education Research, 2024, 42(10): 145-151.

[4] Bie Dunrong. Functions and Construction Paths of Virtual Teaching and Research Rooms. China Higher Education Research, 2024, 40(04): 7-14.

[5] Song Yuechan, Huang Chen. Exploration and Practice on the Construction of Virtual Teaching and Research Rooms for University Mathematics Course Groups: A Case Study of Gandong University. Educational Discussion, 2024, 6(3): 133-134.

[6] Yang Deguo, Zhang Xiaodong. Research on the Construction Method of Virtual Teaching and Research Room for the Integration of Eastern and Western Teaching. Education World, 2024, 6(2): 134-135.

[7] Zhou X, Nie Y, Chu M. Construction and Research of the Virtual Teaching and Research Office of "Weapon Aesthetics". Journal of Intelligence and Knowledge Engineering, 2023, 1(2): 50-57.

[8] Sang H, Wang X, Guo P, et al. Discussion on the Construction of Virtual Teaching and Research Office of Marketing Profession under the Background of New Liberal Arts. Adult and Higher Education, 2022, 4(12): 91-97.

[9] Lin J, Chai J. Construction of Rail Transit Signal and Control Virtual Teaching and Research Center. Scientific and Social Research, 2022, 4(3): 89-93.

[10] Hasan M D S. Virtual Classroom Construction: A Logical Approach. International Journal of Scientific Research, 2012, 2(4): 68-70.

[11] Penagos P, Encarnación T, Ríos J J, et al. Impact of the COVID-19 pandemic on e-commerce adoption in emerging economies. Latin American Transport Studies, 2025, 3, 100037-100037.

[12] FTI Consulting Report: E-Commerce Sales to See an 8.5% Increase YoY. Manufacturing Close - Up, 2025.

[13] BiohackerDirect Reveals Top 4 E-Commerce Stores for Biohacking and Home Fitness Gear in 2025. M2 Presswire, 2025.

[14] Ma L, Tang S, Ganesh A, et al. ROSI: A hybrid solution for omni-channel feature integration in E-commerce. Data & Knowledge Engineering, 2025, 160, 102465-102465.

[15] Ren Y. Entrepreneurial local-state driven rural e-commerce development: Evidence from less-developed rural West China. Cities, 2025, 166, 106188-106188.