

Research on Countermeasures for AI-Enabled Teaching Reform of Cross-Border E-Commerce Majors in Higher Vocational Colleges

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Abstract: Driven by the technological revolution and industrial transformation, the digital and intelligent transformation of education is accelerating. Big data and artificial intelligence (AI) technologies have been widely applied in the cross-border e-commerce industry, raising higher requirements for professional knowledge, comprehensive qualities, and practical capabilities of cross-border e-commerce talents. Combining the typical application scenarios of AI in cross-border e-commerce, this paper analyzes the existing problems in the teaching of cross-border e-commerce majors in higher vocational colleges and constructs the core framework of AI-enabled professional teaching. Focusing on curriculum development, practical training scenarios, faculty building, and evaluation mechanisms, this paper explores targeted countermeasures for AI-driven teaching reform, so as to provide references for cultivating application-oriented talents who can adapt to the intelligent transformation of the cross-border e-commerce industry.

Keywords: Artificial intelligence (AI); Higher vocational colleges; Cross-border E-commerce major; Teaching; Countermeasures

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1. Introduction

In the era of the digital economy, with the in-depth advancement of the Belt and Road Initiative, China has accelerated the pace of building a digital trade powerhouse. Cross-border e-commerce has become a core driving force for the growth of foreign trade ^[1]. Meanwhile, the extensive application of big data, cloud computing, and artificial intelligence has ushered in an intelligent transformation for the cross-border e-commerce industry. A growing number of cross-border e-commerce enterprises take artificial intelligence (AI) technologies as the core means to reshape industrial chains, transform daily workflows towards automation and digitalization, and effectively cut labor costs ^[2]. At present, AI is mainly applied in three core scenarios of cross-border e-commerce. First, AI agents reconstruct the entire operational process. By accessing Alibaba Aoxia Intelligent Agent, enterprises can establish automated workflows for product

research, supplier sourcing, pricing analysis, and supply chain management, which effectively improves the market popularity of selected products. Second, AIGC empowers the large-scale creation of foreign trade copywriting. Merchants can adopt tools such as Midjourney and Canva AI to generate texts and images that fit the styles of different foreign trade platforms. This practice reduces marketing costs and enhances marketing precision ^[3]. Third, AI enables intelligent compliance risk prevention and control. By connecting with AI intelligent regulation detection systems, merchants can quickly inspect the compliance of trade businesses and intellectual property rights, and predict and guard against potential risks in a timely manner. In addition, the *Professional Teaching Standards for Vocational Education (2025 Edition)* clearly puts forward the requirements of promoting major upgrading and digital transformation, and realizing the digital reform of curriculum teaching with the help of artificial intelligence and other technologies. It provides clear guidance for the integration of AI technologies into the teaching of cross-border e-commerce majors in higher vocational colleges. Exploring optimized paths for AI-enabled teaching is of great significance for major construction and talent quality improvement.

2. Existing problems in the teaching of cross-border e-commerce majors in higher vocational colleges

Based on the survey of 11 higher vocational colleges and 20 cross-border e-commerce enterprises, it is found that the integration between AI application scenarios and professional teaching is insufficient. Some colleges have not yet built complete AI training platforms based on large intelligent models. Most professional teachers lack a full understanding of AI application in cross-border e-commerce work, and are deficient in digital application capabilities and teaching guidance abilities. The main problems are summarized as follows.

2.1. Backward curriculum system

The industry-education integration of cross-border e-commerce majors in some higher vocational colleges is not deep enough. The training schemes fail to keep pace with the intelligent transformation of enterprises, resulting in a relatively backward curriculum system. In professional teaching, most teachers mainly follow traditional textbooks. They have little knowledge about the practical application of AI agents, AIGC copywriting, and AI compliance detection in cross-border e-commerce, and fail to integrate relevant content into formal teaching systems ^[4].

2.2. Deficient practical teaching

Some higher vocational colleges are poorly equipped for practical training. The proportion of practical training hours is less than 50%. Corresponding training modules are not set up targeting the three major AI application scenarios in cross-border e-commerce, so students cannot receive immersive and experiential practical training.

2.3. Insufficient dual-qualified faculty competencies

Many professional teachers have long been engaged in on-campus teaching, with limited communication with enterprise experts and managers. They lack practical experience in applying AI to cross-border e-commerce businesses, resulting in weak practical guidance capabilities ^[5].

2.4. Simplified evaluation mechanism

A number of colleges have not established a complete evaluation system integrating posts, courses, competitions, and certificates. The proficiency of AI applications is not included in evaluation indicators, which fails to mobilize students' initiative to learn and explore relevant technologies.

3. Core framework of AI-enabled teaching reform for cross-border e-commerce majors in higher vocational colleges

The core of enabling teaching with AI lies in transforming the advantages of technical tools into educational strengths, so as to empower teaching scenarios, personalized learning, and practical training.

3.1. Simulating full business processes

With the support of AI agents, teachers can simulate the whole operational workflow of cross-border e-commerce and convert practical projects into modular teaching resources. Students can get access to knowledge and skills close to real business scenarios and accumulate experience in using AI tools ^[6]. Meanwhile, teachers can guide students to use AIGC creation tools to revise and optimize copywriting in compliance with relevant application ethics and norms. Students can also analyze diversified cases via AI compliance detection systems.

3.2. Empowering personalized learning

AI systems are equipped with capabilities of data collection, mining, and analysis. They can recommend learning resources of different difficulty levels according to students' learning data and the rules of vocational skill improvement. Focusing on mainstream AI application scenarios in cross-border e-commerce, teachers can develop modular learning resources such as AI-assisted data analysis and AIGC copywriting creation. The AI system can provide targeted Q&A services and review materials based on students' weak points, so as to meet personalized learning demands.

3.3. Building integrated virtual and practical platforms

Colleges can combine AI with VR/AR technologies to build cross-border e-commerce practical platforms featuring virtual-reality integration. Digital twin environments that restore real business scenarios are created, enabling students to experience operation interfaces and content release, and providing immersive virtual practical training conditions ^[7].

4. Countermeasures for AI-enabled teaching of cross-border e-commerce majors in higher vocational colleges

4.1. AI-enabled curriculum development: Modules closely aligned with job requirements

Against the backdrop that AI reconstructs the operation, marketing, and compliance processes of cross-border e-commerce, relevant posts set higher requirements on students' proficiency in AI tools ^[8]. Colleges should follow the intelligent transformation trend of the industry and build a modular curriculum system matching the three major AI application scenarios to keep curriculum contents updated with industrial development.

First, establish a hierarchical modular curriculum system divided into basic knowledge, practical

skills, and extended contents, and increase the proportion of practical courses. Basic courses include Digital Literacy for Cross-border E-commerce and Fundamentals of AI Technology, which help students understand basic concepts, mainstream tools, and typical application scenarios of AI. Practical skill courses consist of AI Agents and Cross-border Practices, AIGC Copywriting Creation, and Intelligent Compliance Practices for Cross-border E-commerce. Centering on real projects and workflows, these courses enable students to experience the application of AI in product analysis, market research, product selection, and pricing, so as to cultivate their ability to apply professional knowledge and comprehensive practical capabilities.

Second, set up a curriculum development team composed of teachers, cross-border e-commerce industry experts, enterprise practitioners, and AI technology developers. Timely add or delete teaching contents based on multi-party opinions, and establish a dynamic content iteration mechanism. In this way, students can keep learning emerging technical tools, real competition projects, and post-related work contents, and the practicality of courses can be guaranteed.

4.2. AI-enabled practical training: Improving competencies via virtual and real combined training

To solve the disconnection between traditional teaching and industrial development, higher vocational colleges should strengthen ties with local cross-border e-commerce enterprises. They can convert real enterprise projects into practical teaching resources with the help of AI technologies, and jointly build and share virtual-reality integrated practical resource libraries. On-campus virtual simulation training platforms can be built to reproduce the whole cross-border e-commerce workflow in digital twin scenarios, providing favorable conditions for students to transfer theoretical knowledge into practical abilities ^[9].

For the construction of on-campus simulation platforms, teachers can cooperate with cross-border e-commerce enterprises and AI service providers to develop three major training platforms focusing on AI agent operation, AIGC copywriting creation, and AI compliance detection. Desensitized resources from Amazon, 168, and other platforms are transformed into virtual practical projects. Students can take part in training sessions, including product selection, marketing copy creation, and risk screening, so as to master the operational logic and skills of AI in various links. In view of the differences in students' hands-on abilities, hierarchical training tasks ranging from beginner, intermediate, to advanced levels are designed for progressive learning. Outstanding students in on-campus training can be recommended to work in the operation and marketing departments of cooperative enterprises, receiving follow-up guidance from enterprise mentors. This helps students accumulate practical experience of AI applications and cultivate the ability to solve real problems.

4.3. AI-enabled faculty development: Realizing collaborative talent training

To carry out AI-enabled teaching, professional teachers are required to master AI principles and practical application skills. Higher vocational colleges can rely on the industry-education integration platform to invite experts from cross-border e-commerce enterprises and AI technology companies to serve as external mentors. Internal teachers and external experts form dual-mentor teams to jointly develop curriculum resources, with external mentors focusing on practical guidance and full-time teachers responsible for theoretical teaching, so as to improve students' knowledge and abilities through collaborative instruction.

Colleges shall formulate regular training systems for professional teachers. Invite enterprise AI experts to deliver lectures or online seminars to introduce the application value, development directions, and key

difficulties of AI tools, helping teachers deepen their understanding of industrial transformation. Meanwhile, require full-time teachers to take temporary positions in cooperative enterprises every year, participate in scientific research and AI operation projects, so that they can keep abreast of industrial trends and improve professional competence and practical guidance capabilities. In addition, clarify the job responsibilities of both internal and external teachers. All teaching staff shall participate in the formulation of curriculum standards, practical projects, and teaching resources. External experts undertake practical skill teaching and guide students to operate on virtual platforms based on frontline experience; full-time teachers track students' progress in theoretical learning and practical training. Both sides adjust teaching and training plans according to students' actual performance, forming a virtuous cycle of "training–practice–optimization."

4.4. AI-enabled dual-dimensional guarantee system: Improving collaborative education effect

Colleges shall take curriculum and practical training as the main lines, and leverage AI technologies to improve teaching evaluation and industry-education coordination mechanisms, so as to build a dual-dimensional guarantee system^[10].

In terms of teaching evaluation, besides basic knowledge and professional skills, the proficiency of AI application shall be incorporated into evaluation indicators. The evaluation covers cross-border e-commerce professional capabilities, AI operational skills, and professional literacy, with specific assessment criteria including the accuracy of product selection, marketing effect of copywriting, and compliance pass rate. The evaluation mode combines formative assessment and summative assessment. Based on the training platform, dual mentors conduct formative assessment (accounting for 60% of the total score) to track students' competency growth and operational performance. Summative assessment is given according to students' performance in enterprise practical projects. The evaluation participants include both college teachers and enterprise mentors, so as to realize the goals of promoting learning and teaching via assessment.

In terms of industry-education coordination, colleges can cooperate with local cross-border e-commerce associations, enterprises, and technology companies to build modern industrial colleges. Regular online and offline seminars are held to update curriculum standards, co-build and share curriculum and practical resources, and jointly train teaching teams, achieving win-win development for both colleges and enterprises.

5. Conclusion

Giving full play to the advantages of AI technologies and promoting the deep integration of AI and cross-border e-commerce teaching is a key measure to update curriculum systems, reconstruct practical training and evaluation mechanisms, and improve overall teaching efficiency. Higher vocational colleges, relevant enterprises, and teaching teams shall closely respond to the transformation demands of the cross-border e-commerce industry. Combining AI applications in operation, marketing, and compliance inspection, colleges should promote the reform of curriculum and teaching modes. By exploring the four-in-one talent cultivation path of curriculum foundation–practical training improvement–internship empowerment–dual-dimensional guarantee, a closed-loop system featuring scenario orientation, technology embedding, and job alignment can be established. This will realize the precise connection between talent cultivation and industrial demands, and cultivate more applied and innovative talents for the high-quality development of the cross-border e-commerce industry.

Disclosure statement

The author declares no conflict of interest.

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