



The Curriculum Reform and Practice of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction" in the Context of Generative AI: A Case Study of the *International Trade Practice*

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Abstract. Building upon traditional curriculum reform practices centered on "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction," this paper develops a tripartite reform model that integrates students, teachers, and generative AI. Focusing on six key dimensions-value orientation, teaching content, teaching resources, instructional methods, assessment approaches, and teaching evaluation-the study deepens the operational mechanism of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction." By applying this model to the *International Trade Practice* course, the reform is effectively implemented, yielding positive teaching outcomes and enhanced student satisfaction.

Keywords: Generative AI, Teaching-Learning Mutual Enhancement, Teacher-Student Co-construction, Tripartite Integration, *International Trade Practice*.

1 Introduction

On November 30, 2022, OpenAI released ChatGPT-3.5. On March 17, 2024, Elon Musk announced the open-sourcing of Grok-1, which further accelerated the rapid development of Chinese generative AI models such as ERNIE Bot, Qwen, Kimi, Doubao, and DeepSeek. Generative AI technologies like ChatGPT are poised to profoundly transform individuals' lifestyles, work patterns, and industrial operations, and, more significantly, higher education. In April 2023, UNESCO published ChatGPT and Artificial Intelligence in Higher Education: A Quick Start Guide to elucidate the integration of ChatGPT into higher education. The guide systematically analyzes its applications in teaching and learning, research, administration, and community engagement. It also examines the challenges and ethical concerns posed by ChatGPT across seven key dimensions: academic integrity, lack of regulation, privacy concerns, cognitive bias, gender and diversity, accessibility and commercialization [1]. Alshater (2022) takes ChatGPT as a research case to explore the empowering effect of artificial intelligence

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on improving students' academic performance, and analyzes the practical value and application significance of AI in academic learning scenarios [2]. Mollick and Mollick (2023) systematically sorted out seven application paths for artificial intelligence to empower student learning, and defined AI as seven roles: AI-tutor, AI-coach, AI-mentor, AI-teammate, AI-tool, AI-simulator, and AI-student [3]. Baidoo-Anu and Ansaah (2023) explore the application value of ChatGPT in education within the generative AI era. They point out that ChatGPT can facilitate personalized and interactive learning as well as support formative teaching assessment, while it also suffers from defects such as factual inaccuracies, inherent biases in training data and potential privacy risks [4]. In January 2025, the Central Committee of the Communist Party of China and the State Council issued the Outline for Building a Leading Country in Education (2024-2035), which explicitly advocates for leveraging artificial intelligence to drive educational transformation [5].

The Book of Rites: Xue Ji, China's earliest educational treatise, states: "Even if there are fine dishes, one cannot know their flavor without tasting them; even if there are profound teachings, one cannot understand their value without studying them. Hence, it is through learning that one becomes aware of one's inadequacies, and through teaching that one encounters difficulties. Recognizing inadequacies prompts self-reflection, while encountering difficulties fosters self-improvement. Thus, it is said that teaching and learning promote each other." The fundamental meaning of this concept is typically interpreted in two ways: (1) It refers to both parties in the educational process. Through teaching, instructors recognize the limitations of their knowledge reserves, thereby stimulating an intrinsic motivation for further professional development; through learning, students identify gaps in their understanding, thereby generating renewed intellectual pursuits. This iterative cycle constitutes the process of "Teaching-Learning Mutual Enhancement." (2) It specifically pertains to teachers. Educators learn while teaching and teach while learning. Perceiving shortcomings and facing challenges in instruction drive them to engage in further study; Insights gained from learning, in turn, enhance teaching quality. Teachers thus achieve continuous growth through this integrated practice. In summary, the original meaning of "Teaching-Learning Mutual Enhancement" emphasizes the reciprocal promotion between teaching and learning, while its extended meaning expands to encompass the mutual empowerment and shared growth between teachers and students.

In the context of generative AI, although teachers cannot be entirely replaced, certain roles and functions—such as curriculum design, knowledge retrieval, classroom simulation, language translation, and assignment assessment—will be gradually assumed by generative AI. Consequently, the focus of teachers' work must shift towards reconstructing teaching content. First, tasks that can be accomplished by generative AI (such as ChatGPT) should be assigned to facilitate student-AI interactive learning. Second, the core focus for teachers should be on knowledge and capabilities that cannot be replaced by generative AI, including values, higher-order thinking, curiosity, imagination, and aesthetic appreciation.

In summary, against the backdrop of generative AI, we must ultimately establish a new model of curriculum reform featuring "Teaching-Learning Mutual Enhancement

and Teacher-Student Co-construction," collaboratively driven by the tripartite integration of students, teachers, and AI.

2 Curriculum Reform of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction" in the Context of Generative AI

Traditional curriculum reform centered on "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction" aims to break the conventional model of unidirectional teacher instruction and passive student reception. It seeks to fully realize the concept of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction" across multiple dimensions, including teaching content, teaching resources, instructional methods, assessment approaches, and teaching evaluation, as detailed in Table 1.

Table 1. Traditional Curriculum Reform of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction."

Reform Content	Teaching-Learning Mutual Enhancement	Teacher-Student Co-construction
Teaching Content	Posing questions and engaging in reflection.	Understanding student needs through questionnaires to co-construct course objectives and teaching content.
Teaching Resources	Utilizing MOOCs for pre-class preview and post-class review.	Co-constructing courses, learning resources, study guides, learning mini-programs, online question banks, and case libraries.
Instructional Methods	Flipped classroom; Research-based teaching (determining research topics, grouping, PPT presentations, or thematic lectures); Discipline competition-driven learning; Customized training / Project incubation.	Co-constructing courses based on the flipped classroom; Co-establishing research teams; Co-participating in competitions; Co-developing customized training / Project incubation.
Assessment Approaches	Incorporating flipped classrooms, research-based teaching, discipline competitions, and customized training/project incubation into the assessment.	Co-constructing course grading criteria.
Teaching Evaluation	Student evaluations and peer reviews.	Co-establishing a university teaching evaluation index system with both teachers and students as main subjects.

Building upon the traditional curriculum reform of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction," this paper constructs a tripartite reform model integrating students, teachers, and generative AI, as detailed in Fig. 1.

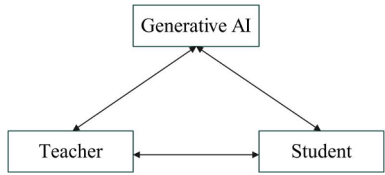


Fig. 1. The trinity of curriculum reform: integrating teaching-learning mutual growth with teacher-student co-construction.

Table 2. The Trinity of Traditional Curriculum Reform of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction."

Reform Content	Students	Teachers	Generative AI
Value Orientation	Receive proper guidance from teachers; establish learning ethics, academic integrity, and scientific values in the AI era.	Care for student development and steer value orientation; define the boundaries of AI usage and educational goals.	Adhere to educational ethics; provide neutral, compliant, and positive knowledge output to assist in value guidance.
Teaching Content	Preview before class and review after class, and use Generative AI to acquire knowledge efficiently; possess information discrimination and critical thinking skills.	Design curriculum content; teach students to reflect and practice individualized instruction; guide the scientific use of AI tools.	Provide instant Q&A, knowledge expansion, and content iteration suggestions for teachers and students; assist in content optimization.
Teaching Resources	Participate in AI-assisted resource co-creation; use AI tools to organize learning materials and refine study notes.	Coordinate resource development and guide students in co-construction; verify the accuracy and applicability of AI-generated resources.	Assist in searching for resources, generating lesson plans, writing textbooks, and creating courseware; co-build question banks, case libraries, and study guides.
Teaching Methods	Participate in AI-empowered flipped classrooms, scientific research, competitions, and project practices; collaboratively complete AI-assisted tasks.	Design AI-integrated teaching; organize co-construction teams for research, competitions, and projects; implement inquiry-based and project-based teaching.	Support flipped classrooms, inquiry-based teaching, competition incubation, and customized training; provide intelligent Q&A, simulation drills, and solution generation.
Assessment Methods	Participate in the co-construction of assessment standards; complete AI tool applications, process-oriented tasks, outcome presentations, and collaborative tasks.	Formulate AI-integrated assessment plans; incorporate AI application skills, process performance, and co-construction outcomes into assessments; organize evaluations.	Assist in assessment proposition, process data recording, objective question grading, and analysis of assessment results.
Teaching Evaluation	Participate in the co-construction of teaching evaluation indicators; conduct self-assessment and peer assessment; provide feedback on AI teaching adaptability.	Organize multi-dimensional evaluations; implement teacher-student and peer reviews; optimize AI teaching strategies.	Build intelligent evaluation platforms, collect teaching data, generate evaluation reports, and assist in the iteration of indicator systems.

Centered on six key dimensions—value orientation, teaching content, teaching resources, instructional methods, assessment approaches, and teaching evaluation—the study deepens the mechanism of "Teaching-Learning Mutual Enhancement and Teacher-Student Co-construction." This ultimately establishes a new collaborative educational paradigm characterized by students' active development, teachers' precision education, and generative AI empowerment, as detailed in Table 2.

2.1 Value Orientation

Under the scientific guidance of teachers, students establish correct learning philosophies and AI ethics awareness, strictly adhering to academic integrity. Teachers, anchored in the fundamental mission of fostering virtue through education, focus on the comprehensive development of students, providing strong value guidance and educational oversight. Generative AI adheres to the bottom line of educational ethics, outputting positive, compliant, and objective knowledge to assist in mutual value cultivation.

2.2 Teaching Content

Students actively engage in pre-class previews and post-class reviews, utilizing Generative AI to expand knowledge acquisition channels while strengthening their information discrimination and critical thinking skills. Teachers coordinate and plan curriculum design, adhering to individualized instruction and guiding students toward deep reflection and independent inquiry. Generative AI provides instant feedback and content optimization suggestions for students' autonomous learning and teachers' instructional design, dynamically refining the teaching content system.

2.3 Teaching Resources

Students actively participate in the co-creation of various learning resources, leveraging Generative AI to organize study materials and optimize learning outcomes. Teachers lead the overall planning, review, optimization, and quality control of teaching resources, spearheading the collaborative co-construction between teachers and students. Generative AI assists teachers in retrieving and integrating materials, as well as generating co-built resources such as lesson plans, courseware, textbook question banks, and case libraries.

2.4 Teaching Methods

Students actively integrate into diverse teaching scenarios, including flipped classrooms, inquiry-based learning, academic competitions, and project incubation, relying on Generative AI to carry out these activities. Teachers innovate classroom organizational forms, coordinating group discussions, subject research, presentations, and com-

petition training to build a teacher-student collaborative teaching community. Generative AI provides full-process support, facilitating classroom interaction, subject discussions, and project design, thereby enriching the pathways of teaching implementation.

2.5 Assessment Methods

Students actively participate in the joint formulation of assessment standards, completing process-oriented learning tasks such as flipped classroom activities, practical projects, and competition assignments, with a focus on the development of comprehensive abilities. Teachers integrate diversified assessment elements, incorporating process performance, co-construction outcomes, practical skills, and the rational application of Generative AI into the comprehensive evaluation. Generative AI assists with objective assessment, process data recording, question bank construction, and assessment data analysis, enhancing the fairness and efficiency of evaluations.

2.6 Teaching Evaluation

Students actively engage in multi-dimensional evaluations, conducting self-assessments and peer reviews, providing feedback on their learning experiences, and jointly participating in the refinement of teaching evaluation indicators. Teachers combine student feedback and peer reviews to comprehensively review teaching effectiveness, continuously optimizing teaching models and co-construction mechanisms. Generative AI leverages big data to collect information throughout the entire teaching process, generating intelligent evaluation reports to help teachers and students build a scientific and comprehensive teaching evaluation indicator system.

3 Curriculum Reform Practice of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction" in the Context of Generative AI: A Case Study of the *International Trade Practice* Course

This paper takes the *International Trade Practice* course as an example to explore the curriculum reform practice of the "Teaching-Learning Mutual Growth and Teacher-Student Co-construction" model, featuring a trinity of students, teachers, and Generative AI. (1) Teacher-Generative AI Interaction: Teachers utilize Generative AI (such as ChatGPT) to organize course tasks. Additionally, teachers train the AI to answer student inquiries, thereby improving the efficiency of Q&A sessions. (2) Generative AI-Student Interaction: Students leverage Generative AI to generate company profiles, product images, and advertisements. They apply AI to draft international business correspondence, perform speech translation and video language conversion, conduct market analysis, and further their professional knowledge. (3) Teacher-Student Interaction:

This focuses on knowledge and capabilities that cannot be replaced by AI, such as values, higher-order thinking, curiosity, imagination, and aesthetic appreciation. Cultivating these remains the core focus of the teachers' work.

In the practice of the *International Trade Practice* course, various Generative AI tools—including ChatGPT, Qwen, ERNIE Bot, Doubao, Kimi and DeepSeek—were selected. The curriculum reform was implemented in a group-based format.

3.1 Value Orientation

Teachers emphasize the importance of integrity and good faith in international trade operations. During the internship, teachers provide arbitration decisions and value guidance when trade disputes arise. Furthermore, when students face business bankruptcy in the simulation, teachers offer emotional support and correct guidance.

3.2 Teaching Content

Teachers formulate training objectives and teaching content based on the trinity model of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction." Teachers use Generative AI to organize course tasks and train the AI to answer student questions efficiently. Students utilize Generative AI to generate company profiles, product images, and ads; draft international business correspondence; perform speech and video translation; conduct market data analysis; and deepen their professional learning.

3.3 Teaching Resources

Teachers use Generative AI to refine syllabi, schedules, and lesson plans. Together, teachers, students, and Generative AI co-authored *the Guide to the Application of ChatGPT-like Generative AI in International Trade Practice*, summarizing practical experiences.

3.4 Teaching Methods

Students actively engage in flipped classrooms and academic competitions. Since the prerequisite courses for the *International Trade Practice Internship* include *Principles of International Trade* and *International Trade Practice*, students can use MOOCs to review forgotten knowledge or utilize Generative AI to obtain specific knowledge points. Teachers organized students to participate in the "POCIB National Collegiate International Business Skills Competition," promoting course learning through competition. Students from our university ultimately won the National Grand Prize, achieving the goal of "promoting teaching and learning through competitions."

3.5 Assessment Methods

Under the trinity model of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction," the grading system is structured as follows:

Total Score = Regular Score $\times$ 10% (including 5% for attendance and 5% for Generative AI application) + Report Score $\times$ 20% + Operation Score $\times$ 70%.

3.6 Teaching Evaluation

Teaching evaluation includes student ratings, peer reviews, and student questionnaires. The curriculum reform received high praise from both students and peers, with student ratings showing a significant improvement compared to previous years without AI implementation. In the questionnaire, 95% of students expressed satisfaction with the course, and 100% of students used AI to solve problems encountered during their studies. Among the six selected AI tools, Doubao and DeepSeek had the highest usage frequency. Students primarily used AI for generating company profiles, creating company and product images, and drafting international business correspondence.

4 Teaching Reflection

The curriculum reform model of the Trinity of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction," underpinned by Generative AI, has been applied to the *International Trade Practice* course for the 2022 and 2023 cohorts. Students' acceptance of Generative AI is steadily increasing, its usage has become more widespread, and course evaluations have improved significantly. Many students have even extended the use of Generative AI to other courses, leveraging it to serve their broader learning needs.

However, prominent issues have also emerged during the teaching practice. Some students have developed an over-reliance on Generative AI, leading to a weakening of their independent thinking and autonomous inquiry skills. When faced with challenges, they tend to seek immediate answers from AI or teachers rather than engaging in active, in-depth exploration. A typical manifestation of this over-reliance is the persistently high AIGC text similarity rate in the graduation theses of the 2022 cohort. This clearly indicates that the exploration of integrating Generative AI into curriculum teaching remains a long and arduous journey.

5 Conclusions

Building upon the traditional curriculum reform framework of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction," this paper establishes a new trinity model integrating students, teachers, and Generative AI. Focusing on six core dimensions—value orientation, teaching content, teaching resources, teaching methods, assessment methods, and teaching evaluation—this study deepens the mechanism of "Teaching-Learning Mutual Growth and Teacher-Student Co-construction."

Through the practical application of this trinity model in the *International Trade Practice* course, the reform has achieved favorable teaching outcomes and significantly improved student satisfaction.

Currently, the application pathways of Generative AI in classroom instruction, personalized learning, and competency development still require further exploration. Future research must focus on the integration strategies of Generative AI and curriculum teaching, as well as the rational guidance of students to use Generative AI tools scientifically and responsibly. It is crucial to mitigate the issue of intellectual laziness caused by over-reliance. While leveraging Generative AI to empower education, a key priority for curriculum reform is to concentrate on cultivating students' abilities in independent thinking, professional practice, and innovation. These remain vital topics that urgently require in-depth discussion.

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