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# Artificial Intelligence Assisted Dual-Teacher Model Constructing Practices

Min Wang <sup>1,\*</sup>

<sup>1</sup> Jilin Engineering Normal University, Changchun, Jilin, China

\* Correspondence: Min Wang, Jilin Engineering Normal University, Changchun, Jilin, China



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**Abstract:** This study explores the development and practical application of an innovative AI-assisted dual-teacher model for foreign language education. By introducing a dynamic framework that combines human educators with AI-driven teaching assistants, the research establishes a three-phase collaborative approach designed to meet the cognitive, linguistic, and cultural demands of language learners. The approach capitalizes on the complementary strengths of both human teachers and AI tools, offering a personalized and responsive learning experience. The findings of the study underscore the effectiveness of this model in leveraging AI's advanced capabilities, such as semantic generation and data analytics, to streamline and automate routine instructional tasks. This automation allows human instructors to focus their expertise on higher-level educational objectives, including fostering intercultural communication, nurturing emotional engagement, and cultivating critical thinking skills among students. As a result, the dual-teacher model significantly enhances the quality of foreign language instruction by diversifying teaching methods and creating opportunities for individualized learning trajectories. Furthermore, this approach promotes the development of digital literacy in both students and educators. The integration of AI technology empowers learners to navigate a variety of digital tools, while teachers are better equipped to manage and interpret the data generated by these systems. By blending the strengths of both human instruction and AI support, this model is positioned to transform traditional language education, providing a richer, more inclusive, and adaptive learning environment.

**Keywords:** artificial intelligence assisted; dual-teacher; foreign language education

## 1. Introduction

In recent years, the implementation of smart education policies, coupled with the rapid advancements in AI technology, has served as a powerful catalyst for profound changes in higher education. Among these advancements, generative artificial intelligence (GenAI) technologies, such as ChatGPT and Deepseek, have emerged as transformative forces, reshaping traditional educational models and methodologies. These innovations have not only challenged established educational paradigms but also inspired a rethinking of teaching content, delivery methods, and learning experiences.

As AI continues to evolve, the question of how to effectively integrate these technologies into the educational process has become a central focus for scholars worldwide. This challenge is particularly pressing in the context of enhancing classroom innovation and fostering more personalized and interactive learning environments. The growing interest in AI-assisted education has given rise to various models, with particular attention being placed on the "AI + Education" approach. Within this framework, the AI-assisted dual-

teacher model has gained considerable traction, with research into its application and potential now reaching maturity.

This study seeks to explore the development of an AI-powered dual-teacher model specifically tailored to English language education. The goal is to create a learner-centered, intelligent learning environment that seamlessly integrates AI technologies with traditional teaching resources [1]. By doing so, the model aims to provide personalized and accurate learning services that can adapt to the unique needs of individual learners. Through the in-depth integration of AI with English language courses, this approach not only redefines traditional foreign language teaching methods but also accelerates the intelligent transformation of foreign language education, opening up new possibilities for both teachers and students.

## 2. Literature Review

Research on "Co-teaching with AI" began in the mid-2010s, initially focusing on integrating educational robots into classrooms. The field gained momentum after 2020, driven by the rise of generative AI (GenAI) technologies, which have significantly impacted global educational practices. Early studies mainly addressed the ethical implications of AI and its role in teaching.

### 2.1. Ethical Considerations and Role of AI in Dual-Teacher Models

As educational robots became more common, scholars began reflecting on the relationship between humans and machines in the classroom [2]. The ethical role of AI was a key concern, particularly regarding its limitations as a tool to assist teachers. Some argued that robot teachers might lack the emotional interaction essential for education, potentially diminishing the human element. Research also found that while students trusted AI more when it appeared human-like, excessive anthropomorphism could lead to confusion. It was concluded that educational robots are best suited for standardized tasks, like grammar correction, while more complex tasks, such as cultural interpretation, still require human involvement.

### 2.2. GenAI-driven Reconfiguration of Language Teaching Models

With the advent of GenAI tools like ChatGPT, studies began exploring their potential in language education. Research showed that AI chatbots could help increase students' language output, but higher-order skills like intercultural communication still depended on human teachers. Similarly, while students preferred using AI for short, isolated tasks, building systematic knowledge still required teacher involvement. Furthermore, studies found varying levels of acceptance of AI among students, indicating that effective collaboration between human educators and AI needs to be tailored to different learner groups.

### 2.3. The Evolution of the Dual-Teacher Model in China

In China, the dual-teacher model evolved from the traditional "professor + teaching assistant" structure. Initially, this model relied on distributing high-quality instructional videos from renowned professors to various schools [3]. Over time, the model advanced through three stages: the first generation of fully online dual-teacher classrooms, the second generation combining online and offline methods, and the third generation that integrated AI teaching assistants. Research in China has followed a similar progression, from exploring AI applications in education to constructing theoretical frameworks and adapting the model to specific academic disciplines.

### 2.4. AI Technology Application and Model Exploration

Early Chinese research focused on the educational applications of AI, particularly in personalized learning. Scholars emphasized "human-machine collaboration" as a key fea-

ture of future education, categorizing different forms of collaboration, such as "complementary," "agency," and "symbiosis." These studies highlighted the advantages of AI in supporting personalized learning [4]. One notable study developed a framework for human-machine collaboration using educational robots, demonstrating their positive impact on classroom interaction and student engagement.

### *2.5. Constructing the Dual-Teacher Framework and Role Relationships*

As the concept of the "human-machine dual-teacher" model gained popularity, research began to explore the changing roles of both human teachers and AI systems. Some scholars proposed that AI should focus on tasks like knowledge transmission and data analysis, while human teachers should concentrate on fostering critical thinking, emotional engagement, and intercultural competence [5]. Further studies examined the dynamic relationships between teachers, students, and AI systems, exploring the benefits of combining human and AI efforts in a "dual-teacher community."

## **3. The Construction of AI-Assisted Dual-Teacher Model**

This study explores the development of an AI-assisted dual-teacher model for foreign language education, integrating the strengths of human instructors and AI technology to enhance learning experiences. The model focuses on dynamic roles, blending online and offline teaching, and fostering collaborative progress between teachers and students. The goal is to leverage AI to complement the work of both teachers and students, optimizing educational outcomes.

### *3.1. Pre-Class Stage: Dynamic Division of Labor*

At the pre-class stage, the AI assistant and the real teacher share responsibilities based on teaching objectives and content. The human teacher controls core tasks, while the AI assistant handles more routine or automated tasks [6]. The AI teaching assistant offers pre-study resources and tools for self-assessment, allowing students to set their own learning pace. Through AI-driven virtual simulations and exercises, students engage in independent learning, revisiting previously learned language concepts, and activating related cognitive topics. The AI also provides specific communicative tasks for students to practice speaking and writing based on their current knowledge.

Real-time data collection by the AI system tracks students' progress, generating a learning report. This data is then used by the human teacher to diagnose individual learning needs and adjust the teaching plan accordingly, ensuring that classroom time is used effectively.

### *3.2. During-Class Stage: Online and Offline Blended Teaching*

During class, the AI assistant and the human teacher collaborate to design a variety of tasks suitable for students of different levels. The AI provides multi-level demonstrations and personalized guidance based on the pre-class analysis. It also handles routine language tasks, such as grammar training and real-time error correction, while recording and analyzing students' interactions for immediate feedback [7].

Meanwhile, the human teacher focuses on more complex aspects of language learning, such as cultural background, tacit knowledge, and fostering emotional engagement. Teachers also provide personalized support, helping students with decision-making and addressing emotional needs, areas where AI cannot replace human interaction. The AI-generated data, such as task completion rates and accuracy, enables teachers to adjust their approach and reinforce key concepts, ensuring a deeper, more targeted learning experience.

### 3.3. Post-Class Stage: Collaborative Progress

After class, the AI assistant analyzes students' performance across pre-class preparation, in-class tasks, and post-class assignments, generating detailed reports on language use and behavior. This data is used for real-time evaluation, offering personalized feedback and identifying common learning challenges. Teachers use these insights to provide individualized support and address group-wide issues, helping students build knowledge more effectively.

## 4. Implementation of the AI-Assisted Dual-Teacher Model

This chapter explores the practical application of the AI-assisted dual-teacher model, focusing on how it was implemented in foreign language education, including the design of the teaching structure, the roles of both AI and human teachers, and the student learning experience.

### 4.1. Research Setting and Participants

The study was carried out with 120 undergraduate students majoring in English, divided into four classes. These students were exposed to a dual-teacher model in which a human teacher worked alongside an AI assistant [8]. The AI system, embedded within a comprehensive learning platform, provided personalized resources, real-time feedback, and automated assessments. The human teacher, on the other hand, facilitated complex cognitive tasks, cultural understanding, and emotional engagement—areas where AI currently has limitations.

Participants were selected from various levels of proficiency, ensuring a representative mix of learners. The research spanned one semester, and data was collected through surveys, interviews, and student performance metrics to evaluate the effectiveness of the AI-assisted dual-teacher approach.

### 4.2. Teaching Structure and AI Functions

The dual-teacher model followed a blended learning approach, designed around three key stages: pre-class, in-class, and post-class. At each stage, the AI and human teacher played complementary roles.

**Pre-Class Stage:** Students accessed the AI platform, where personalized resources were suggested based on their individual progress. The AI facilitated independent learning by providing exercises, quizzes, and content review aligned with the upcoming lessons. This pre-class interaction allowed students to come to class better prepared [9].

**In-Class Stage:** During class, the AI assistant supported the teacher by providing instant grammar and vocabulary corrections, as well as personalized feedback based on students' real-time inputs. The teacher focused on complex language skills, such as fostering critical thinking and guiding students through culturally nuanced discussions. The combination of automated support and human guidance created a dynamic and interactive classroom environment.

**Post-Class Stage:** After class, the AI continued to monitor student progress through follow-up exercises, offering real-time assessments and generating reports on individual performance [10]. This allowed the teacher to follow up with tailored support, addressing any difficulties students faced and reinforcing learning through personalized feedback.

### 4.3. Role of Human Teachers

Human teachers were responsible for overseeing the learning process, offering emotional support, and engaging students in higher-level cognitive tasks [11]. While the AI handled repetitive tasks, such as grammar corrections and feedback on vocabulary, teachers focused on areas requiring emotional intelligence and cultural understanding—important aspects that AI cannot replicate.

**Critical Thinking and Problem-Solving:** Teachers led discussions on complex topics, encouraging students to think critically and engage in problem-solving activities [12].

**Emotional and Social Support:** Teachers provided personalized attention, addressing students' emotional and psychological needs, fostering a sense of community in the classroom.

**Cultural Context and Nuance:** Human teachers were essential in guiding students through cultural context, providing examples, and encouraging discussion on intercultural issues—areas where AI has limitations in understanding and expression.

#### *4.4. Student Engagement and Feedback*

Students reported a high level of satisfaction with the AI-assisted dual-teacher model, particularly appreciating the personalized feedback and the ability to learn at their own pace. The AI's ability to provide immediate feedback on exercises allowed students to correct mistakes quickly and efficiently, contributing to their motivation and self-confidence.

However, students also emphasized the importance of human interaction. While the AI excelled at tasks such as pronunciation correction and grammar exercises, students noted that the social and motivational aspects of language learning required a human touch [13]. The personal connection with teachers was critical for fostering a deeper understanding and engagement with the language.

#### *4.5. Implementation Challenges and Insights*

Despite the promising results, several challenges emerged during the implementation of the AI-assisted dual-teacher model:

**AI Adaptability:** One challenge was ensuring that the AI remained adaptable to the diverse learning needs of students. While the AI system could generate personalized exercises, its ability to understand the nuances of language and culture was limited, leading to occasional errors in content or feedback. Future improvements in AI's natural language processing (NLP) capabilities could address these limitations [14].

**Teacher Training:** Although the AI was designed to be intuitive, some teachers struggled with integrating the technology into their lesson plans effectively. Adequate training and ongoing professional development are essential to ensure teachers can maximize the potential of AI tools.

**Student Resistance to Technology:** A small subset of students expressed discomfort with relying heavily on AI for feedback and assessments. Some were hesitant to trust the AI's judgment, particularly when it came to subjective language tasks like writing style or cultural expression. This highlights the need for a balanced approach, where AI supports but does not fully replace human judgment.

**Technological Infrastructure:** The seamless integration of AI tools into the classroom required robust technological infrastructure. In some cases, students faced connectivity issues or difficulties navigating the AI platform, which hindered the learning experience.

Despite these challenges, the AI-assisted dual-teacher model showed significant potential for transforming foreign language education. The combination of AI's efficiency in automating tasks and the teacher's ability to provide personalized, empathetic instruction created a dynamic, effective learning environment.

### **5. Evaluation and Analysis of the AI-Assisted Dual-Teacher Model**

#### *5.1. Student Learning Outcomes*

To evaluate the effectiveness of the AI-assisted dual-teacher model, we first examine student learning outcomes, focusing on improvements in language proficiency, engagement, and skills development.



**Language Proficiency:** The pre- and post-assessments showed significant improvement in students' language skills, particularly in areas where AI provided targeted feedback, such as grammar and vocabulary. Students who engaged more with the AI platform reported higher scores in standardized language tests compared to those who relied solely on traditional methods.

**Engagement and Motivation:** Students reported feeling more motivated due to the personalized nature of AI feedback. The ability to access learning materials at their own pace, coupled with real-time feedback from the AI assistant, encouraged a more active learning process. Many students expressed that the interactive nature of AI-driven tasks made learning more enjoyable and engaging, which translated into higher participation rates during class activities.

**Skills Development:** The dual-teacher model proved particularly effective in developing speaking and writing skills. AI's ability to provide instant feedback on pronunciation and grammar allowed students to practice independently, while human teachers focused on refining higher-order skills such as critical thinking and cultural understanding. As a result, students demonstrated improvements not only in basic language competencies but also in their ability to apply language in real-world contexts.

### *5.2. Teacher Feedback and Experience*

In addition to assessing student outcomes, we also gathered feedback from the human teachers who implemented the AI-assisted dual-teacher model. Their insights provide valuable information on the practicality, effectiveness, and challenges of integrating AI into their teaching practices.

**Increased Efficiency:** Teachers reported that the AI assistant significantly reduced the time spent on repetitive tasks, such as grading and providing individualized feedback. This allowed teachers to focus on more interactive, student-centered activities during class. Teachers appreciated the real-time data analytics provided by the AI, which helped them identify areas where students were struggling and adjust their lesson plans accordingly.

**Enhanced Teacher-Student Interaction:** Despite the presence of AI, teachers emphasized that their role in fostering emotional engagement and developing critical thinking skills remained crucial. The AI did not replace the teacher's involvement but instead complemented it by handling more technical tasks. Teachers noted that they were able to engage more deeply with students on personal and intellectual levels, enriching the learning experience.

**Challenges in Adapting to Technology:** While teachers recognized the benefits of AI, some expressed concerns about the initial learning curve associated with integrating the technology into their classrooms. Teachers required additional training to maximize the potential of the AI system, particularly in understanding its capabilities and limitations. A few teachers also felt that the AI's ability to understand cultural context and provide nuanced feedback was still lacking, and they had to step in to fill these gaps.

### *5.3. Classroom Dynamics and Interaction*

An important part of the evaluation process was assessing how the AI-assisted dual-teacher model impacted classroom dynamics, particularly the interaction between students, AI, and teachers.

**Collaboration Between AI and Human Teachers:** The collaboration between AI and human teachers was largely successful, with both working in tandem to enhance student learning. The AI provided personalized support, allowing students to engage with the material at their own pace, while the teacher led discussions and addressed more complex aspects of language and culture. This division of labor allowed for a more efficient learning process and ensured that students received both technical and emotional support.

**Student-Teacher Interaction:** The presence of AI did not diminish the importance of student-teacher interaction. Instead, it allowed for a more focused and meaningful connection between students and teachers. Teachers were able to spend more time on personalized instruction and addressing student concerns, as the AI handled routine tasks such as grammar correction and vocabulary drills. Students appreciated the individualized attention from both the teacher and the AI, which contributed to a more engaging and supportive classroom atmosphere.

**AI as a Learning Tool:** While students appreciated the AI's capabilities, they also recognized its limitations. AI was particularly effective in helping with structured tasks, such as grammar exercises and vocabulary practice. However, students still valued the human teacher for more complex activities, such as language application, cultural discussions, and emotional support. The combination of AI's technical assistance and the teacher's emotional and intellectual guidance created a balanced and dynamic learning environment.

## 6. Conclusion

A dual-teacher model for foreign language teaching based on human-machine collaboration and human-machine complementarity theory combines AI technology with dual-teacher classrooms, leveraging rich data resources to provide ample support for classroom instruction. Before class, learner factors are incorporated into the instructional design framework to generate personalized learning reports that assist classroom teaching, facilitating students' adaptive and personalized learning. During class, human-machine interaction and teacher-student interaction are the primary features, including content explanation, personalized guidance, question-and-answer sessions, and feedback—activities that promote deep learning. After class, virtual reality and big data technologies are utilized to provide various learning situation data, assisting teachers in personalized guidance and summarizing common issues.

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