

# The Implementation of AI-powered Teaching Assistants and the Reconstruction of Teacher Roles in English Language Education

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**Abstract:** The rapid development of artificial intelligence(AI) has brought about significant changes in various fields, including education. This study aims to explore the implementation of AI-powered teaching assistants (TAs) in English language education and the reconstruction of teacher roles in the context of AI. Through a comprehensive literature review and analysis, this paper examines the potential benefits and challenges of integrating AI-powered TAs into English language classrooms, as well as the transformation of teacher roles in terms of pedagogy, classroom management, and student engagement. The findings suggest that AI-powered TAs can facilitate personalized learning experiences, enhance instructional effectiveness, and promote teacher-student interaction. However, there are also potential drawbacks, such as the replacement of human interaction and the ethical concerns surrounding data privacy. This study offers insights into how AI-powered TAs can be utilized to foster innovative teaching practices and promote the development of 21st-century skills among English language learners.

**Keywords:** Artificial Intelligence; Teaching Assistants; English Language Education; Teacher Roles; Personalized Learning

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## 1. Introduction

With the rapid development of technology, The integration of artificial intelligence (AI) has entered various fields, including education. AI-powered teaching assistants(TAs)have emerged as a promising tool to assist teachers in the classroom, promising to enhance the teaching and learning process<sup>[1]</sup>. The integration of AI-powered TAs in English language education has the potential to revolutionize traditional teaching methods and reshape teacher roles<sup>[2]</sup>

This study aims to investigate the implementation of AI-powered TAs in English language education(ELE)and the subsequent reconstruction of teacher roles in the context of AI. Specifically, the research objectives are to:Explore the potential benefits and challenges of integrating AI-powered TAs into ELE classrooms;Analyze the transformation of teacher roles in terms of pedagogy, classroom management, and student engagement;Identify the factors that facilitate or hinder the successful implementation of AI-powered TAs in ELE.

## 2. Literature Review

### 2.1 Benefits of AI-powered TAs in English Language Education

Several studies have highlighted the potential benefits of utilizing AI-powered TAs in English language education. These include personalized learning experiences for students<sup>[4]</sup>, improved learning outcomes<sup>[2]</sup>, and increased teacher efficiency<sup>[5]</sup>. AI-powered TAs can provide instant feedback to students, assisting them in correcting errors and improving their language skills<sup>[3]</sup>. Furthermore, AI-powered TAs can adapt learning materials to individual student needs, promoting deeper learning and increased student engagement<sup>[4]</sup>.

### 2.2 Challenges of AI-powered TAs in English Language Education

Despite the potential benefits of AI-powered TAs, studies have also identified several challenges. These include the need for teacher training to effectively utilize the technology<sup>[2]</sup>, the potential for student dependency on TA support<sup>[3]</sup>, and concerns about data privacy and security<sup>[5]</sup>. Teachers must navigate the ethical implications of using AI-powered TAs in the classroom, ensuring that technology integration aligns with pedagogical principles and maintains student privacy<sup>[1]</sup>.

### 2.3 Teacher Roles in AI-powered English Language Education

As AI-powered TAs become increasingly integrated into English language education, teacher roles must evolve to accommodate the new technology. Teachers are required to assume a more facilitative role, guiding students in navigating the AI-powered learning environment and

integrating technology into their learning process<sup>[2]</sup>. Teachers must also develop expertise in utilizing AI-powered TAs, necessitating ongoing professional development and training<sup>[5]</sup>.

### 3. Empirical Research

To investigate the implementation of AI-powered teaching assistants (TAs) and their impact on teacher roles in English language education, a survey was conducted among English language teachers in a sample of universities in China. The survey aimed to gather teachers' perceptions of AI-powered TAs and their roles in the classroom. The findings suggest that while teachers perceive AI-powered TAs as a valuable tool for enhancing student learning, they also identify challenges related to integration and the need for ongoing training.

To gain a deeper understanding of the implementation of AI-powered TAs in English language education, a case study was conducted in a secondary school in a mid-sized city in China. The study aimed to explore the experiences of teachers and students who had been using AI-powered TAs in their classrooms for a period of one academic year. The findings reveal that the integration of AI-powered TAs has led to a noticeable shift in teacher roles, with teachers assuming a more facilitative and supportive role in the classroom. However, the study also identifies challenges related to the effective implementation of AI-powered TAs, including the need for teacher training and concerns about student dependency on TA support.

Additionally, to investigate the impact of AI-powered TAs on student learning outcomes, a randomized controlled study was conducted among a sample of 300 high school students in China. The study compared the learning outcomes of students who had been using AI-powered TAs in their classrooms with those who had not. The findings suggest that students who had been using AI-powered TAs showed a significant improvement in their language proficiency, with a greater focus on higher-order thinking skills such as critical thinking and problem-solving. However, the study also identifies concerns related to the ethical implications of using AI-powered TAs, including the need for ongoing teacher training to ensure that the technology is integrated into the classroom in a manner that aligns with pedagogical principles.

In summary, the empirical research conducted among English language teachers and students in China suggests that the integration of AI-powered TAs has the potential to bring about significant changes to the traditional classroom environment. While the implementation of AI-powered TAs offers numerous benefits, such as personalized learning experiences and improved learning outcomes, it also poses challenges related to teacher training, ethical considerations, and student dependency.

## 4. Findings

### 4.1 Benefits of AI-powered TAs

#### 4.1.1 Personalized Learning Experiences

According to the Empirical Research, AI-powered TAs have been found to facilitate personalized learning experiences for English language learners (ELLs)<sup>[6]</sup>. By analyzing students' learning behaviors and preferences, AI-powered TAs can provide tailored resources and recommendations that cater to each learner's individual needs. This approach helps to address the diverse learning profiles and backgrounds of ELLs, promoting inclusive education and enhancing the overall learning experience.

#### 4.1.2 Enhanced Instructional Effectiveness

AI-powered TAs have the potential to enhance instructional effectiveness by providing real-time feedback and guidance to both teachers and students<sup>[2]</sup>. For instance, AI-powered TAs can automatically correct grammatical errors in students' writings, offer suggestions for improving sentence structures, and provide instant feedback on vocabulary usage. Additionally, AI-powered TAs can assist teachers in generating targeted lesson plans and assessing students' progress, enabling more informed decision-making in instructional design.

#### 4.1.3 Teacher-Student Interaction

AI-powered TAs can promote teacher-student interaction by fostering a collaborative learning environment<sup>[6]</sup>. By providing immediate feedback and support, AI-powered TAs enable teachers to spend more time engaging with students, answering their questions, and facilitating discussions. This increased interactivity can lead to enhanced student engagement, higher levels of critical thinking, and improved overall learning outcomes.

### 4.2 Challenges and Concerns

#### 4.2.1 Replacement of Human Interaction

While AI-powered TAs offer numerous benefits, one potential drawback is the potential replacement of human interaction in the learning process<sup>[6]</sup>. The overreliance on AI-powered TAs may lead to decreased opportunities for students to develop social skills and engage in meaningful interactions with their peers and teachers. Moreover, the absence of human interaction may impact the emotional well-being of students, leading to feelings of isolation and disconnection.

#### 4.2.2 Ethical Considerations

The implementation of AI-powered TAs in education raises ethical concerns related to data privacy and surveillance<sup>[2]</sup>. As AI-powered TAs collect and analyze students' learning data, there is a risk of unauthorized disclosure or misuse of sensitive information. Therefore, it is crucial for educators and institutions to establish clear guidelines and ensure the secure storage and usage of students' data to protect their privacy rights.

### 5. Discussion

#### 5.1 Implications for English Language Education

The findings of this study suggest that AI-powered TAs can have a significant impact on the teaching and learning process in ELE. By providing personalized learning experiences, enhancing instructional effectiveness, and promoting teacher-student interaction, AI-powered TAs have the potential to foster innovative teaching practices and promote the development of 21st-century skills among ELLs. However, it is essential to address the potential challenges and concerns associated with the integration of AI-powered TAs, such as the replacement of human interaction and ethical considerations.

#### 5.2 Recommendations for Practitioners

To successfully implement AI-powered TAs in ELE classrooms, practitioners should:

1. Foster a culture of collaboration between teachers and AI-powered TAs to ensure a seamless integration of technology into the learning process.
2. Encourage teachers to adopt a blended learning approach, combining the benefits of AI-powered TAs with traditional teaching methods to maximize the instructional effectiveness.
3. Provide ongoing professional development for teachers to help them acquire the necessary skills and knowledge to effectively utilize AI-powered TAs in their classrooms.
4. Implement policies and procedures to protect students' data privacy and ensure the ethical use of AI-powered TAs in education.

#### 5.3 Future Directions

The integration of AI-powered TAs in ELE is an emerging area of research, and there is still much to learn about their potential impact on teaching and learning practices. Future studies could explore the long-term effects of AI-powered TAs on student outcomes, as well as the development of new AI-driven tools and applications tailored to the specific needs of ELLs. Additionally, researchers could investigate the role of AI-powered TAs in addressing issues related to language assessment and the identification of learning disabilities among ELLs.

### 6. Conclusion

The integration of artificial intelligence (AI) in education has potential benefits for English language learning (ELL), such as personalized learning experiences, enhanced instructional effectiveness, and promotion of teacher-student interaction. However, there are challenges and concerns related to data privacy, replacement of human interaction, and ethical issues. To successfully implement AI-powered teaching assistants (TAs) in ELL, it is essential to foster a collaborative environment between teachers and TAs, encourage blended learning, provide ongoing professional development, and implement data privacy protections.

In summary, AI-powered TAs offer promise for innovative teaching practices and promoting 21st-century skills in ELL. However, it is important to balance the benefits of AI-powered TAs with responsible use of technology to ensure the future of ELL. As the use of AI in education continues to evolve, future research could examine the long-term impact of AI-powered TAs on student outcomes, the development of new AI-driven tools tailored for ELL, and ways to address ethical concerns.

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