Research on the Transformation of English Teaching Mode in Middle Schools Driven by AI: A Case Study of Middle Schools in Ulanqab City

Shuanqiao Qi, Junfeng Huangfu, Hong Liang*
Jining Normal University, Ulanqab 012000, Inner Mongolia, China

Abstract: This paper focuses on the revolutionary impact of Artificial Intelligence(AI) technology on middle school English teaching modes. By exploring how AI technology facilitates personalized teaching, contextualized learning, and blended online-offline teaching modes, it unveils the significant advantages of AI in enhancing teaching efficiency, stimulating students' interest, and bolstering language practice abilities. Indeed, AI has optimized traditional teaching modes and injected new vitality into middle school English teaching. However, the integration of AI technology with English teaching also faces numerous challenges, requiring collaboration among government departments, teacher training departments, schools, and other stakeholders to address them collectively. In summary, as the integration of AI with education and teaching continues to deepen, educators should constantly promote the utilization of AI's strengths and explore a path for harmonious coexistence and development between humans and AI technology.
***Keywords*:** artificial intelligence(AI) , English teaching mode, technology

1. Introduction

Since the emergence of ChatGPT, AI technology has made significant progress in the field of foreign language teaching. It relies on computers and networks, closely connected with language teaching, and has brought about changes in foreign language education (Zhao Shiju, 2023)[1]. AI technology has created a language environment that is close to reality for foreign language teaching, alleviated the problem of uneven distribution of educational resources, and provided personalized learning paths. However, it also brings challenges such as the transformation of teacher roles, data security, and privacy protection. To meet the educational needs of the AI era, we should fully leverage the advantages of AI technology while effectively preventing its risks, and re-examine and formulate educational strategies.

2. The widespread penetration and application of artificial intelligence (AI) technology in the field of education

technology is reshaping the education ecosystem with unprecedented depth and breadth. General Secretary Xi Jinping emphasized that China attaches great importance to the profound impact of artificial intelligence on education, actively promotes its deep integration with education, and promotes reform and innovation (Wu Dan, 2022)[2]. The "New Generation Artificial Intelligence Development Plan" issued by the State Council also clearly proposes to use intelligent technology to promote the reform of talent training models and teaching methods. Professor Zheng Yongyan from Fudan University pointed out that technological innovation forces us to re-examine the definitions of "learner", "teacher", and "language ability", and English education should pay more attention to the learning process.

technology provides personalized learning experiences for students through big data and machine learning algorithms, customizing teaching content and learning paths based on learning progress, interests, and abilities (Mao Weiwen et al., 2023)[3]. It can not only stimulate students' potential and interest, but also provide precise support for teachers, reduce repetitive workload, enable teachers to focus more on personalized needs, and improve learning efficiency and quality. At the same time, AI technology provides abundant learning resources, such as simulated dialogues, video content, and interactive games, to enhance the fun and engagement of learning (Hu Zhuanglin, 2023; Song Fei et al., 2023)[4][5]. In addition, AI technology makes it possible to quantify learning outcomes, helping students and teachers better understand learning outcomes through data analysis.

Looking ahead, the continued application of AI in the field of education will drive education into a new era of intelligence, fairness, and infinite possibilities. In the face of change, we should embrace opportunities, be brave in challenges, use AI as a wing, promote high school English teaching to new heights, and promote students' comprehensive development.

3. The Application Status of AI in English Teaching in Middle Schools in Ulanqab City

At present, middle schools in Ulanqab City are gradually introducing AI technology, especially in terms of teaching tools and auxiliary means. The popularization of Xiwo whiteboard and recording and broadcasting all-in-one machines provides a good foundation for the application of AI technology. Xiwo whiteboard, with its rich functions and interactivity, has been widely used in many middle schools. Its functions include cloud courseware, time capsules, classroom activities, mind maps, and subject resources, greatly improving classroom teaching effectiveness. Xiwo Company is accelerating the integration of AI technology into Xiwo Whiteboard and launching a new product line based on AI, such as the linkage between Xiwo Teaching Model and Xiwo Whiteboard 5 courseware tool, to achieve intelligent generation and optimization of courseware. In addition, the "classroom activities" function module of Xiwo whiteboard (such as fun classification) can stimulate students' interest in learning and enhance their autonomy.

The recording and broadcasting all-in-one machine is also widely used in middle schools in Ulanqab City, meeting the needs of high-quality course recording and supporting online and offline integrated learning. However, in the face of the rapid development of globalization and informatization, the English teaching in secondary schools in Ulanqab City needs innovative models. The traditional model focuses too much on imparting knowledge and neglects the cultivation of individual differences and active learning abilities among students. Introducing AI technology can not only improve teaching quality and learning effectiveness, but also break geographical limitations and promote educational equity. In addition, this research is of great significance for promoting education reform, enhancing students' comprehensive quality, and promoting teachers' professional development, which helps to form teaching models that meet the requirements of the times and have local characteristics.

4. Concept for the Transformation of Junior High School English Teaching Mode in the AI Era

In the era of AI, the teaching mode of junior high school English is facing changes. The four element new curriculum model proposed by Professor Wen Qiufang integrates artificial intelligence (AI) into the traditional three elements of teachers, students, and textbooks, making AI an enhancer and connector, and strengthening the interaction between the three (Wen Qiufang, 2024)[6]. This model reduces the burden on teachers through AI technology, facilitates personalized teaching and professional development, while improving students' learning efficiency and overall quality, and optimizing textbook content. Introducing AI can optimize traditional teaching methods, enhance teaching flexibility and efficiency, and promote the overall transformation of the education ecosystem. Therefore, middle school English teaching in Ulanqab City needs to actively explore innovative models to cope with the opportunities and challenges brought by AI. The following are several learning modes suitable for middle schools in Ulanqab City driven by AI.

4.1 Personalized learning mode empowered by AI technology

AI technology has demonstrated five core advantages in foreign language education, driving the development of personalized learning models: collecting learner interest, style, and schedule data through questionnaire surveys and speech analysis (Ruiz et al., 2023)[7], AI generates personalized learning plans that cover goals, content, and methods; Dynamically adjust learning routes based on learning outcomes and feedback, optimize teaching methods and content difficulty, and ensure efficient learning; Analyze learner behavior and speech data to establish portraits (Mustapha et al., 2023)[8], accurately recommend learning content, and enhance initiative; Using visualization tools to display learning progress, vocabulary mastery, and grammar errors, helping learners to intuitively understand their learning status; Generate personalized reports containing language proficiency development, issues, and improvement suggestions to help learners grasp their own learning status. This personalized learning model of "one person, one policy" greatly stimulates students' learning potential and enthusiasm, significantly improving learning efficiency. For example, the scallop reading app customizes learning plans based on students' goals and levels, and updates files with learning progress, providing personalized learning experiences for middle school students in Ulanqab City.

4.2 Deep Fusion Learning Mode of Blended and Flipped Classroom

This model combines traditional classroom face-to-face teaching with AI enabled online learning platforms to achieve seamless integration between online and offline. Students receive face-to-face guidance from teachers in the classroom, feel the humanistic care of traditional teaching, and use online platforms for self-directed learning and knowledge consolidation after class. For example, Xiaoyuan Search provides accurate answers through image recognition technology, and is equipped

with expert lecture videos and interactive Q&A functions to enhance learning interactivity. The Xiaoyuan Learning and Training Machine integrates AI models with ink screen tablets to generate personalized learning paths, provide intelligent correction and other functions, and form a complete learning loop. Flipped classroom places the autonomy of learning in the hands of students, allowing them to preview new knowledge before class, solve doubts and deepen understanding in class, and the teacher acts as a guide to promote cooperative learning. This model enhances students' self-learning ability and collaborative spirit, promotes interactivity and efficiency in teaching, and lays the foundation for cultivating innovative talents.

4.3 A teaching model of harmonious coexistence between self-directed learning and cooperative learning

Driven by AI technology, the combination of self-directed learning and collaborative learning has become a new trend in the field of education. Through online learning platforms, students can engage in self-directed learning based on their personal interests and pace. The platform also provides a space for communication, supporting students to discuss and collaborate across time and space, and jointly solve learning difficulties. Taking the "Onion Academy APP" as an example, AI technology provides personalized learning paths for students and promotes collaborative learning among students. Virtual teaching assistants and intelligent mentors interact to answer questions and provide advice, enhancing students' cooperation awareness and abilities. This model not only enhances students' self-learning ability, but also cultivates their teamwork ability and promotes their common growth.

4.4 A bidirectional collaborative teaching model between artificial intelligence and teachers

The complementary advantages of AI and teachers jointly enhance teaching effectiveness (Ji et al., 2023)[9]. AI, as an English learning tool, provides personalized assistance and customized learning resources and paths based on students' learning styles, speeds, and interests. However, AI cannot replace the core role of teachers in classroom teaching, cannot determine teaching goals, priorities, and outcomes, and cannot accomplish the fundamental task of cultivating students' moral character (Wen Qiufang, 2024)[6].

Teachers play an irreplaceable role in cultivating students' critical thinking, cultural understanding, and advanced language skills. Teachers collaborate with AI to build a collaborative teaching model by guiding classroom discussions, stimulating students' thinking, cultivating learning interest, and maintaining a classroom interactive atmosphere. AI is responsible for personalized assistance, while teachers focus on classroom teaching and cultural education, combining the two to maximize teaching effectiveness. For example, AI databases can perform practice sessions covering listening, speaking, reading, writing skills, vocabulary, grammar, and other aspects. AI technology can evaluate learners' language abilities, identify weak areas, and indicate directions for improvement. Taking vocabulary practice as an example, the AI system can repeatedly display unfamiliar words until students memorize them. With the help of speech recognition technology, students can practice pronunciation through tools such as Dao and fluent English speaking, but these tools have limitations in terms of logic and creative dialogue. In addition, AI technology can automatically correct spelling and grammar errors, provide translation services, explain complex sentences, and even provide images for unfamiliar words, providing learners with comprehensive learning support.

technology is promoting a comprehensive change in the middle school English teaching model, and it also brings many challenges to teachers. First, teachers face difficulties in using new technologies to improve teaching methods and need more technical support and professional training (An Xin et al., 2023)[10]. Although AI technology can help teachers reduce the burden and increase efficiency in English writing and listening and speaking teaching, some teachers have reported that learning and using AI technology has increased the burden, such as long time to learn technology and heavy teaching tasks. Therefore, it is necessary to find a balance between reducing burdens and increasing efficiency.

Secondly, although AI can provide personalized learning resources and feedback, its role in emotional support, moral guidance, and interpersonal communication is limited. Teachers need to combine the advantages of AI with their own teaching strengths to achieve optimal teaching outcomes. In addition, teachers need to transition from traditional knowledge transmitters to technology guides and learning partners, working together with AI to provide students with rich and personalized learning experiences.

Teachers also need to educate students on the importance of data privacy and teach them how to set up and manage account permissions to avoid the risk of data breaches. At the same time, teachers need to guide students to recognize the existence of algorithmic biases and cultivate them to critically evaluate and question the output of AI systems. To address these challenges, teachers need to continuously improve their technical capabilities, teaching level and digital literacy, while focusing on ethical and ethical issues to ensure that AI technology has a positive impact on teaching.

5. Conclusion

AI has created a novel learning environment, abandoned the traditional classroom teaching model, and effectively promoted students' independent learning and the improvement of higher-level thinking abilities. Despite the challenges in implementation, the key role of AI in educational innovation cannot be ignored. Only by guiding students to make rational use of these tools and creating a suitable educational atmosphere can we scientifically and efficiently cultivate talents that meet the needs of future society.

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References

[1] Zhao Shiju. ChatGPT's Challenges to Human Language Ability and Language Education, and Corresponding Strategies [J]. Yangtze River Academic, 2023, (04): 114-118.

[2] Wu Dan. Artificial Intelligence Promotes Innovation in Education [N]. People's Daily, 2022-12-22(5).

[3] Mao Wenwei, Xie Dong, Lang Hanxiao. ChatGPT Enabling Japanese Language Teaching in the New Era: Scenarios, Issues, and Countermeasures [J]. Foreign Language Research, 2023, (06): 25-33.

[4] Hu Zhuanglin. ChatGPT on Foreign Language Teaching [J]. Chinese Foreign Languages, 2023, 20(03): 1+12-15.

[5] Song Fei, Guo Jiahui, Qu Chang. The Application System and Practice of ChatGPT in Teaching Chinese as a Foreign Language [J]. Journal of Beijing International Studies University, 2023, (6): 110-128.

[6] Wen Qiufang. English Education in the Era of Artificial Intelligence: An Analysis of the Four-Element New Curriculum Model [J]. Chinese Foreign Languages, 2024, 21(03): 1+11-18. DOI: 10.13564/j.cnki.issn.1672-9382.2024.03.001.

[7] Ruiz Simón, Patrick Rebuschat, and Detmar Meurers. Supporting Individualized Practice through Intelligent CALL. [A). In Simón Ruiz,Patrick Rebuschat, Detmar Meurers (eds.) Practice and Au-tomatization in Second Language Research [C]. London: Routledge, 2023:119-143.

[8] Mustapha, Riad, et al. Towards an Adaptive E-learning System Based on Deep Learner Profile,Machine Learning Approach,and Reinforcement Learning [J]. International Journal of Advanced Computer Science and Applications, 2023, 14 (05): 265-274.

[9] Ji, Hyangeun, Insook Han, and Yujung Ko. A Systematic Review of Conversational Al in Lan-guage Education: Focusing on the Collaboration with Human Teachers [J].Journal of Research on Technology in Education, 2023, 55 (01): 48-63.

[10] An Xin, Shen Xi, Zhou Ying, et al. The Integrated Development of Artificial Intelligence and Teaching from the Perspective of English Teachers: Opportunities, Challenges, and Paths for Improvement [J]. Modern Educational Technology, 2023, 33(02): 71-79.

Author Bio

Shuanqiao Qi, Junfeng Huangfu

Corresponding author: Hong Liang (1974-), Female, Master of Education, Professor, Research direction: Curriculum and teaching theory.