

Investigating AI-powered Public English Language Teaching in Secondary Schools

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[**Abstract**] Based on a study of nearly 1000 research papers on public English lessons in domestic middle schools, indexed by China National Knowledge Infrastructure (CNKI), this paper employs literature review, text analysis, and comparative research methods to reflect on and summarize public English lesson teaching in Chinese middle schools from multiple dimensions. Our findings suggest: Firstly, the teaching content of public English lessons in middle schools is becoming more intelligent and personalized, fully integrating technology, culture, and social issues related to Artificial Intelligence. Secondly, the teaching methods are increasingly interactive and gamified, leveraging AI to drive English learning and enhance classroom engagement and fun. Thirdly, the role of the teacher in public English lessons is transforming to a facilitator, promoter, and collaborator in learning. Fourthly, evaluation methods are becoming more diversified and process-oriented, focusing not only on students' exam scores but also on their learning processes, abilities, and qualities.

[**Key words**] middle school English; public lesson; intelligentization; personalization; teacher role; learning process

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[**DOI**] <https://doi.org/10.62662/kxwxy0208001>

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1 Introduction

Middle school English open classes serve as crucial platforms for teachers to showcase their pedagogical skills, exchange teaching experiences, and enhance their overall teaching capabilities. Traditionally, research on open classes has predominantly focused on teaching philosophies, instructional design, and pedagogical methods. However, with the rapid advancement of Artificial Intelligence (AI), the education sector is experiencing unprecedented opportunities and challenges. Integrating AI technologies into middle school English open classes to achieve intelligent and personalized learning content, interactive and gamified teaching methods, a transformed role for teachers, and diversified and process-oriented evaluation approaches has become a significant topic in the current reform of middle school English open classes.

Building upon these evolving trends, and considering the requirements of the former director of the Department of Education of the Ministry of Education, Wang Wenzhan, regarding questioning all students, as well as the related research of scholars such as Fu Jinglin (2012), Dai Qibing (2016), Zhao Jin (2018), Wang Xueying (2014), Feng Guangjun (2012), Wang Yan (2013), Wei Miao (2023), Gao Xiaofei (2023), Ju Qingling (2014), and Liu Jin (2022), this paper delves into the innovative transformations in teaching content, teaching methods, teacher roles, and evaluation approaches in AI-empowered middle school English open classes. The aim is to provide theoretical references and practical guidance for the reform of these classes.

2 Intelligent and personalized teaching content in AI-empowered middle school English open classes

Traditional English teaching models are often confined to textbook explanations and memorization of

grammatical rules, disconnected from the vibrant reality of daily life, and struggling to ignite students' enthusiasm. Facing the rapid pace of technological advancement and social change, how to innovate English teaching content to make it more contemporary, engaging, and practical has become a crucial issue for every English educator. The rise and widespread application of Artificial Intelligence (AI) technology offer new approaches and opportunities for addressing this challenge. AI technology can effectively assist middle school English open classes in achieving intelligent and personalized teaching content, organically integrating AI-related technology, culture, and social issues into the classroom, thereby significantly improving students' learning motivation and effectiveness.

AI technology is penetrating every corner of our lives at an unprecedented speed, from the convenience and comfort of smart homes to the intelligent safety of autonomous driving, from the precise and efficient medical diagnosis to the intelligent decision-making in financial analysis. However, many middle school students' current understanding of AI remains at the conceptual level, lacking in-depth comprehension and reflection. As an important form of teaching demonstration and exchange, middle school English open classes shoulder the crucial responsibility of guiding students to understand AI, recognize AI, think about AI, and ultimately adapt to the AI era.

Specifically, introducing AI issues into middle school English open classes has the following significant implications:

Stimulate learning interest and ignite the desire for knowledge: Traditional English teaching content often appears dry and uninteresting, making it difficult to resonate with students. AI issues, on the other hand, are closely related to current trends and students' daily lives, which can stimulate students' curiosity and spirit of exploration, prompting them to participate more actively in the learning process. For example, guiding students to explore the applications of AI in gaming and entertainment can spark their interest in AI technology itself.

Expand knowledge horizons and enhance cross-cultural communication skills: AI technology is global in nature, with different countries and regions focusing on different aspects of AI development. Understanding the current state and trends of AI can effectively expand students' knowledge horizons and help them recognize the application of AI technology in different cultural contexts, thereby enhancing cross-cultural communication skills. For example, comparing and analyzing the differences between China and the United States in AI development can cultivate students' international perspective.

Cultivate critical thinking and enhance innovation capabilities: The development of AI technology brings many opportunities, but also poses numerous challenges. Discussing and debating AI issues can guide students to think about the ethical and social impact of AI, cultivate their critical thinking and innovation capabilities, enable them to think independently, judge rationally, and become future talents with innovative spirit. For example, organizing students to debate AI ethical issues can improve their critical thinking skills.

Meet personalized needs and achieve individualized instruction: Each student has different learning foundations, learning styles, and learning interests. AI technology can provide personalized learning content and methods based on students' individual differences, thereby meeting the needs of different students and achieving individualized instruction. For example, the AI platform can intelligently recommend reading materials of different difficulty levels based on students' vocabulary and grammar mastery.

3 Interactive and gamified teaching methods in AI-empowered middle school English open classes

Traditional English teaching often relies on one-way lectures by teachers, with students passively receiving knowledge. This lack of interaction and engagement can lead to low learning efficiency. To address this issue, Artificial Intelligence (AI) technology is being widely applied in the field of English education, aiming to enhance the interactivity and gamification of teaching methods, stimulate students' learning interest, and improve classroom participation and learning outcomes.

AI technology is being applied in English teaching in the following key areas:

Firstly, AI-driven interactive teaching tools provide personalized learning support for students. For example, AI voice assistants can provide real-time voice feedback and corrections, helping students improve their oral fluency and accuracy. Students can overcome barriers to oral expression and boost confidence through conversation practice with AI voice assistants. AI chatbots focus on grammar and vocabulary practice, providing personalized guidance and suggestions to help students solidify their basic knowledge and improve their language proficiency. AI writing assistants can provide real-time grammar and spelling checks and offer suggestions for improvement, helping students improve their writing skills and expressive abilities. These interactive tools not only increase students' learning efficiency but, more importantly, enhance their learning enjoyment and spark their learning enthusiasm, making the learning process less tedious.

Secondly, AI-driven language learning games integrate English knowledge into various interesting game scenarios, such as role-playing games, puzzle games, and strategy games. In the process of playing games, students unconsciously learn English vocabulary, grammar, and expressions, combining education with entertainment, truly achieving "learning through play". This gamified learning approach can effectively stimulate students' learning interest, improve their learning motivation, and make them more willing to actively participate in learning.

In addition, AI-driven online competition platforms can organize various English competition activities, such as vocabulary competitions, grammar competitions, and oral competitions. Students can improve their English proficiency and competitive awareness through participation in competitions. They can also communicate and learn with other students, progressing together. This competition model can stimulate students' learning enthusiasm, enhance their teamwork awareness, and cultivate their competitive spirit and courage to take on challenges.

Finally, AI-driven virtual reality (VR) learning environments provide students with an immersive English learning experience. Students can practice speaking, role-play, and simulate scenarios in VR environments, thereby improving their English application skills. This immersive learning experience can enhance students' learning engagement and make them more invested in learning, thereby improving learning outcomes.

In summary, AI technology effectively enhances the interactivity and gamification of English teaching by providing interactive teaching tools, language learning games, online competition platforms, and virtual reality learning environments. These innovative teaching methods can stimulate students' learning interest, improve their learning motivation, and help them better master English knowledge and skills. As emphasized by Gao Xiaofei (2023), the core of student-centered learning is student initiative. Only when students actively participate in classroom learning can they truly exercise their subjectivity and achieve efficient learning. The application of AI technology is precisely intended to stimulate student initiative and empower them to become masters of their own learning.

4 Transformation of teacher roles in AI-empowered middle school English open classes

In traditional English teaching, the teacher's role is that of a knowledge provider and classroom manager. However, in an AI-empowered environment, the teacher's role needs to transform into a learning facilitator, promoter, and collaborator.

AI technology can provide rich learning resources and personalized learning paths, and teachers need to guide students to utilize these resources, develop their own learning plans, and engage in self-directed learning. For example:

Guide students to choose appropriate learning resources: Teachers can recommend suitable AI learning platforms, online courses, and learning materials based on students' learning foundations and interests.

Help students develop personalized learning plans: Teachers can assist students in developing detailed learning plans, including learning goals, content, time, and methods.

Encourage students to engage in self-directed learning: Teachers can encourage students to use AI tools for self-directed learning, such as oral practice, grammar exercises, and writing practice.

AI technology can provide various interactive learning tools and collaboration platforms, and teachers need to promote the interaction and collaboration among students, making them work together to solve problems and make progress. For example:

Organize group discussions: Teachers can organize students to participate in group discussions, collectively exploring AI-related technologies, culture, and social issues.

Organize project collaborations: Teachers can organize students to collaborate on projects, such as creating AI-related presentations, videos, or websites.

Utilize online collaboration platforms: Teachers can use online collaboration platforms, such as Google Docs, and Microsoft Teams, to promote the communication and collaboration among students.

AI technology is a new field that is constantly evolving, and teachers also need to continuously learn and explore. Teachers can learn AI knowledge, explore AI applications, and make progress together with students. For example:

Attend AI training courses: Teachers can attend AI-related training courses to learn the basic concepts, technologies, and applications of AI.

Explore AI tools together with students: Teachers can explore various AI learning tools with students, such as AI voice assistants, AI chatbots, and AI writing assistants.

Research AI teaching methods together: Teachers can research AI-driven teaching methods together with students, such as interactive teaching, gamified teaching, and personalized teaching.

Through the transformation of teacher roles, middle school English open classes can better leverage the advantages of AI technology, improve students' learning outcomes, and cultivate students' innovation abilities.

5 AI-powered diversified and process-oriented approach to evaluating middle school English open classes

Traditional English evaluation methods often prioritize exam scores, overlooking students' learning process, abilities, and overall development. In contrast, with the support of AI, evaluation methods should be diversified and process-oriented. The focus should shift from merely assessing exam scores to emphasizing students' learning journey, skills, and holistic competencies.

AI technology can offer various assessment tools to comprehensively evaluate students' diverse capabilities. For example:

Language Proficiency Assessment: AI speech recognition technology can assess students' fluency and accuracy in spoken English. AI natural language processing technology can evaluate students' reading comprehension and writing skills.

Cognitive Ability Assessment: AI machine learning technology can assess students' critical thinking and problem-solving abilities.

Social-emotional Ability Assessment: AI sentiment analysis technology can assess students' learning attitudes and teamwork skills.

Through diversified evaluation, middle school English open classes can gain a more comprehensive understanding of students' learning progress, providing more personalized guidance to them.

AI technology can record students' learning processes and provide real-time feedback and assessment. Teachers can leverage insights from students' learning processes to understand their learning habits and approaches, enabling timely adjustments to teaching strategies.

Recording Student Learning Behaviors: AI platforms can record students' study time, learning content, and academic performance.

Providing Real-time Feedback: AI platforms can provide real-time feedback and suggestions based on students' learning progress.

Evaluating Student Progress: AI platforms can evaluate students' academic progress based on their performance.

Through process-oriented evaluation, middle school English open classes can gain a deeper understanding of students' learning situations, identify problems promptly, and implement appropriate measures, thereby enhancing students' learning outcomes. As Dai Qibing (2016) points out, teachers should conduct diverse teaching evaluations to truly cater to everyone.

6 Conclusion

Artificial intelligence opens up broad prospects for innovation in middle school English open classes. AI empowerment can not only make teaching content more intelligent and personalized, incorporating cutting-edge contemporary issues, but also stimulate students' interest and participation through interactive and gamified teaching methods. At the same time, AI promotes the transformation of teachers' roles, becoming guides and collaborators in students' learning. More importantly, evaluation methods will be more diversified, focusing on students' learning processes, abilities, and overall quality, rather than just exam scores.

Of course, the integration of AI is not always smooth, and there are challenges in terms of technology, teachers and ethics. However, we have reason to believe that with the increasing maturity and improvement of AI technology, these challenges will eventually be overcome. Middle school English open classes empowered by AI will surely break through the limitations of traditional models, create a higher-quality and more dynamic learning experience for students, and help them grow into future talents with global vision and innovative spirit.

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