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Research on the English Writing Teaching Model in the AI Era

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Abstract

With the rapid development of artificial intelligence (AI) technology, the education sector, particularly language teaching, is undergoing unprecedented changes. English writing, as an essential component of language learning, is increasingly struggling to meet the demands for personalization and efficiency in traditional teaching models. This paper aims to explore the innovation and development of English writing teaching models in the AI era, analyzing the application of AI technology in English writing and its impact on teaching effectiveness. First, the paper reviews the development of AI technology and examines its potential value in English writing teaching, especially in the use of intelligent writing assistance tools and personalized learning paths. Next, it analyzes the challenges facing English writing teaching in the AI era, including the imbalance in technology dissemination and the transformation of teachers' roles. Finally, based on future development trends, the paper proposes strategies and recommendations for promoting the deep integration of AI technology with English writing teaching. This research aims to provide theoretical support for the innovation of English writing teaching models and offer practical references for educational policymakers and practitioners.

Keywords

Artificial Intelligence, English Writing, Teaching Model, Personalized Learning

1. Introduction

With the rapid development of artificial intelligence (AI) technology, the global education sector is undergoing profound transformation. In particular, AI's introduction into language learning and writing instruction has posed both significant challenges and opportunities to traditional teaching methods. English writing, as a critical part of language learning, has long been a central focus of developing students' language abilities. However, traditional English writing teaching models often rely on manual grading by teachers, in-class feedback, and standardized writing exercises, which are inefficient when dealing with large student groups and fail to effectively meet the demands of personalized learning. With the application of AI technology, more intelligent tools and automation systems are being introduced into English writing instruction, offering real-time feedback, grammar checks, vocabulary

recommendations, and other functions, which help improve writing skills and shorten the learning curve. Despite the vast potential of AI in English writing instruction, the current teaching models and technology applications still face several challenges. First, the widespread adoption of AI technology faces technical barriers, especially in areas with uneven educational resources, where the implementation of AI is significantly more difficult. Second, with the growing use of AI tutoring systems, the role of teachers and teaching methods are also undergoing a transformation. Traditional teacher-centered teaching is gradually shifting toward a more collaborative and guiding approach, which demands higher levels of professional competence and instructional design from teachers. Therefore, exploring the innovation, application, and challenges of English writing teaching models in the AI era has become a key issue in current English education research. This paper aims to study the transformation and development of English writing teaching models in the AI era, exploring the application of AI technology in English writing instruction, analyzing its impact on students' learning efficiency and teachers' teaching methods, and proposing strategies and recommendations to address the challenges. By systematically studying the integration of AI technology with English writing teaching, this paper hopes to provide valuable theoretical support and practical guidance for educators, policymakers, and technology developers, further promoting the deep integration of AI technology in the education sector (Chen, 2022).

2. Overview of AI Technology and Its Relationship with Writing Instruction

2.1 Overview of AI Technology

Artificial Intelligence (AI) refers to the simulation of human intelligence, enabling computers to perform tasks that typically require human cognition, such as perception, reasoning, learning, and decision-making. In recent years, with the improvement of computational power and advances in big data technology, AI applications have developed rapidly across various fields. AI technology primarily includes subfields such as Natural Language Processing (NLP), machine learning, deep learning, and computer vision, with NLP playing a particularly important role in language teaching and writing training. Natural Language Processing (NLP) is the core technology within AI used to understand, analyze, and generate natural language. It enables computers to "read" text, comprehend semantics, perform grammatical analysis, and generate text that adheres to language rules (Gayed et al., 2022). In English writing instruction, NLP technology is widely used in areas such as automated grammar checks, vocabulary suggestions, and article structure optimization. By intelligently analyzing students' writing, NLP provides real-time error correction and improvement suggestions. Machine learning and deep learning are key technologies enabling AI to learn and continuously optimize itself. With large volumes of language data, AI systems can identify common error patterns in writing and automatically adjust writing guidance strategies to offer personalized writing advice. These technologies can evolve and improve over time, enhancing the precision and efficiency of writing assistance. Additionally, computer vision technology is beginning to play a role in writing instruction, especially in writing exercises that

require image support or visual feedback. AI can assist students by using image recognition and content analysis to enhance the expression and creativity of their writing. The combination of these technologies not only drives the transformation of writing instruction from traditional classroom modes to personalized and intelligent approaches but also provides students with a more efficient and interactive learning experience. In summary, the rapid development of AI technology has brought revolutionary changes to English writing instruction. It not only enhances the efficiency and quality of teaching but also provides robust technological support for personalized learning, immediate feedback, and precise assessment (Hawanti & Khudoiberdieva, 2023).

2.2 The Relationship Between AI and English Writing Instruction

The introduction of AI technology provides a new perspective and methodology for English writing instruction, leading to significant changes in traditional teaching models. First, AI can offer personalized writing assistance to students through intelligent tools, a feature especially beneficial for students of varying levels and needs. In traditional classrooms, teachers often struggle to provide individualized feedback to every student within a limited time frame. However, AI systems, through Natural Language Processing and machine learning technologies, can provide real-time suggestions for grammar corrections, vocabulary replacement, sentence structure optimization, and more during the writing process. Students can immediately understand their writing issues and make improvements. This instant feedback not only improves writing efficiency but also enhances students' ability to learn independently (Wu, 2022). Second, AI technology enables the automated assessment of student writing, alleviating the burden on teachers for grading assignments. In traditional English writing instruction, teachers need to spend a considerable amount of time grading essays and providing feedback, a process that is both tedious and often influenced by subjective judgment. AI automatic grading systems, on the other hand, can objectively score students' writing according to predefined criteria and offer specific improvement suggestions. For instance, AI can evaluate writing from multiple dimensions such as grammar, structure, and fluency, helping students improve their writing skills from different perspectives. As deep learning technology continues to evolve, AI's grading accuracy has steadily increased, with the ability to even identify logical errors and unclear expressions in student writing (Marzuki, et al., 2023).

3. The Application Models of AI in English Writing Instruction

3.1 Intelligent Writing Assistance Tools

Intelligent writing assistance tools are one of the most common and mature applications of AI technology in English writing instruction. These tools utilize Natural Language Processing (NLP) technology and machine learning algorithms to provide students with automated grammar checks, vocabulary recommendations, sentence structure optimization, and other functions, helping students improve the accuracy and fluency of their language expression during the writing process. Firstly, intelligent writing assistance tools can effectively reduce basic errors that students make while writing

through real-time grammar and spelling checks. For example, these tools can automatically identify and highlight grammatical mistakes, spelling errors, and improper punctuation usage, offering suggestions for corrections. With this instant feedback, students can continuously improve their language expression during the writing process and avoid accumulating mistakes. Compared to traditional manual grading methods, intelligent tools provide a more efficient and systematic error correction service, helping students minimize elementary mistakes and thereby improving their overall writing quality (Intiser et al., 2023). Secondly, intelligent writing assistance tools also have features for vocabulary recommendations and sentence structure optimization. These tools can analyze students' vocabulary usage, identify repetitive, overly simple, or inaccurate words, and recommend more diverse and appropriate alternatives. Additionally, the tools can offer suggestions for optimizing sentence structure, such as adjusting sentence length, improving word order, and avoiding overly complex or lengthy sentence structures to enhance readability and clarity. Through this intelligent writing guidance, students can automatically improve the quality and style of their writing without relying on manual intervention. Moreover, some advanced intelligent writing assistance tools also feature sentiment analysis and article structure optimization functions. These tools can assess the emotional tone and mood of students' writing, helping students adjust their expression based on the purpose and audience of their article (Song, & Song, 2023). For example, the tool may analyze whether the tone of the article is too formal or too casual, and provide corresponding suggestions for adjustment to ensure consistency with the writing goal. The tools can also help students optimize the article's structure by suggesting proper paragraph divisions, guiding students on how to correctly order arguments and evidence, and so on. These features help students systematically organize their writing ideas, improving the logic and coherence of their essays. Intelligent writing assistance tools not only play a positive role in students' personalized writing training but also support teachers' instruction. Teachers can design more targeted teaching plans based on the issues and areas for improvement that students encounter while using these tools. For example, teachers can use feedback data from intelligent tools to identify students' weak areas in grammar, vocabulary, or article structure, and provide focused teaching accordingly. Additionally, these tools can offer quantitative analysis data on students' writing progress, helping teachers better assess their students' writing levels and learning outcomes. In summary, intelligent writing assistance tools have enhanced the efficiency and precision of writing instruction, while providing students with a more independent and personalized learning platform. With the help of these tools, students can continuously improve their writing skills in practice, gradually enhancing their language expression ability. As technology continues to advance, intelligent writing assistance tools will play an increasingly important role in English writing instruction, driving further innovation and development of teaching models (Harunasari, 2023).

3.2 Personalized Writing Learning and Automatic Assessment

Personalized writing learning and automatic assessment are another important area of AI application in English writing instruction. This model uses AI systems' self-learning capabilities and big data analysis

to customize personalized writing tutoring plans based on each student's unique learning progress, writing style, and needs. At the same time, the automatic assessment system provides instant feedback through comprehensive analysis of students' writing content, helping teachers assess students' writing proficiency more efficiently, thereby improving teaching effectiveness and the targeting of student learning. First, personalized writing learning, based on AI technology, can deeply analyze students' writing performance to identify strengths and weaknesses in areas such as grammar, vocabulary, and logical structure. AI systems can use students' historical writing data to identify common error patterns or unique writing habits, and provide personalized learning suggestions accordingly. For example, if a student frequently makes mistakes with verb tenses, the AI system can automatically alert them and offer relevant learning resources, such as grammar rules, example sentences, and exercises, to help the student improve in that area (Harunasari, 2023). This personalized learning approach allows students to get more practice and guidance in their weak points, accelerating their writing improvement. Moreover, personalized writing learning goes beyond error correction. It can also provide customized learning tasks based on students' writing progress and interests. Through intelligent recommendations from the AI system, students can receive tasks that match their current level, ranging from basic grammar corrections to advanced article structure optimization, gradually improving their writing skills. These targeted learning tasks help students challenge themselves without overwhelming them with tasks that are either too simple or too complex, maintaining their interest and motivation. Complementing personalized learning is the AI-driven automatic assessment system. Traditional English writing assessments often rely on teachers manually grading papers, a process that is both time-consuming and subject to subjective bias. In contrast, the automatic assessment system, by setting a series of standardized evaluation criteria, can comprehensively analyze students' writing in a short time and provide specific scores and improvement suggestions. For example, the AI system can score an essay based on grammar accuracy, vocabulary use, sentence structure, coherence, and logical consistency, offering feedback accordingly. This automatic assessment not only saves teachers time spent grading assignments but also provides students with instant evaluation feedback, helping them quickly identify problems in their writing. Furthermore, the AI automatic assessment system can implement dynamic evaluation. As students' writing abilities improve, the system continually adjusts the evaluation standards and difficulty level, providing feedback that matches the student's current writing proficiency. This ensures that the student's learning process remains within a reasonable challenge range—neither too easy nor so difficult that it causes frustration. Additionally, the automatic assessment system can use data analysis to help teachers monitor students' learning progress, identify difficulties in specific writing areas, and provide teachers with actionable teaching suggestions to adjust their instructional strategies accordingly (Alharbi, 2023).

4. Challenges and opportunities of English Writing Teaching Model in the Era of AI

4.1 Sustainability and Equity Challenges

Despite the significant advantages AI technology offers in English writing instruction, its widespread adoption and in-depth application still face a series of sustainability and equity challenges. These issues largely affect the long-term impact and broader reach of AI technology in the educational field. First, the widespread adoption and maintenance of AI technology require substantial resource investment, particularly in areas such as hardware, data processing, and technology updates. For educational systems, especially in developing countries and regions, the development of technological infrastructure remains a major challenge. While AI writing assistance tools and automatic assessment systems provide convenient teaching methods, these tools often depend on high-performance computing platforms and internet connectivity (Li, 2022). If educational institutions cannot provide stable technical support and equipment updates, students may not have equal access to the writing guidance and personalized learning experiences offered by AI. This technological barrier could lead to unequal distribution of educational resources, causing students in resource-poor regions to miss out on the opportunities that AI technology provides, thus exacerbating educational inequity. Second, the limitations and biases inherent in AI technology itself also affect the fairness of writing instruction. Although AI scoring systems provide objective, standardized assessments in areas such as grammar, syntax, and vocabulary, these systems are typically trained on large datasets that may contain biases. For example, AI systems may score based on the writing patterns of native English speakers, overlooking the unique language expressions of second-language learners. This could lead to unfair evaluations and feedback for non-native speakers when using AI tools for writing, impacting their learning experience and grading outcomes. Particularly in multicultural and multilingual classrooms, the "universality" of AI technology might reduce its adaptability to different student groups, failing to reflect students' diverse language development needs and cultural backgrounds. Moreover, while AI-driven personalized learning can offer students customized content, it may also exacerbate the digital divide. For students who lack sufficient technical support or have not accessed high-quality educational resources, the advantages of personalized learning may not be fully realized. Over-reliance on AI systems might overshadow the traditional teacher's role in guiding students. For students with weaker learning abilities or lower levels of technological acceptance, AI-guided instruction may feel overly simplistic or mechanical, lacking humanized guidance and emotional support. This could lead to dependency or frustration, and even affect the students' confidence in writing. To address these challenges, education policymakers and technology developers need to implement measures to ensure the equity and sustainability of AI in writing instruction. On the one hand, governments and educational institutions can invest more in educational technology infrastructure to ensure that students from various regions and backgrounds have equal access to the teaching resources and learning opportunities offered by AI technology. On the other hand, developers of AI technology need to consider multicultural and linguistic backgrounds when designing and training AI systems to avoid

technological biases that could negatively affect learners. Additionally, the application of AI technology should complement the traditional role of teachers, who still need to play a significant guiding and supporting role in personalized learning, ensuring that students experience comprehensive growth with the assistance of technology. Overall, while AI technology presents tremendous potential and opportunities for English writing instruction, its widespread adoption and application must be approached with careful consideration of these equity and sustainability challenges.

4.2 Transformation of Teacher Roles and Innovation in Teaching Methods

With the rapid development of AI technology and its widespread application in English writing instruction, the roles of teachers and teaching methods are undergoing unprecedented changes. This transformation not only impacts teachers' daily tasks but also demands that they possess higher technical literacy and innovative capabilities to adapt to the evolving teaching environment and models. First, the introduction of AI technology shifts the role of teachers from being traditional "knowledge transmitters" to "learning guides" and "learning partners." In traditional teaching models, teachers are often the central figures in the classroom, responsible for explaining knowledge, correcting student errors, grading assignments, and providing feedback. However, with the support of AI technology, many tedious tasks, such as grammar checking, article structure analysis, and instant feedback, can be handled by intelligent writing tools and automated evaluation systems. This allows teachers to focus more on classroom interaction, developing critical thinking skills, and providing in-depth guidance on writing techniques. For example, teachers can analyze the data feedback from AI tools to monitor each student's progress and challenges in writing, develop personalized learning plans, and provide targeted classroom guidance based on students' actual needs. Moreover, the shift in teachers' roles in the AI era extends to their transformation from mere knowledge conveyors to designers and organizers of the learning process. In an AI-assisted learning environment, teachers are no longer the sole source of knowledge but play a more significant role in planning and guiding the learning process. Teachers need to design and organize flexible, diverse learning activities that enable students to learn independently, collaborate, and engage in creative writing with the help of AI. For instance, teachers can guide students to use AI writing tools for collaborative writing, improving their writing skills through real-time feedback and revisions. Additionally, teachers can organize discussions and reflections, helping students develop critical thinking while using AI tools, preventing them from over-relying on technology at the expense of the thinking and creative aspects of writing. Innovation in teaching methods is another important aspect of AI technology application. AI has not only transformed the role of teachers but has also driven deep changes in classroom teaching models. Traditional writing instruction often relies on teachers' in-class explanations and assignment grading, whereas in the AI era, teachers can use intelligent writing tools, automated evaluation systems, and other technological methods to create more personalized and interactive teaching models. For example, in a flipped classroom model, teachers can provide writing tasks and learning resources in advance, allowing students to use AI tools for independent learning and practice outside of class. In the classroom,

teachers can analyze students' learning data on AI platforms and provide targeted explanations and in-depth guidance on writing techniques. This approach not only enhances students' autonomy in learning but also improves the interactivity and personalization of teaching. Furthermore, innovation in teaching methods in the AI era is also reflected in the ways of learning assessment. Traditional writing assessment methods mainly rely on teachers' subjective judgment, which may be influenced by inconsistent grading standards and limited grading time. AI's automated evaluation systems, however, can provide more objective and comprehensive assessments, covering not only grammar, vocabulary, and structure but also evaluating the logic, coherence, and depth of expression in an essay. Teachers can use AI evaluation results to make more targeted teaching adjustments, providing students with more precise and specific feedback, thereby helping them improve their writing abilities more rapidly. In summary, the widespread application of AI technology has led to profound changes in both the roles of teachers and teaching methods. Teachers are no longer traditional "knowledge transmitters" but have become guides, collaborators, and designers of the learning process. Through innovative teaching methods and flexible learning models, teachers can better utilize AI technology to enhance teaching effectiveness while fostering students' critical thinking and creative writing skills. In this transformative process, teachers must continuously improve their technical literacy and actively explore how to integrate AI with traditional teaching models to meet the ever-changing educational demands and challenges.

5. Conclusion

The application of AI technology in English writing instruction has brought about significant changes in teaching models. With the help of intelligent writing tools, personalized learning, and automated evaluation systems, students can receive real-time feedback and customized tutoring, thereby improving their writing skills. Although AI technology has demonstrated immense potential in enhancing teaching efficiency and personalized learning, challenges remain, particularly concerning the uneven distribution of technological resources and AI biases. At the same time, the roles of teachers and teaching methods are also evolving, shifting from traditional knowledge transmitters to learning guides and process designers. In the future, with the continuous development and improvement of AI technology, English writing instruction will become even more intelligent and personalized, driving educational equity and improving the quality of writing instruction.

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