

The Intelligent Writing Revolution: The Transformation of AI Writing Tools in College English Writing Teaching in the Past Five Years

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Abstract: This paper systematically reviews the influence and development of artificial intelligence (AI) in university English writing teaching over the past five years. The research focuses on two aspects: one is the functional transformation of AI writing tools from vocabulary and grammar revision and review to article construction and content generation, and the other is that the role of AI comprehensive development zone in teaching is no longer limited to 'auxiliary tools', but also as a helper in the writing process and teaching process. However, the process of AI participating in university English writing teaching is challenging and there are problems such as the deviation of students' writing ability focus, the suppression of students' individuality and creativity, and the increase in students' cognitive load. The solutions to these problems require greater attention to teachers' guiding ability in the teaching process. The guiding role of teachers in helping students correctly understand and use AI tools in the teaching process, the joint construction of a reasonable Student-AI-Teacher Teaching System by educators and learners, and the continuous conception of AI's future teaching applications.

1 Introduction

Over the past five years, the development of Natural Language Processing Technology and Deep Learning has enabled artificial intelligence writing tools, such as Automated Writing Evaluation(AWE), to achieve the function of automatic grading and suggestions in English teaching, helping students recognize and correct grammar and vocabulary errors in their articles, and improving students' writing skills. With the advent of ChatGPT in 2023, Generative Artificial Intelligence (GAI) has shown great potential in the education field. AI writing tools are no longer limited to the correction and suggestions of grammar and vocabulary in articles, and a series of Large Language Models (LLMs) (such as ChatGPT) can communicate with users and generate complete texts. The development of artificial intelligence has led to what changes in the functions of AI in university English writing teaching, and at the same time, what problems have arisen? In the era of AI, what changes

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should teachers make in the teaching of college English writing, and how can they better play the role of a guide?

2 Research background

AI writing tools are under constant development. Lin J. divides the development of AI writing tools into three stages: in the early stage, the auxiliary AI writing tools were mainly used to detect spelling errors and make simple sentence corrections. Due to the immature technology, they could not provide effective assistance in other aspects of university English writing; In (2018-2022), exploration of GAI in the field of education initiated the diversified development of AI writing tools in college English writing teaching. AI writing tools began to have further development in grading and suggestions; The release of ChatGPT in 2023 represents that AIGC has driven AI writing tools into a stage of comprehensive development. LLMs like ChatGPT can generate complete text through communication and analysis instructions. Not only can instructions such as providing outlines and evidence be completed in a short time. It can even generate text that meets the requirements based on instructions [1]. AI writing tools are in the stage of comprehensive development. In terms of their functions in university English writing teaching, they have shifted from single grammar and vocabulary error correction to process-oriented feedback that involves content structure generation. To a certain extent, this has increased the participation of AI writing tools in university English writing.

3 Diversification of AI writing tools

In the past five years, the development of artificial intelligence in college English writing teaching has gradually shifted from the exploratory stage to the comprehensive stage. The writing process is divided into four basic stages: students in writing after the "planning" (brainstorming, outline), the student's creative process, namely writing, as well as the "feedback" behavior of teachers on students' articles, according to the teacher and students on the feedback structure and content of "revised" [2]. As the users enter the full development phase of AI writing tools, the capabilities of AI writing tools evolve in terms of vertical enhancement of "feedback" and "revision" tasks and horizontal expansion of brainstorming, outline building, and writing generation. The GAI powered AI writing tools provide a better service than earlier AI writing tools in terms of vocabulary and grammar correction and advice. Taking ChatGPT as an example, Rodric Julian Robles conducted a study on students' feedback on four main writing skills, and found that ChatGPT further improved the early AWE (Automatic Writing Evaluation) in correcting vocabulary and grammar, and has the remarkable ability to generate diverse writing frameworks for AI, as well as the ability to help students create articles that meet writing learning goals and have a reasonable structure, deepen their understanding of the structure of the article, and reduce surface errors such as vocabulary and grammar. In addition, the use of ChatGPT can be combined with contextualized teaching, and the context constructed by AI can help students deepen their understanding of narrative writing, such as story background and detail description. Research indicates that narrative writing and process writing have achieved the most stable progress [3]. The real-time feedback provided by ChatGPT is of great significance in university English writing teaching. It not only helps students write high-quality papers and improve their writing skills, but also creates a writing teaching environment that can stimulate students' learning motivation and reduce their cognitive burden. During the interaction with ChatGPT, students also strengthened their English logical thinking through question-and-answer

sessions and improved their ability to express in English and self-confidence [3]. Therefore, the process of students using ChatGPT is also the process of internalizing their writing skills.

4 The role of the AI

The transformation of AI's functions has enabled AI to participate in university English writing teaching beyond merely serving as an auxiliary tool for revision and suggestions, gradually evolving into an important component of the support during the writing process.

Imran, A. A. and his partner support the AI automatic generation function mentioned by Roderick Julian Robillos. Compared to other resource acquisition methods, AI can help students obtain more English writing teaching resources in a shorter time [3,4]. The development of the role of AI in university English writing teaching cannot merely be regarded as a grading system for English writing articles; instead, it can assist students in recognizing their shortcomings through grammar and vocabulary corrections and process support for the article, and serve as a source of expanded writing learning resources [5].

Just as Vygotsky's "zone of proximal development" theory and "scaffold teaching" theory were adopted by Roderick Julian Robillo as the theoretical basis, ("zone of proximal development" refers to the phased development of learners' cognitive ability through social interaction and tool assistance, Scaffolding teaching is a learner-centered teaching model, in which teachers or more capable peers will provide temporary support for learners like scaffolding, helping them to complete the learning tasks that they would not have been able to complete independently. As learners' abilities improve, these supports will gradually be removed, and eventually learners can complete tasks independently and achieve autonomous development. That is to say, the phased development of the "Zone of Proximal Development") [3]. When using artificial intelligence tools to participate in college English teaching, teachers should follow the principle of scaffolding teaching, provide students with personalized scaffolding, and gradually reduce the support of teachers and artificial intelligence tools, so as to realize the development of students' "zone of nearest development". This process requires strengthening the cognitive subject (or learners) of students, avoiding students' excessive reliance on artificial intelligence. Teachers still play a guiding role in the teaching task, and the teaching task is still student-centered, and it is a scaffold structure built by teachers based on the scaffolding teaching [6]. When establishing the participation system of AI writing tools for college English writing teaching, students (namely learners) are always the main body. The development trend of AI writing tools will become the co-builders of students' college English writing teaching. As the assistant of teachers and the partner of students, the relationship between students and AI is no longer a one-way knowledge learning. The destiny of college English writing teaching process is a community of destiny, which helps students to expand the "zone of proximal development", improve students' English writing ability and improve teaching quality.

5 The drawbacks of AI participation in English writing teaching

The process of AI participating in university English writing teaching is characterized by both opportunities and challenges. There are some common issues encountered when using AI writing tools nowadays.

When college students use AI writing tools to participate in university English writing, a shift in focus may occur, whereby the focus of writing ability development is altered. For instance, Xiao Yong and Li Dan pointed out that AWE might cause students to apply fixed templates in English writing, ignoring the individuality and innovation of English writing, weakening their individual expression, and hindering the development of their innovative

thinking. Moreover, it is not conducive to the teaching of innovation in university English writing, and it may also limit students' divergent thinking [7].

Beyond the impact on writing skills, the use of AI tools also introduces practical challenges for students during the writing process. Secondly, there are certain challenges for students when using ChatGPT. Roderick Julian Robillos pointed out that when students use ChatGPT for writing, due to the diverse and complex information sources in the database and the lack of rigorous verification, it is difficult for them to rely on themselves to verify the accuracy and appropriateness of the information, which may interfere with the motivation of college students in writing. However, when verifying generated content, distinguishing the authenticity of information, and integrating complex information, it may increase the cognitive load on students. During the use of ChatGPT, if the command instructions are ambiguous, it may disrupt the coherence and overall quality of the output text [3].

These practical and cognitive challenges are closely linked to a broader and more serious concern: academic integrity. Academic misconduct refers to behaviors that undermine the originality of academic works. Using AI to generate is the most frequent academic misconduct recently [8]. While Črček, J Patekar, through experiments, believe that many college students using ChatGPT have problems with academic integrity and academic fraud [9].

6 Construct a rational student-AI-teacher ecosystem

The traditional English writing teaching ecosystem consists of teachers and students, and the analysis object of the course is the text segments provided by the teacher. It not only has severe time limitations, but it is also often a mechanized and fragmented process, making it difficult to stimulate students' creativity and improve their writing skills [10]. In the information age, teaching tasks are no longer limited to traditional teaching tools. 'Chalk and board' is no longer the symbol of the teacher, but more diverse and intelligent; and in terms of teaching content, a knowledge ocean constructed by network resources has truly been realized. AI provides diverse examples and personalized feedback paths for university English writing teaching tasks [6]. However, AI writing tools are a social and cultural product that mediates between teachers and students. In the teaching ecosystem, more attention should be paid to the role played by teachers in the classroom. AI cannot replace the core role of teachers in English writing teaching [11]. Therefore, in university English writing teaching, the participation of AI follows the cognitive subject of the learner. Students merely rely on AI tools and ignore the importance of teachers, as Roderick Julian Robillos pointed out, whether from the perspective of AI's shortcomings or from the long-term development of students' writing ability, it is not conducive to the cultivation of students' critical thinking, and even has a counterproductive effect on students' cognitive burden [3]. It can be seen that the importance of teachers in university writing teaching tasks is irreplaceable.

Solving the ethical and creative integration of AI in academic environments and using AI tools in academic settings. College students should use AI writing tools within a limited range. In English writing teaching, provide students with process support and article revisions beyond the students' ability range, such as achieving a threshold of AI-generated content in writing teaching tasks. At the same time, students should strengthen their awareness of academic misconduct. Evaluation should not be limited to grammar and vocabulary assessment; it should prioritize evaluating students' critical thinking and problem-solving abilities rather than being repetitive. Teachers should focus on enhancing the understanding of plagiarism, and students should use AI tools within academic norms [8]. And in the weak links of AI assessment, such as emotions and culture, educators still need human intervention and comprehensive assessment [12].

Reflective writing tasks that combine thinking can effectively reduce students' reliance on technology, and are conducive to enhancing students' engagement and creativity. According to the user-centered teaching philosophy, reflective assessment can be incorporated when using ChatGPT to complete writing tasks, which not only promotes students' creative thinking but also aligns with the teaching principle that the focus of the writing task is not on the article itself but on the process. For example, in a university English writing class, evaluating AI-written articles can help students deepen their understanding and use of AI tools, while also enabling them to reflect through the evaluation to improve their writing thinking [13].

Mondal proposed the future of AI education applications, which require reasonable development within a legal guarantee environment, establishing AI regulations and plans, demanding transparency in AI algorithms and data, strict norms and restrictions on academic integrity issues, and ensuring correct user usage through supervision mechanisms and user detection [12]. Beyond addressing the issue of national policy guarantees, university educators need to reasonably construct a student-AI-teacher teaching system, which is a key issue that current university English writing teaching tasks need to consider [14]. Marzuki proposed that society should view the use of AI from a broad perspective, popularize it in various fields, design a teaching ecosystem that suits the teaching tasks, and at the same time, be familiar with the operation and application of AI writing tools [14]. Chen Xi proposed that more diverse AI-generated content (AIGC) educational applications can meet the various needs of university English writing, and AIGC generates learning resources (learning videos, interactive learning games, etc.) based on the interest and specificity of students. Educational applications can not only meet the learning needs of students at different levels but also enhance the accessibility of educational resources on a larger scale, making education more inclusive and flexible [15].

7 Conclusion

This article mainly conducts literature screening based on the CNKI and Google Scholar websites. The references include 10 foreign-language academic papers from Google Scholar and 5 Chinese-language academic papers from CNKI. In summary, over the past five years, the rapid development of AI writing tools has driven profound changes in university English writing teaching tasks. This article focuses on the discussion of the transition of AI writing tools from the development stage to the comprehensive development stage.

The transformation of AI writing tools is manifested in two aspects. On one hand, in terms of function, the functions of AI writing tools are no longer limited to evaluating and modifying teaching outcomes and correcting simple grammar errors, but have a higher degree of participation in students' tasks, providing support in aspects such as outline construction, content generation, and material search in the process of students' English writing. On the other hand, in terms of role, AI writing tools have transformed from a single "auxiliary tool" to a participant in the writing process of students, an assistant in writing teaching, and a provider of learning resources.

However, AI writing tools are a "double-edged sword", with both opportunities and challenges; excessive use of AI writing tools may result in the homogenization and templateization of written articles, which is not conducive to the development of students' creative thinking and the improvement of their writing skills, and also violates the principle of following individuality in writing teaching. As a resource provider, AI writing tools have improved writing efficiency, seemingly reducing students' cognitive load, but the transparency of information sources is not guaranteed, and students actually need to invest in verifying, identifying, and integrating information, resulting in an increase in cognitive load

rather than a reduction. And the issue of academic integrity is a concern for countless people since the release of ChatGPT, and this problem has not been perfectly solved until now.

To address these issues, teachers remain central in AI-assisted university English writing. Guided by the zone of proximal development and scaffolding theory, AI supports student-centered teaching rather than replacing teachers. The AI era raises demands on teachers' roles and instructional quality. A balanced "student–AI–teacher" ecosystem is needed, with clear boundaries for AI use, legal regulation, and diversified evaluation focusing on writing processes, creativity, and critical reflection.

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