

Analysis and Trends of the Role of English Teaching Models Integrating AI Technology in Improving Students' Digital Literacy

Bo Huang

School of Foreign Languages for Business, Southwestern University of Finance and Economics, Chengdu, 611130, China

Abstract: The rapid development of information technology is changing education and the use of artificial intelligence in the teaching of English offers a novel way to systematically improve learners' digital literacy. By creating an intelligent personalized learning environment, this type of teaching allows students to practise higher order skills such as looking for, evaluating information; using digital tools in strategy and using media to critically analyse information, in the context of language learning tasks. While this type of teaching has had obvious benefits in terms individual learning and competence, in practice the implementation is subject to practical barriers such as weak curricular linkage and the digital divide. With the advance of technologies such as generative AI, the combination of artificial intelligence and English teaching is likely to focus on building an intelligent learning ecosystem and will be more concerned with access and ethical use. This is strategically important to drive this type of model to develop interdisciplinary professionals for the digital age. This should include equal access, good privacy, good algorithm and teacher training to ensure that the benefits of this model can be made for all.

Keywords: AI Technology, English Teaching, Teaching Model, Student Digital Literacy, Educational Trends.

1. Introduction

In the era of rapid development of information technology, artificial intelligence is penetrating into all areas of society by a pace and a scale like never seen before, and education is no exception. As a teaching discipline that focuses on communicative competence and intercultural communication, teaching English has great potential to be integrated with technologies of AI. This is not only about the replacement of the instruments used in the classroom. This is a transformation of the philosophies of teaching and learning, instructional paradigms, and learning ecosystems. In this context, developing students digital literacies has become a primary goal of education worldwide. Digital literacy is more than computer operation, it is a set of key competencies that students need to thrive in a digital age, which includes information retrieval, using digital tools efficiently, online security, media and critical literacy [1].

Conventional educational approaches have their own limitations in terms of systematically developing students digital literacies. Teaching English with AI provides a new way to immerse in the development of these skills. The purpose of this research is to systematically study the impact of AI English teaching models on students digital literacy, what their mechanisms are, and the current status and future direction. By studying this topic, we hope to provide theoretical guidance and practical suggestions for English teachers, develop from a language proficiency training to an English literacy teaching with technology, and better prepare students for the demands of future societies. This chapter outlines the context, issues, and framework of the study. It also identifies the gaps in the literature and suggests directions for empirical validation and practical implementation in education worldwide today.

2. Definition of Core Concepts

To investigate the impact of an English teaching approach

which includes the use of artificial intelligence on students' digital literacy, two key terms must be defined. Digital literacy is a constantly evolving concept which goes far beyond just being able to use a computer and the internet [2]. For this research digital literacy is defined as the extensive range of skills people need to learn, work and interact successfully in the digital realm and to make good decisions online. This includes the ability to efficiently and critically access, evaluate and use digital information; the ability to skillfully and creatively use digital tools for communication, collaboration, knowledge creation and problem solving; and the ability to think critically about digital media content, understand its sociocultural impact, and have responsible online behavior and safety awareness. Another core concept is the integration of artificial intelligence technology English teaching model. It is an emerging teaching approach that incorporates artificial intelligence technology, for example natural language processing, speech recognition and voice synthesis, machine learning, intelligent adaptive learning platforms and tutoring systems, into English language teaching. This type of teaching is different from conventional multimedia-assisted teaching. The main characteristics of the new teaching approach are the technological intelligence and adaptability, and the responsive teaching design. It can provide individualized learning paths and customized content recommendation, instant and contextual language practices through human-computer interaction, data analysis and continuous formative assessment of learners. Defining these two concepts provides the basis for the subsequent analysis and teaching implications of the study.

3. Promotion of Students' Digital Literacy by English Teaching Model Integrating AI Technology

As a crucial ability for citizens in the information age, the connotation of digital literacy has expanded from the early

computer operation skills to a series of complex capabilities, including information acquisition and identification, innovative use of digital tools, critical thinking, and social collaboration in digital environments. This chapter will deeply analyze how the English teaching model integrating AI technology systematically cultivates and enhances these core digital literacy skills of students in specific teaching practices.

3.1. Improve Information Acquisition Capabilities

In the aspect of improving information acquisition ability, the intervention of artificial intelligence technology makes the behavior of information acquisition change from passive reception to active and strategic exploration process. In traditional classroom, students' learning materials mainly come from limited resources screened by teachers, and the channels and scope of information acquisition are relatively fixed [3]. In the AI-supported learning environment, students face an almost infinite, dynamically updated digital information resource library. Intelligent learning platforms and tools can help students overcome obstacles of information overload. For example, through natural language processing technology, AI can understand students' query intentions and provide more accurate retrieval results; based on learners' knowledge level and interest preferences, AI system can make personalized content recommendations, and push high-quality and highly relevant learning resources such as original news, academic papers, podcasts, videos, etc. directly to students. This process not only greatly improves the efficiency of information acquisition, but also requires students to develop an efficient information screening and evaluation strategy. Students need to learn how to set effective keywords, how to quickly scan and judge the initial value of information, and how to cross-verify information from different sources to confirm its authenticity and accuracy. This practice of higher-order information processing, repeated in daily learning, makes information literacy no longer an isolated curriculum, but internalized as a natural part of student problem-solving, laying a solid foundation for their ability to adapt to the rapidly evolving information society of the future.

3.2. Strengthen the Application Ability of Digital Tools

At the level of strengthening the ability to apply digital tools, the teaching model integrating AI technology promotes the use of digital tools from isolated skill practice to comprehensive practice of solving complex problems. The model itself integrates a variety of digital tools, such as intelligent speech recognition systems for pronunciation correction and oral fluency training, adaptive learning platforms for customized learning paths, and online collaborative document tools for supporting project-based learning between groups. In order to achieve specific language learning goals, students must be proficient in the operation and effective integration of these tools. For example, in completing a research report on environmental issues, students may need to use AI search engines to collect relevant information on a global scale, use intelligent summary tools to quickly grasp the main points of the literature, use online translation tools to assist in understanding technical terms, and finally write, revise, and typeset the report with team members on a collaborative writing platform. This series of

operations requires students not only to master the functions of individual tools, but also to emphasize the ability to seamlessly switch and cooperate between different tools. This real-world task-driven tool experience fosters students' technical adaptability and flexibility to cope with new software and platforms that may emerge in the future. More importantly, students learn how to strategically select and organize technical resources to meet challenges. This is a metacognition process that transforms technology into their own abilities. It is the highest-level embodiment of tool application in digital literacy.

3.3. Develop Critical Media Thinking

In relation to the development of critical media literacy, the classroom which is shaped by artificial intelligence tools provides learners unique opportunity to engage in critical thinking and judgement. In this digital age, people should not simply consume information, but also evaluate the perspective, agenda and even possible bias of the media messages [4]. Artificial intelligence supported English teaching is particularly well-suited to nurture this skill. Students' interaction with AI themselves provides another context to consider. AI outputs (e.g. correction comments, translation output, and content proposals) are not factually unquestionable truths, but rather a result of the underlying algorithm and training corpus. Learners should be taught how to critically evaluate the content produced by the AI. For instance, when using machine translation, a learner can critically evaluate the translation of a culture-bound phrase and ask the AI to translate it another way, or when using AI-supported writing tools a learner can critically evaluate whether a suggested word or phrase is suitable for the situation and style in question. In other words, being sceptical towards technology is one aspect of critical media literacy and digital citizenship. Teachers can guide students to use AI tools to compare and analyze media coverage of the same event from different cultural backgrounds and ideologies. By contrasting the different perspectives aggregated by AI, students can more intuitively understand the constructiveness of media information, recognizing that any information inevitably has a specific perspective and framework. This training enables students to go beyond superficial language understanding and gain insight into the cultural values and power relations carried by language as a medium, thus developing into responsible digital citizens with international vision and deep insight.

4. Application Status and Trend of English Teaching Mode Integrating AI Technology

4.1. Analysis of Current Application

At present, English teaching practice integrating artificial intelligence technology has gradually moved from concept exploration stage to large-scale application, and its application breadth and depth are expanding day by day, but the overall development is still unbalanced.

In the aspect of personalized learning support, adaptive learning platform and intelligent learning guidance system have been widely used. These systems can accurately diagnose the weak points of their knowledge through the analysis of students' learning behavior data, and dynamically adjust the difficulty and path of learning content, realizing a certain degree of teaching students according to their aptitude

[5]. Secondly, in language skills training, the application of speech recognition and natural language processing technology has become mainstream. Intelligent oral evaluation system can provide instant feedback for students' pronunciation and fluency, AI writing assistant can assist in grammar and word level, which to some extent alleviates the dilemma of insufficient personalized feedback in traditional large class teaching. In terms of teaching content generation and management, AI technology is beginning to show potential. Teachers can use AI tools to quickly generate practice questions, read comprehension materials, and even create simple dialogue scenarios, thus improving teaching preparation efficiency and enriching teaching resources.

However, the current application status also faces many challenges and limitations. On the one hand, the deep integration of technology is insufficient. Many applications still remain at the instrumental and fragmented auxiliary level, failing to fundamentally reshape the teaching structure and process, and the organic combination of technology and curriculum goals is still weak. On the other hand, the digital divide is highlighted. There are significant differences in hardware facilities, network environment, teachers' technical acceptance and training support among different regions and schools, which leads to the unbalanced development of AI education application. In addition, there is no universal consensus and effective supervision mechanism for data privacy and ethical considerations. How to collect and use students' learning data in compliance and reasonably is a key issue to be standardized in practice.

4.2. Future Trends

Looking forward to the future, the English teaching model integrating AI technology will evolve towards a more intelligent, integrated and humanistic direction, showing several clear development trends.

The first trend is that generative AI will be increasingly integrated, with large scale language models no longer simply being aids but instead acting as agents themselves. They will take on a variety of roles as conversation partners, collaborative creators, personalised mentors etc. This will enable learning experiences to be highly contextualised and interactive and to support students to explore and construct within an environment that is as close as we can get to a real language environment. The second trend is the move away from a technology that is one of teaching and instead is an ecosystem that enables learning.

Future developments will not be limited to one technology or platform. Instead there should be a move towards an analytics learning platform that brings the multiple AI tools and data together. This will enable multi-dimensional assessment across the whole learning journey and give teachers and administrators a view of what is happening in the whole classroom so that they can make better pedagogical interventions and decisions. Trend three is focus on inclusion

and equity. With technologies maturing, falling costs and a focus on bridging the digital divide, more work will be done to build lightweight solutions for poorer regions and to give them support programmes that help address the educational divide. Another major trend is that ethics and literacy will be in focus [6]. As the influence of AI in education continues to grow, with it comes a need for stronger data protection, algorithmic transparency and ethical governance frameworks. There will also be a need for learners to have AI literacy so that they can understand, evaluate and use these technologies responsibly. This will become one of the central aims of education in addition to improving their language and digital skills. A partnership between educators, technologists, policy makers, researchers, students and communities worldwide will be essential.

5. Conclusion

The integration of AI into the teaching of English can largely improve the digital literacy of students. By building an intelligent learning environment, it is able to improve students' abilities to collect and process information more precisely, their ability to move from basic use of digital tools to strategic use, and provide an authentic context for cultivating media-critical thinking. However, the current integration of AI suffers from obstacles such as lack of deep integration and unbalanced development, but the development trend of incorporating generative AI, building learning ecosystems, expanding access, and standardizing practices, is unambiguous.

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