

Research on the Application of AI-Assisted Teaching in New Primary English Textbooks

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Abstract: Nowadays, with the rapid development of science and technology, various AI technologies are emerging in our lives and work. In the field of education, these advanced technologies are like a “cardiotonic” injected into the development of modern education. This paper analyzes the characteristics of new primary English textbooks and the advantages of applying AI-assisted teaching in them, and makes a preliminary exploration of the application paths of AI-assisted teaching in new primary English textbooks from four aspects.

Keywords: AI-assisted teaching; Primary English; Textbook application

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1. Introduction

In the context of globalization, English is being used with increasing frequency and in a growing number of scenarios. Therefore, the importance of mastering English is self-evident. The period from 3 to 12 years old is the golden age for humans to learn a second language. Hence, teachers must help students lay a solid foundation in English during the primary school years to remove obstacles to their future development.

2. Analysis of the characteristics of new primary school English textbooks

2.1. Emphasizing practical English application with themes closely connected to daily life

Taking the new People’s Education Press (PEP) English textbook for Grade 4, Volume 1, as an example, the unit themes mainly focus on family, social interactions, and other aspects^[1]. For instance, units like “Unit 1 My Classroom,” “Unit 3 My Friends,” and “Unit 6 Meet My Family!” not only enhance primary school students’ sense of social awareness and cultivate their initiative and enthusiasm to use both their mother tongue and spoken English, but also strengthen their sense of family responsibility. Through these themes, students come to understand that learning English is not only a responsible act towards themselves but also towards their families and society^[2]. In short, unlike other non-linguistic subjects, English requires students to not only memorize words, grammar, and

phrases but also dare to “speak up.” The alignment between English textbook themes and children’s daily lives can, to a certain extent, encourage them to actively “speak English” frequently and repeatedly.

2.2. Following the law of progressive learning to gradually increase grammar difficulty

For primary school students, they can memorize content and master skills in a short time if they are interested in it. However, as a non-native language, English poses challenges in two aspects: on one hand, its pronunciation may cause discomfort to students, reducing their initiative to “speak English”; on the other hand, learning English involves long-term, complex, and arduous processes, which clearly conflict with primary school students’ psychological tendency of “curiosity and playfulness”^[3]. As a result, most children exhibit significant “inertia” in learning English. The new English textbooks’ adherence to the law of progressive learning can largely alleviate this problem. It prompts teachers to adopt new teaching models, gradually help students accumulate grammatical knowledge, improve their proficiency in applying English grammar, and ultimately perfect their grammatical system.

3. Advantages of AI-assisted teaching in the application of new primary school English textbooks

3.1. Realizing personalized learning

The application of AI technology in primary school English classrooms, on the one hand, can collect basic data such as pupils’ learning habits and academic performance, and establish an intelligent analysis and tracking mechanism, thus providing a strong impetus for the improvement of students’ English ability. On the other hand, it can recommend content that conforms to children’s interests, hobbies, teaching progress, and difficulty level based on the basic data, to meet students’ personalized learning needs^[4]. For example, AI-assisted teaching can recommend English content and exercises of appropriate difficulty according to pupils’ current academic performance and status, helping them gradually catch up with or even surpass the teaching progress and comprehensively improve their English proficiency. At the same time, the application of VR technology can also shorten the distance between students and the English subject, stimulate their potential enthusiasm for English learning, and improve their classroom participation^[5].

3.2. Accurate teaching evaluation and feedback

AI-assisted teaching enables teachers to keep abreast of students’ learning situations, such as homework completion, classroom participation, and test scores, and provides a large amount of comprehensive data support for the adjustment of teaching progress and teaching strategies, ensuring that the adjusted teaching progress and strategies can have a positive impact on students’ English ability. Meanwhile, such flexible adjustments and real-time AI monitoring can also help children understand their own strengths and weaknesses, guiding them to make up for gaps, avoid arrogance and impetuosity^[6].

AI intelligent systems can continuously record and analyze students’ learning process in the whole process, realizing precise teaching evaluation. By tracking students’ learning progress and effectiveness in real time, AI can timely identify problems encountered by students in learning and provide targeted tutoring suggestions and personalized learning plans. At the same time, AI can also provide teachers with detailed and timely teaching feedback, assisting teachers in dynamically adjusting teaching strategies and progress, and optimizing teaching methods.

3.3. Optimizing classroom teaching scenarios

The mastery of language skills is inseparable from participation in “speaking” and corresponding language scenarios ^[7]. However, in traditional primary school English classrooms, teachers often rely on textbooks and let students try to complete oral training based on the scenarios in the textbooks. Although this method can improve students’ oral English ability, it cannot help medium and low-achieving students with average ability and a weak foundation to quickly improve their English proficiency. The combination of AI-assisted teaching and VR equipment can bring students into real situations, allowing them to infer, feel and understand English speaking, grammar, and phrases based on their mother tongue ability, thus fundamentally improving their English ability ^[8].

At the same time, the integration of AI technology can also enhance the interactivity and interestingness of teachers’ teaching, improve students’ initiative and enthusiasm in participating in activities, and enable students to naturally master English knowledge in “real” interactions and games that combine education with entertainment.

4. Effective strategies for applying AI-assisted teaching in new primary school English textbooks

4.1. Utilizing AI-assisted teaching to implement personalized instruction

The integration of AI-assisted teaching and educational systems provides a strong impetus for reforming primary school English teaching, with particularly prominent advantages in facilitating students’ personalized ability development. By leveraging AI-assisted teaching, teachers can design and innovate more methods and activities characterized by “teaching students in accordance with their aptitude,” thereby enhancing students’ learning experience and improving teaching quality. Meanwhile, the integration of AI-assisted teaching and big data technology enables rapid collection and classification of students’ English foundational data, accurately identifying individual learning difficulties among primary school students. For example, in Unit 5 My Clothes of the Grade 4 English textbook (People’s Education Press), the key teaching difficulty is helping students correctly use possessive nouns. AI-assisted teaching can pinpoint individual students’ difficulties in this unit through online quizzes and adopt scientific methods to help them overcome these challenges. For instance, if AI detects that Student A confuses plural nouns with possessive forms, it will design comparative fill-in-the-blank exercises such as:

These are _____ (Tom) shoes.

The _____ (children) toys are in the box.

If AI identifies that Student B struggles with distinguishing the pronunciation of singular and plural possessives, it will create listening exercises like comparing “The dog’s tail is long.” and “The dogs’ tails are long.” to help address pronunciation issues. Personalized instruction through such methods effectively achieves a win-win situation for both “teaching” and “learning.”

4.2. Utilizing AI-assisted teaching to flexibly adjust progress

English is a “global” language through which students can communicate with children from different countries. However, the meaning of vocabulary can vary with different pronunciations. For example, the word “spring” is pronounced /sprɪŋ/ in standard English, meaning “spring.” But if children place the stress further back when pronouncing it, it may refer to “spring” (as in “Check the spring”). This highlights the importance of improving pronunciation skills for primary school students ^[9]. In traditional pronunciation teaching, teachers often lack real-time feedback tools, making it difficult to accommodate differences in individual learning rhythms. This leads to situations where students with weaker foundations “cannot keep up” and those with stronger abilities “are not

sufficiently challenged,” which in turn affects the friendly development of teacher-student relationships. In the AI-assisted teaching model, teachers can encourage students to download excellent AI agents, leveraging their functions such as speech recognition, speech-to-text conversion, language communication, and difficulty adjustment. This not only stimulates students’ enthusiasm to actively practice pronunciation and “speak up”^[10] but also helps teachers flexibly adjust teaching progress. For example, Unit 1 Making Friends in the Grade 3 English textbook (People’s Education Press) involves numerous dialogues about self-introduction and introducing friends to others. When teaching this unit, teachers can have students practice their oral pronunciation by communicating with AI agents. Students can activate the AI agent’s voice dialogue function and introduce themselves as if chatting with a real friend: “Hello! My name is Lucy. I’m nine years old. I like drawing and singing.” The AI agent will not only respond in real time but also provide feedback on pronunciation issues, such as: “Lucy, the pronunciation of ‘aw’ in ‘drawing’ can be fuller.” It will also demonstrate the standard pronunciation for the student. When introducing friends to the AI agent, if a student says, “She has long hair and big eyes. She is very kind,” and makes pronunciation errors, the AI agent can mark the mispronounced words using bilingual prompts or speech-to-text functions. As students gradually “keep up” and “get enough challenges,” teachers can decide whether to proceed to the next stage of pronunciation teaching based on the real-time feedback data from the AI agent^[11].

4.3. Utilizing AI to assist teaching and conduct online instruction

The application of AI-assisted teaching in new primary school English textbooks can not only optimize classroom teaching scenarios and methods, but also improve the quality and effectiveness of online teaching, and enhance students’ confidence in learning English. Through AI-assisted teaching, teachers can construct multi-dimensional, dynamic, and real language application scenarios based on students’ real-time learning status and feelings^[12].

For example, when teaching “Unit 6 Meet my family!” in Grade 4 of the People’s Education Edition during online classes, teachers can use AI + VR technology to bring students into a virtual “family” environment. With VR devices, students can be immersed in a lively family scene and complete the task of “making weekend plans” in English, such as telling interesting school stories to the AI virtual “mother” or asking the “father” about recent family travel plans in English. This immersive scenario can effectively enhance children’s sense of accomplishment and confidence, arouse their intrinsic learning motivation, and promote the development of a positive and healthy learning attitude^[13].

In addition, the integration of AI technology and online teaching can further improve the pertinence and personalization of online teaching resources. For instance, based on students’ weak points, appropriate English exercises and learning resources can be recommended to them. After teaching “Unit 3 My weekend plan” in the first volume of Grade 6 English of the People’s Education Edition, teachers can use AI software to select suitable learning resources and practice exercises for students, upload them to the online learning platform, and push vivid micro-course videos to students. These videos, through animated character dialogues, help students consolidate the knowledge learned in class.

4.4. Utilizing AI to assist teaching and enrich evaluation forms

As an important part of teaching, diversified evaluation forms can help students better understand their strengths and weaknesses, thereby adjusting their study plans and methods^[14]. In addition to evaluating students on online platforms, AI technology can also realize peer evaluation among students. The process is as follows: First, assign peer evaluation tasks. Teachers can use AI software to select appropriate evaluation tasks for students and clarify the evaluation content and standards; Second, submit learning tasks. Students can record “oral assignments” or

write written assignments by themselves and upload them to the learning platform equipped with AI tools; Third, distribute peer evaluation tasks. The AI learning platform assigns corresponding peer evaluation tasks according to students' strengths or abilities; Fourth, receive tasks and conduct discussions. Students score based on their personal experience, and note the reasons for errors as well as methods and skills to avoid them; Fifth, summarize peer evaluation results. AI can automatically collect and sort out students' evaluation results, and classify the results according to problems, facilitating teachers' guidance and explanation. The "AI + peer evaluation" model can have a positive impact on students from multiple dimensions, such as improving English ability and critical thinking. For teachers, it can effectively ensure the quality and effect of teaching and further accelerate the process of the new curriculum reform^[15].

In addition, AI-assisted teaching can also continuously record and analyze students' entire learning process and conduct precise assessments. By monitoring students' learning progress and effectiveness in real time, AI can promptly identify problems in students' knowledge mastery and skill application. For example, by analyzing students' homework and test data, it can accurately locate individual students' confusion about the singular and plural forms of "possessive nouns". In response to these problems, AI can provide students with targeted tutoring methods such as pushing special exercises and recommending relevant micro-course videos. At the same time, AI can also provide teachers with detailed teaching feedback, such as the overall weak knowledge points of the class and the effect comparison of different teaching methods, thereby prompting teachers to adjust teaching strategies and methods on time, realizing the dynamics and flexibility of the teaching process, and effectively ensuring teaching quality.

5. Conclusion

In summary, the continuous advancement of artificial intelligence (AI) technology has brought brand-new opportunities and challenges to the development of primary school English teaching. On one hand, AI-assisted teaching can provide convenience for English teachers, break the constraints of traditional classroom models, and improve teaching quality. On the other hand, it can also help students expand their knowledge, stimulate their interest in English learning, and enhance their cross-cultural communication skills. However, artificial intelligence can never completely replace the role and status of teachers. Therefore, teachers must face up to AI-assisted teaching, so as to create a more high-quality English teaching environment, gradually solve the practical problems in "teaching" and "learning" in primary school English teaching, and contribute to the construction of efficient primary school English classrooms.

Disclosure statement

The author declares no conflict of interest.

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