

The Application of Artificial Intelligence in Innovating English Teaching Practices in Primary Schools: A Case Study of Youxuepai

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Abstract: The English curriculum standards for compulsory education emphasize the integration of information technology and English teaching, and expand the channels for students to learn and use English through changes in teaching methods. In the era of artificial intelligence, effectively leveraging artificial intelligence technology to improve the quality of English teaching has become a focus of attention. This study adopts the methods of interview and case study to explore the practice and innovative strategies of AI application in primary school English teaching, using the platform of “Youxuepai” as an example. The objective is to explore the practice of intelligent tutoring tools in primary school English teaching, to achieve changes in the way of teaching and learning, and to provide empirical evidence for the future application and development of educational technology. In particular, it provides useful references in the areas of resource screening, learning situation diagnosis, interactive classroom, multimodal input method and personalised learning path. Pre-learning with multimodal input is carried out by precisely pushing resources before class, optimising the teaching process by using contextual teaching strategies and personalised learning strategies during class, and designing personalised consolidation exercises after class to achieve precise teaching.

Keywords: Artificial Intelligence, Youxuepai (Noah), Primary English Teaching, Practice

1. Introduction

The English Curriculum Standard for Compulsory Education requires the integration of information technology into the teaching of English in primary and secondary schools, emphasising the change in teaching and learning methods and expanding the channels for students to learn and use English [1]. With the introduction of intelligent educational platforms such as Youxuepai (Noah), English teaching is becoming increasingly efficient, interactive and personalised through vivid videos, audios and interactive games. From the literature review, it is also found that both domestic and foreign countries are paying great attention to “AI + English teaching”. For example, Hu Yanling describes “AI + Foreign Language Teaching” as the creation of a comprehensive, autonomous and informative foreign language learning environment, record learning progress and provide foreign language learning content [2]. Similarly, Tian Xiaojing, on the other hand, analysed the practical significance of “Internet+” in junior high school English teaching, and summarised the ways to realise “Internet+” in English teaching, which mainly include expanding learning resources,

supporting the teaching of listening, speaking, reading and writing with multimedia, and creating new intelligent teaching environments such as micro-courses and micro-videos [3].

Despite this growing attention, research on the application of AI in primary school English education remains limited and is still in an exploratory phase. This paper adopts the methods of interviews and case studies to focus on the improvement of teaching and learning by integrating AI technology into the three phases of English teaching in primary schools, namely before, during and after class, so as to improve the effectiveness of English teaching. This study aims to deeply explore the application mode of intelligent tutoring tools in primary school English teaching, explore the integration path between traditional teaching means and intelligent tutoring tools, and promote the innovative reform of primary school English teaching.

2. Advantages of artificial intelligence technology in supporting English teaching

The advantages of application of artificial intelligence technology in English teaching are mainly reflected in the following points:

2.1. Rich learning resources

Artificial Intelligence supports a variety of needs, such as listening, reading, writing, etc., and help students expand their learning channels. According to the *2019 White Paper on Internet Learning in China*, English is the subject with the deepest integration practice of information technology education and teaching. Compared with traditional learning methods, AI technology can provide rich curriculum resources to meet the diverse needs of listening, reading, writing, and actual communication and communication, which is conducive to students expanding their learning channels and experiencing multimodal learning methods [4]. AI provides diverse resources for listening and reading, including short English videos (e.g., animation, film clips, news videos) and e-books (e.g., classic literature, popular science books, children's stories) adapted to different levels, which help students improve their language skills through real contexts and optimise their pronunciation practice and reading experience with the help of multimodal input and speech recognition functions.

2.2. Multimodal learning

In the information age, teachers actively use modern information technology to try to carry out multimodal teaching, using pictures, videos, audio and other resources to mobilise all the senses of students to participate in learning activities, and improve the learning effect [5]. AI technology facilitates this approach through various forms of input: through intelligent speech recognition technology, to help students carry out word tracking, listening practice, real-time feedback on the accuracy of pronunciation. Visual input: using pictures, videos, animations and other resources to help students understand the context and cultural background and make learning more enjoyable. Interactive input: Students interact with simulated situations through role-playing, situational dialogues and other features, practising the language in a playful way. The integration of artificial intelligence technology provides strong support for the multimodal use of English learning, making speech input more accurate and efficient, visual input more vivid and visual, and interactive input more realistic and interesting, thus comprehensively enhancing students' English learning experience and effectiveness.

2.3. Application of memory laws

Applying the law of memory in English language teaching helps students to acquire language knowledge more efficiently and improves the learning effect. According to Ebbinghaus' theory of the forgetting curve, the fastest rate of forgetting is in the initial stage after students acquire new knowledge. For example, after learning English words, students should review the words they have learned in the next two days to make sure they can remember the English words as much as possible [6]. Artificial intelligence technology consolidates students' memory through English songs, listening materials, audio recordings and other forms of timely review, scattered review and spaced repetition of learned English in combination with learners' memory patterns. At the same time, combined with personalised learning paths, it uses visual tools such as pictures, videos, diagrams, etc., and helps students strengthen their memory and flexible application through multi-sensory participation in role-playing and situational dialogues.

These benefits fully reflect the potential of AI technology in English language teaching, especially at the primary level, where students' interest and initiative in learning can be better stimulated through multimodal input and personalised learning paths.

3. Strategies of Youxuepai to support innovation in primary English teaching

Youxuepai (Noah) is an intelligent tutoring tool that integrates textbooks, lesson plans, teaching aids and virtual electronic educational products. It integrates pre-teaching, in-class practice and post-teaching review, helping teachers to achieve personalised teaching and meet the diverse learning needs of students [7].

3.1. Pre-class: content screening and resource enrichment

Youxuepai's intelligent platform offers a large number of English resources for primary schools. According to the theory of multimodal discourse analysis, teachers can help students to do personalised pre-study before class based on their teaching objectives by pushing resources and diagnosing their learning situation. This provides data support for instructional improvement.

3.1.1. Precise push

Before class, teachers can access a variety of teaching resources from the Resource Centre, create micro-videos, animations, pre-test questions and so on, and push them to students to help them select teaching resources according to their needs for pre-testing and completing pre-course exercises. Students can follow the machine to learn vocabulary, listen to the text and read it themselves. For example, in the third grade lesson of *"Unit 1 Meeting new people"* in the People's Education Press (PEP), the vocabulary of the pre-reading part of the lesson is arranged to follow the reading and the students are asked to read five words: *"USA, Canada, UK, classmate, neighbour"* and write 18 words: *"China, very, they..."*. The pupils can select the words they can read; those they cannot read are not selected (After the statistics in the background, the teacher can clearly see that the children can't read these words). Because there are more words to write in this lesson and it is difficult to recognise and read the words *"classmate"* and *"neighbour"*, the teacher decides to give the students the microclasses *"Remembering Words Smartly"* and *"Playing with Self-Pronunciation"* to make it easier for them to learn on their own. If the students do not have any knowledge points after the pre-learning, they can leave a message through the UCS and the teacher can then provide targeted help to the students.

3.1.2. Teaching according to individual aptitudes

Teachers learn about the overall situation of the class before learning through Youxuepai, diagnose according to the learning situation and adjust the teaching content accordingly. For difficult words like "*classmate*" and "*neighbour*", listening questions are set for the students to hear and identify; then topics related to these two words continue to appear in the multiple choice fill-in-the-blank; and later reintroduce them in integrated questions. Game-based learning tools tailored to students' proficiency levels—such as word solitaire and dialogue simulations—are also used to make learning engaging and to help students achieve their learning goals in a relaxed atmosphere.

3.2. In class: delivering precise teaching based on the learning situation of students

In class teaching is the most important part of the whole teaching process. In traditional English teaching, most teachers ask questions and students answer. Under the background of artificial intelligence, teachers can use the interactive classroom and hierarchical practice functions of "Youxuepai" to create a multimodal learning situation, optimise the teaching process and achieve accurate teaching.

3.2.1. Contextualised teaching strategy

The resource integration and interactive functions of the platform emphasise guiding students to naturally integrate into English learning in real contexts, enhancing students' language practice ability and interest in learning, and opening up new ways for contextualised English teaching in primary schools. For example, when teaching shopping vocabulary and sentence patterns, the teacher introduces the learning task through the contextual teaching method, designs an interactive virtual shopping mall scene with the multimedia resources of the "Youxuepai" intelligent platform, and the students use the speech recognition technology to have a real-time dialogue in the role of customers or shopkeepers to improve their speaking skills. Meanwhile, teachers can use the on-screen brush tool to highlight key content and guide students through various question formats—multiple-choice, reading comprehension, matching, and listening—using dynamic methods such as competitive answering and random selection. This approach enhances engagement and supports full-cycle language training through coordinated sensory input and output.

3.2.2. Personalised learning strategies

Based on the comprehensive assessment of students' knowledge mastery level and learning ability, we dynamically match learning tasks and create multi-dimensional learning portraits based on classroom performance, homework and other data. For example, in the "*five-three daily practice*" of Youxuepai, "five" is to break down the objective into five core knowledge points and "three" is to design exercises at three levels. The first level of the lesson "*Unit 1 Meeting new people*" in the third grade of the People's Education Press (PEP): there are two questions about connecting sentences with signs, three questions about filling in the blanks with pictures and three questions about filling in the blanks with options; mastering the sentence pattern "*I'm from the...*". Level 2: Four Sentence-to-Sentence and Picture-to-Picture multiple-choice questions and a difficult reading question where students must use the phrase "*I'm from the...*" in the text. Level 3: Nine listening questions and one more difficult reading comprehension question. Teachers can optimise the learning process and personalise the lesson by providing basic, advanced and challenging exercises for different levels of students. During the lesson, students are encouraged to engage in group discussions, competitive interactions and point rewards through gamified exercises to stimulate students' interest in learning and cultivate positive attitudes towards learning.

3.3. After class: optimising homework and empowering learning

According to the law of memory and Ebbinghaus' Forgetting Curve Theory, teachers utilise the intelligent tutoring tools provided by Youxuepai to assign personalised and graded homework aligned with the lesson progress. By leveraging the Review module's extensive question bank, students are supported in consolidating their knowledge and enhancing their comprehensive application skills.

3.3.1. Creating personalised homework to fill gaps and strengthen learning

After class, teachers push various assignments to students based on their evaluation records and learning reports in Youxuepai. Depending on students' completion status, teachers can offer individualised tutoring or push tailored teaching resources, enabling timely support to address learning deficiencies. Based on each student's knowledge mastery, Youxuepai evaluates their learning ability in terms of vocabulary mastery rate, grammar error rate, etc., and recommends a personalised learning path accordingly.

For example, for students who learn quickly and have good comprehension skills, the recommended tasks are to write a short essay focusing on complex sentences and to complete two extracurricular reading materials to expand their vocabulary. For students who learn slowly and need repetition, the recommended tasks are to memorise 10 high-frequency words a day, complete basic grammar exercises and watch the animated explanatory videos provided by the platform. In this way, the teacher is transformed from a transmitter of knowledge to a regulator of the learning process, signalling a change in the English education model driven by the AI platform.

3.3.2. Providing a platform for tiered exercises

The data feedback from the platform can also help teachers to implement targeted tiered support after understanding students' characteristics. With the built-in vocabulary follow-up, dictation, word training, synchronous text follow-up, topic recitation, role simulation, error checking, skill development and other intelligent tiered practice modules, teachers can customise and select exercises according to students' individual learning status, and provide advanced resources for students with excellent performance to maintain their learning enthusiasm and effectively improve their English learning level. Teachers can customise and select exercises according to students' individual learning status, while providing advanced resources for high-performing students to maintain their enthusiasm and effectively improve their English learning. For example, in the lesson *"Unit 1 Meeting new people"* in the third grade of PEP, a video about the appearance of animals is placed in the "Expand and Enhance" section. This enables students to not only consolidate lesson knowledge but also explore additional engaging content with the help of foreign teachers in the "Big English" section.

4. Conclusion

This study demonstrates the application value of AI technology in primary school English teaching through the relevant practice cases of "Youxuepai". Notably, the exploration of resource screening, learning diagnosis, interactive classroom, multimodal input method and personalised learning paths provides a useful reference for the reform of primary school English teaching and has strong practical significance.

Before class, teachers leverage Youxuepai's data-driven tools to push targeted resources based on teaching objectives and student readiness. Students, select appropriate teaching resources according to their needs and abilities and do pre-study with multimodal input.

During the lesson, teachers apply the interactive classroom and hierarchical practice functions of Youxuepai to create multimodal learning situations, and optimise the teaching process by using contextual teaching strategies and personalised learning strategies to achieve accurate teaching.

After class, drawing on memory principles and the forgetting curve theory, teachers assign layered exercises and personalised homework, helping students consolidate knowledge and improve their overall language competence. However, this study is constrained by certain limitations, such as the lack of detailed interview data and the absence of a comprehensive evaluation system. There is an urgent need to explore more modes of integration between AI and English teaching in primary schools and promote the wide application of AI+English teaching in primary schools, so as to quantify and evaluate the actual application effect of AI technologies such as “Youxuepai” and how to promote their application. Future research should focus on quantifying and assessing the actual effectiveness of AI technologies like Youxuepai and developing practical strategies to promote their broader application in classrooms.

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