A Study on the Application of Artificial Intelligence in Secondary School English Reading Instruction

Xiao Li
School of Foreign Language, Liaocheng University, Liaocheng, Shandong, China

Abstract: The rapid advancement of Artificial Intelligence (AI) has sparked growing interest in its pedagogical potential, particularly within secondary education. This paper explores the integration of AI into secondary school English reading instruction, a domain where traditional methods often struggle to address learners' diverse needs. By leveraging AI-driven tools—such as intelligent tutoring systems, adaptive learning platforms, and real-time language processing applications—English reading classes can become more personalized and interactive. AI enables dynamic adjustment of text difficulty, instant feedback on reading comprehension, and recommendation of authentic materials tailored to individual proficiency levels. These capabilities not only stimulate students' motivation and engagement but also foster autonomous learning habits. Furthermore, AI-assisted instruction supports the development of core English literacy, including critical thinking, vocabulary acquisition, and discourse analysis. The paper discusses specific implementation strategies, such as using AI for pre-reading prediction tasks, while-reading scaffolding, and post-reading assessment. Challenges like data privacy, teacher training, and resource accessibility are also briefly considered. Ultimately, the application holds promise for enhancing teaching quality and language learning. This analysis aims to offer practical insights and guidance for responsibly harnessing the potential of AI.

Keywords: Personalized Learning; Adaptive Feedback; Student Engagement; Teaching Efficiency; Digital Literacy

1. Introduction

At present, in the teaching of secondary school English, reading instruction is one of the necessary links for all-round improvement of students' English. Traditional English reading instruction generally has the problem of monotonous textbook content and limited flexibility in teaching strategies; thus, it is not possible to meet the various learning needs of all students fully and affects the improvement of teaching quality. With the rapid development of artificial intelligence, many new avenues have been created for education. Big Data Analysis, natural Language processing and machine learning can be utilised to provide personalised learning support and timely feedback for students, so a new technological path has been established to solve the problems in traditional English reading teaching [1]. According to the Compulsory Education English Curriculum Standards (2022 Edition), we need to change the ways of teaching and learning English. It will motivate teachers to use digital technology and the Internet more creatively in teaching, advance the development of blended learning, and provide various high-quality digital resources that meet the different learning needs of individual students. Therefore, the direction of policy is to incorporate artificial intelligence into English education.

2. Current Situation of Research

In this part, artificial intelligence and related domestic and foreign studies will be introduced, and at the same time, some deficiencies in the current research on AI-assisted language learning will also be pointed out.

2.1 Definition of Artificial Intelligence

As a new area of science, artificial intelligence aims to emulate and achieve intelligent behaviour in humans by giving computers the ability to understand, perceive, reason, recognize, interact, etc. It has a wide range of scope and contains many sub-disciplines, such as speech recognition, robotics, natural language processing, image recognition, machine learning, expert systems, etc. With the progress of artificial intelligence technology, it is now capable of handling difficult problems and

shows some signs of exceeding human intelligence in some areas. There are many large language models available at present, and examples from China include iFlytek, Spark, Tongyi Qianwen, Wenxin Yiyan, Kimi, Doubao and Deepseek; internationally, ChatGPT and Claude are among them.

2.2 Current State of Research at Home and Abroad

Research abroad has begun to tackle some issues, such as AI-assisted English writing and speaking learning [2,3], the personalisation of learning and real-time feedback in the mobile environment, innovations in teaching models, and potential risks and ethical problems of AI intervention. At home, most of the research has focused on the impact of artificial intelligence on foreign language education, model construction and application, the promotion of students' self-study, changes in the roles of teachers, etc. Taken together, the above studies have shown that artificial intelligence in education has many advantages [4].

There are still some defects in the existing studies. Most research has focused on university and vocational English teaching, thus having a relatively small number of subjects; at the same time, the contents of this research are often broad discussions about teaching models and reforms, and in-depth analysis of teaching practice at the micro level is still relatively sparse [5]. In terms of AI-assisted language skills instruction, there has been more attention paid to writing, speaking and translation. On the other hand, research on how to use it in the key areas of reading comprehension is lacking [6]. Among the few studies that have examined AI-assisted English reading instruction in secondary schools, none have been conducted at the micro-level; that is, they have not examined discourse analysis and dynamic assessment. Based on the above, this paper will concentrate on the application of artificial intelligence in secondary school English reading teaching and, through case studies, explore how it can improve the design of the curriculum and teaching organization.

3. Advantages of AI-Enhanced Smart Learning Models in Secondary School English Reading Instruction.

The three reasons for the addition of artificial intelligence in teaching are the large amount of teaching resources, the optimisation of personalised study, and changes in the examination system.

3.1 Provision of Rich Teaching Resources

A technology stack based on large language models will be employed to collect a large amount of multi-modal English learning resources and construct an intelligent teaching warehouse that can be accurately connected with the topics of different units. For example, in the teaching of the biographies unit, the system can automatically suggest videos of famous speeches and corresponding parts from the original text to enrich the language material and enhance the authenticity of learning [7].

3.2 Optimisation of Personalised Learning

Artificial intelligence can be used to create an intelligent scenario and a game to give students a realistic reading environment and thus spark their interest in learning and participation in English reading. Artificial intelligence can also provide personalised teaching materials based on the learning requirements and various circumstances of students in terms of specific content [8]. Based on the students' reading ability, interest and learning goals, a computer program will recommend some good books and appropriate difficulties for them.

3.3 Construction of the Dynamic Evaluation System

Traditionally, in English teaching, only after being given a test or homework by the teacher could students receive feedback on their own work. A large number of the reading data are now being analysed by artificial intelligence. The intelligent assessment system will collect the reading data of the students in real time, automatically generate a diagnosis report on their reading ability, and then the teachers will revise their teaching plans accordingly. Only the single attribute of the former-style marks and grades has been kept in the evaluation system, and no overall assessment system has been formed. At the same time, the function of automatic marking and resource management will shorten the time teachers need to spend on this task and free up teaching resources for in-depth design of high-order instructions.

4. AI-Empowered Strategies for Secondary School English Reading Instruction

Next, we will introduce some applications of AI in helping to analyse discourse and develop courseware for discussion, and then present a case study of the Deepseek platform.

4.1 Further Discussion Analysis

Discourse analysis can be used to set the goals of teaching, choose appropriate teaching methods and organise teaching activities. However, some teachers currently face many problems in the actual teaching of text analysis, such as a lack of depth in analysis, failure to explore themes and semantics, and neglect of linguistic and stylistic characteristics [9]. The application of artificial intelligence technology can offer new paths to address the problems listed above, help teachers learn about the content of texts in depth and grasp features of language, optimise teaching plans, etc.

To confirm that artificial intelligence can be used for text analysis in this paper, I used the Deepseek platform to enter the target text and provided the following three-dimensional analysis prompts for what, how and why when analysing the text: Assume you are a secondary school English teacher. Please provide a detailed analysis of the following text: briefly introduce its topic and main ideas; analyze its style, language and structure; explain what the author intends to achieve through writing. The analysis results of the Deepseek Platform are as follows:

First-person narration is used in the text, and the dodo is the subject of the discussion on species extinction. The introduction can present some original lifeforms from the islands in the Indian Ocean in a museum, such as various types of food and the close relationships between different animals; Then, it can be described how after humans arrived in 1598, deforestation reduced their habitat, direct hunting was carried out due to their slowness and weakness, and the introduction of foreign invasive species disrupted the reproductive cycle; finally, based on the information from the museum, a double-entendre idiom such as "as dead as a dodo" is used to issue a warning and call for the protection of the remaining rare species.

How: The style is that of an educational narrative combined with that of an ecological fable. Personification is used to give the dodo human emotions; it describes its homeland as a peaceful and safe place and thinks that its extinction is a sad story, and the opening question has a conversational style and draws on cultural references from Alice's Adventures in Wonderland to increase cognitive resonance. Linguistically, ecological words that are understandable to lower-grade students are used, and many frequently used emotions are added to inspire interest. Syntactically, there are groups of short sentences in the text that form a cause-and-effect chain over time and are further marked by temporal expressions.

[Why] The purpose of this text is to inspire people to care about the environment through emotions. The aims of the cultural teaching are clear; it explains that the English cultural metaphor ' is as extinct as the dodo. Literary fiction is compared with the reality of extinction to teach students dialectical thinking.

By comparison, I have carried out a manual analysis of the same text:

The subject of the article is species extinction and ecological protection. Written in the first person by the dodo bird, it describes the peaceful and stable life it had on the islands of the Indian Ocean before 1598, when human activities such as deforestation, hunting, and the introduction of foreign diseases caused a decline in its numbers due to disturbances to the reproduction cycle. Now living in museums, they are preserved as symbols to inspire people to protect wild animals.

How It is an anthropomorphic narration of ecological knowledge in the form of a story; logically speaking, logical conjunctions are used to show cause and effect, and personification and contrastive rhetoric are added for emotional expression and warning; in terms of structure, it has a general-to-specific-to-general circular model, starts with a rhetorical question to catch the readers' attention, develops sequentially according to the progression from past prosperity to the consequence of extinction, and finally returns to the museum to issue a call to action.

[Why] To popularise the scientific knowledge about the extinction of the dodo and cultivate students' ecological awareness and good values through language learning.

Artificial intelligence was better than the other ones for analysing discourse. Take a museum specimen as the thread and, with help from artificial intelligence, connect the past, present and future to clarify the logic of the whole work and add richness. In addition, it can also explain the cultural metaphor and lead students to contrast literary fiction with real-life extinction;

thus, they will better grasp the problem of species extinction around the world and extend their reading of this text. The AI was better at the analysis of literary language; that is to say, it could point out the regular arrangement of events and time in a logical sequence clearly. On the other hand, the manual analysis did not fully grasp this.

However, artificial intelligence still has problems with adapting to the different learning requirements of students; the general structure of the generated analysis is too complicated, and students with weaker foundations or slightly poorer comprehension may not be able to understand it [10]. In contrast, the 'overview-details-conclusion' structure used by the researchers is shorter and can help students grasp the general content of the text more easily. In addition, the AI's analysis of ecological issues and their cultural connotations is also quite in-depth; thus, students can explore different kinds of extinctions in literature and in life through dialectical comparison. This is a problem of cognition for secondary school students, and teachers need to spend more time guiding, explaining and extending to help the students learn the material well.

Therefore, to improve the quality of text study and teach better, we need to make more use of human intuition along with artificial intelligence technology. Teachers should consider the learning conditions of the students, then use AI to analyse and adapt the detailed analysis provided by the AI, making adjustments according to the teaching objectives and students' actual needs.

4.2 Help with Instructional Design

In the following sections, I will present some examples of how artificial intelligence is applied in the design of teaching activities and classroom questions to arouse students' interest in learning.

4.2.1 Designing teaching activities

Teachers can make full use of AI large language models to achieve intelligent Design of teaching activities. Firstly, teachers can put forward information on the reading ability, interests and study history of Year 7 students into an AI large language model. According to the above analysis, some tasks can be recommended for teachers based on the students' situations. For example, students who have achieved good results in ecology-themed reading and shown an interest in nature conservation can be recommended some activities by the large language model, such as writing a short essay on the reasons for the extinction of the dodo or participating in role-playing dialogues about ecological conservation; students with relatively poor vocabulary can be recommended reading materials containing essential ecological vocabulary and be given corresponding vocabulary consolidation tasks, such as vocabulary fill-in-the-blanks and sentence construction exercises. Second, the large language model will also be used for teaching by teachers. At any time during the reading, students can raise their hands in class to ask the teacher questions, and the teacher will use this model to give them quick and accurate answers and explanations. For example, when talking about an article on the extinction of the dodo, the teacher can have students ask and answer questions to the large language model so they can communicate directly in English with the AI. The teacher will lead the discussion and suggest ways to improve; thus, it is easier for the students to learn. Teachers can also use a large language model in class to adjust the difficulty of homework dynamically according to how well students have learned so far. When students show a good performance after completing some basic exercises, teachers can use the large language model to increase the difficulty and depth of the tasks; for instance, they can be required to do comparative reading and write short essays. If students have trouble understanding the reasons for the extinction of the dodo, the large language model can help the teacher generate some extra short tasks to help students gradually overcome these difficulties and enhance their reading comprehension.

Therefore, artificial intelligence can build an environment that is closer to the students' daily lives and encourage them to want to express themselves and explore more. Building on the context provided by AI, teachers can add more details and refine the task requirements to guide students to apply what they have learned from the text in real life at this stage, learn how to protect the ecosystem, and extract underlying values.

4.2.2 Design of teaching questions

Teacher questioning serves as an important link to foster good communication among teachers and students, as well as among students themselves and between students and the text in class; it is also one of the primary ways to

encourage all-round development of students' thinking and language skills. Some teachers have not paid enough attention and are using a single kind of question, including too many subjects and lacking development or organisation for their questions.

In light of the above, teachers can use artificial intelligence to optimise question design and develop many different types of questions that integrate textual content with pedagogical needs, thus fostering students' thinking abilities. The specific steps of implementation are as follows: The teacher sets the goals for the questions and has the AI generate questions in line with these goals; then, the teacher asks the AI to refine the existing questions to improve their clarity and direction. The following is a particular example:

Understanding and Analysis: Where did the dodos live before the arrival of humans? According to the passage, what were the reasons for the extinction of dodos?

Inference and Prediction: Based on the above information, what would have happened to the dodos had humans not come to their island? If similar measures were to be taken today to protect the endangered species, what do you think would be the possible results?

Application and Extension: Do you know of a typical case in our country or somewhere else where human activities have led to the extinction or endangerment of a particular species? Design a project for the protection of a certain species in your area or school. What would you do to make it a success?

In this case study, AI-generated and optimised classroom questions were designed; in accordance with the laws of cognition, the structure of these questions has shown an increase in lower-order to higher-order thinking, and various types of questions have stimulated deep thinking from students through different ways of questioning. According to the results of A1, teachers need to select good questions and adjust them in line with the situation of the activity to stimulate students' thinking and gain more profound understanding.

4.2.3 Construction of the dynamic evaluation system

By using the power of data processing and analysis, Artificial Intelligence has been employed to build a new system of scientific, comprehensive and dynamic reading ability tests. It can monitor the learning process of students in real time, assess various indicators of learning, and help teachers better combine teaching and evaluation.

The intelligent assessment system will record how long a student has read, how often they have paused between paragraphs, when they have looked up words, and the results of comprehension tests, etc. For instance, if a student stops reading more than three times during the reading of a paragraph on the human hunting of the dodo and frequently looks up words such as "hunt" and "extinction", the system will mark that paragraph as a section where the student has difficulty understanding the text.

After obtaining the data, AI will be employed for natural language processing and machine learning to analyse it, and then a visual diagnostic report of reading ability will be produced. The report presents both the number and reasons why the student's learning has progressed in the areas of vocabulary, reading and writing, and thinking. In the background of the dodo lesson, AI can be used to check whether students have learned some vocabulary through word frequency statistics and semantic analysis; at the same time, based on the logical connections in the text, it can judge whether students understand the cause-and-effect relationship of human activities and extinction. This assessment system does not only test the absorption of knowledge but also evaluates other factors such as how well one can apply reading strategies, think critically and make use of cultural contexts; this aligns with the main competencies listed in the English curriculum standards. For example, through questions and assessments, one can learn how well students grasp the cultural metaphor and apply it to various ecological problems in life.

Teachers have used AI-generated assessment reports to give different kinds of teaching to the students. Students who are lacking in vocabulary may be given dodo-themed vocabulary games and exercises; those without the ability of logical analysis can be asked to create cause-and-effect diagrams; in cultural comprehension teaching, case studies on the protection of endangered species are used to stimulate group discussion and achieve the objectives of assessment for teaching and assessment for learning.

5. Conclusion

Now, Artificial Intelligence technology has been introduced to secondary school English

education and is changing how teachers teach and how students learn. It can solve problems in traditional reading instruction and, at the same time, promote the all-round development of students' in-depth understanding, critical thinking and overall English language skills to support the improvement of all-round English subject abilities. However, artificial intelligence still has problems in meeting all the different learning needs of students and controlling the depth of the content; thus, teachers need to exercise their professional judgment to make reasonable selections. Efforts must continue to enhance teachers' digital literacy, ensuring that AI technology genuinely enhances teaching effectiveness and promotes students' all-around development.

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