

Application and Potential Problems of Generative Artificial Intelligence in Foreign Language Teaching

Hu Yan^{1,a,*}

¹Jiangxi University of Technology, Nanchang, Jiangxi, China

^a2055483588@qq.com

*Corresponding author

Abstract: *With the rapid development of technology, generative artificial intelligence, represented by ChatGPT, has gained much attention, and its impact on the field of foreign language teaching is gradually emerging. The application of generative artificial intelligence has brought new developments to foreign language teaching. It promotes personalized education, meets the different needs of students, improves students' learning interest and motivation, and also provides teachers with rich teaching resources and inspiration for teaching design, effectively improving the teaching effect. However, in the process of its application, there are also some problems, such as data leakage or misuse, false information, over-reliance on technology, and educational unfairness. Therefore, it is vital to objectively understand generative artificial intelligence and take appropriate measures to deal with these problems.*

Keywords: *Generative artificial intelligence; Foreign language teaching; Potential problems*

1. Introduction

On November 30, 2022, OpenAI, an artificial intelligence research laboratory in the United States, released a chatbot program called ChatGPT^[1]. It is a natural language processing tool driven by artificial intelligence technology with language comprehension and text generation capabilities, and the ability to interact with humans through speech recognition and synthesis technologies. Within five days of its launch, the number of registered users exceeded one million, attracting widespread attention and sparking discussions from all walks of life.

ChatGPT marks that generative artificial intelligence has made remarkable progress in the field of text generation, and has had a considerable impact on sectors such as the economy, society, culture, and education. The rapid development of generative artificial intelligence has led people to think about its value in meeting the demands of high-quality educational development, as well as the opportunities and challenges it may bring to the education sector.

2. Overview of Generative Artificial Intelligence

Generative artificial intelligence is a technology that generates text, pictures, sound, video, code and other contents based on algorithms, models, and rules^[2]. It possesses the ability to understand, analyze and autonomously generate contents, enabling it to comprehend and analyze complex situations based on the information provided by users, and generate contents with certain logic and coherence. In addition, with the help of deep learning, neural network and other technologies, it can learn and imitate the inherent patterns of things, extracting useful information from large amounts of data. Using deep learning technology, generative artificial intelligence can simulate the neural network of the human brain to analyze data and find the rules.

Generative artificial intelligence can use natural language processing technology to have a natural conversation with learners, which is of great help to foreign language learning. Learners can ask questions in a phonetic way, and generative artificial intelligence can imitate human language and generate logical dialogues, which allows learners to obtain the experience of real conversations, and improve their speaking skills.

Generative artificial intelligence can provide appropriate learning plans and learning contents based on learners' individual needs, learning progress, and English proficiency, so that students can get a

better language learning experience. With the help of generative artificial intelligence, students can choose the learning contents that meet their own language level.

With the continuous development and improvement of science and technology, generative artificial intelligence is expected to bring more opportunities to education, and create a more intelligent and personalized learning experience for educators and learners, promoting innovation and development of education.

3. Applications of Generative Artificial Intelligence in Foreign Language Teaching

In traditional foreign language teaching, teachers explain language knowledge in class while students listen passively. The learning atmosphere is relatively dull. As a result, some students lack interest in learning, and the learning effect is not ideal. With the development of generative artificial intelligence technology, people begin to think about how to better integrate this technology into foreign language teaching, so as to stimulate students' interest in language learning and help teachers' design effective classroom activities to improve teaching efficiency. More and more people get to realize the importance of generative artificial intelligence in assisting foreign language teaching. The application of generative artificial intelligence in the field of foreign language teaching is also gradually extensive, including intelligent assessment and feedback, intelligent speech interaction, intelligent teaching assistance and intelligent learning support.

3.1 Intelligent Assessment and Feedback

Intelligent assessment refers to the use of generative artificial intelligence technology to assess students' foreign language learning in areas such as pronunciation, morphology, and syntax^[3]. In traditional teaching, students' oral training primarily takes place during classroom instruction, where teachers assess students' pronunciation and correct errors in real time. However, due to large class sizes and limited classroom time, teachers may not be able to take into account every student's learning needs. Some students may not receive timely feedback or corrections from their teachers, resulting in stagnant language skills and diminished interest in learning. The development of generative artificial intelligence can effectively solve this problem by assessing each student's pronunciation and providing specific suggestions for improvement.

For example, in oral assessment, learners can use speech evaluation software for exercises. Learners can upload their own audio to the software and then the software analyze and compare each word's pronunciation with a standard reference^[4]. The software will provide instant feedback and highlight the non-standard pronunciation of the learners. This enables students to correct their mistakes promptly. Additionally, generative artificial intelligence can provide high-quality pronunciation examples, allowing students to imitate the standard pronunciation of words, phrases, and sentences, thereby improving their oral proficiency through repeated practice. The generative artificial intelligence acts as a teacher for each student, spotting their pronunciation problems and offering timely solutions.

Generative artificial intelligence has been effectively applied in oral assessment. Many learners face difficulties in oral language learning, such as inaccurate pronunciation and the inability to communicate fluently. At the same time, they lack sufficient opportunities for oral training. Generative artificial intelligence can cater to each learner's individualized needs by providing personalized learning content and immediate feedback on the problems they encounter. This can better stimulate students' interest and motivation in learning, enhance their learning efficiency, and assist teachers in improving their teaching efficiency, achieving better outcomes.

3.2 Intelligent Speech Interaction

Generative artificial intelligence possesses natural language comprehension and generation capabilities and can continuously learn and analyze data for effective speech interactions with students. Students can ask questions through speech, and generative artificial intelligence can use speech recognition technology to identify the student's question and provide timely responses. For example, generative artificial intelligence chatbots can simulate real conversational environments and have natural conversations with students, enabling students to have an immersive language learning experience. These conversations are not simple pre-set question-and-answer exchanges but rather continuous, logically coherent multi-turn interactions. The system can learn from previous interactions, making the contents of the conversations more coherent and fluent, and providing students with more

accurate and comprehensive answers and suggestions.

For foreign language learners, interacting with generative artificial intelligence chatbots can help them practice oral expression, as the system can provide targeted feedback on their pronunciation. If a student's pronunciation is not accurate, the system will offer a standard pronunciation for the student to imitate, and the student can better realize pronunciation problems and correct them. Therefore, students can practice oral English in this dynamic and realistic activity. They can engage in oral practice, and constantly improve their oral expression and listening comprehension.

Many students feel anxious about being teased by classmates or criticized by teachers for mispronunciation during oral communication. However, since chatbots are not real people, students do not experience anxiety when they make mistakes during interactions. In this relaxed language environment, students can freely train their oral English and express their views, which helps to boost their communication confidence and motivation, ultimately improving learning outcomes.

3.3 Intelligent Teaching Assistance

Generative artificial intelligence, with its powerful information processing and analysis capabilities, can integrate a large number of resources and data to provide foreign language teachers with comprehensive language knowledge and teaching resources, helping teachers design more effective teaching activities. Teachers can refer to the teaching materials obtained from the system to design teaching plans and optimize teaching strategies to improve teaching outcomes. Moreover, generative artificial intelligence can assess students' language proficiency, helping teachers identify students' learning difficulties and needs. Based on these analysis results, teachers can provide more specific feedback and useful suggestions, sparking students' interest and initiative in learning and helping them master language knowledge and skills more efficiently.

Generative artificial intelligence can also assist foreign language teachers in completing their tasks by providing more efficient assignment management tools, thereby saving a significant amount of time and energy^[5]. For example, intelligent homework review systems can assist teachers in efficiently and fairly grading students' assignments, identifying errors, and providing corresponding scores and suggestions. According to the analysis data given by the system, teachers can better understand the students' learning difficulties and adjust their teaching strategies in time.

One of the challenges faced by foreign language teachers during assignment review is the time-consuming process of essay grading. However, with the continuous development of automatic essay grading technology, generative artificial intelligence can effectively participate in foreign language writing instruction. This not only improves the work efficiency of teachers but also helps students improve their English writing skills.

Generative artificial intelligence can check for spelling errors, misuse of words, grammar mistakes, and problems with text structure in students' essays, providing timely feedback and suggestions. For example, some essay review systems can score students' uploaded essays and offer suggestions regarding vocabulary, sentence structure, and organization. Students can revise their essays based on the system's feedback, and they can also make use of model essays provided by the system to accumulate vocabulary and sentence patterns for future writing. For some inappropriate expressions in student essays, the review system can provide more accurate and professional alternatives for students' reference. At the same time, teachers can combine students' writing performance with the feedback from the review system to offer more precise and comprehensive suggestions, so as to help students identify areas for improvement in future writing.

3.4 Intelligent Learning Support

Generative artificial intelligence breaks the spatial and temporal boundaries of the classroom, enabling students to learn anytime and anywhere. It can generate personalized learning content for each student based on their learning history, performance, interests, goals, and progress, in order to meet their different needs. For example, for students with a weaker foundation in English, generative artificial intelligence can generate learning content with simpler vocabulary or syntax and corresponding exercises of an appropriate difficulty level, ensuring that students can consolidate basic knowledge through proper exercises. Generative artificial intelligence can also integrate students' interests into the learning contents, thus enhancing their motivation and participation. For example, if a student is interested in pop music, generative artificial intelligence will generate the learning material

related to pop music, which will greatly stimulate students' interest and motivation.

In traditional foreign language teaching, teachers periodically assign exercises to assess students' mastery of knowledge points. However, these exercises are for all students, ignoring the different language level of each student. When students identify their weak points through errors, they may still struggle to obtain targeted exercises for reinforcement, leaving them unable to fully grasp and apply the language knowledge. Over time, students may lose interest in learning, and their language skills may stagnate.

The development of generative artificial intelligence can help solve this problem, as it can periodically collect and analyze students' learning data, adjusting the learning content accordingly. Based on students' understanding of certain English grammar points, generative artificial intelligence can generate exercises of varying difficulty. For example, if data shows that students frequently make mistakes on questions related to the subjunctive mood, generative artificial intelligence will focus on generating subjunctive mood exercises for students, enabling them to practice their weak points through targeted exercises, thus precisely and effectively improving their learning efficiency^[3].

4. Potential Problems

Generative artificial intelligence has great potential in educational applications. It can improve teachers' lesson preparation efficiency, provide teachers with teaching design ideas, and offer students personalized learning content and opportunities for oral practice. Generative artificial intelligence provides new possibilities for foreign language teaching^[6]. It can stimulate students' learning potential and innovation ability. However, some potential problems may arise when applying generative artificial intelligence to foreign language teaching.

4.1 Data Leakage or Misuse

When analyzing students' learning situations, generative artificial intelligence needs to collect personal information, academic performance, learning behaviors, learning interests, and other data^[7]. The data will leave traces in the system, and if there are system vulnerabilities or operational errors, the data may be leaked or misused, which will seriously affecting personal privacy and safety. In addition, some malicious individuals may use the data for fraud or manipulation, causing losses to students.

Therefore, when applying generative artificial intelligence to foreign language teaching, corresponding measures should be taken to ensure that data is fully protected in the process of collection, storage and processing. More importantly, teachers and students should raise their awareness of data protection.

4.2 Unreliable or False Information

When generating the content required by learners, generative artificial intelligence will reorganize a large number of learning materials, but it does not judge the authenticity and reliability of the generated content itself. It may be limited by the training data and algorithms, resulting in the generation of some false or misleading information in some cases. It is also possible that the generated text contains ethically biased or discriminatory contents.

Although generative artificial intelligence can provide students with rich learning resources, students may not be able to verify the accuracy of all information, which will adversely affect their learning. Teachers should guide students to attach great importance to the objectivity and accuracy of the results produced by generative artificial intelligence, cultivate students' ability to distinguish information, and enable students to choose relatively reliable materials from a large amount of information through their own judgment.

4.3 Over-reliance on Technology

Generative artificial intelligence has brought some convenience to students in the process of foreign language teaching, but it also leads students to rely too much on technology^[7]. They can easily access learning materials and complete assignments through generative artificial intelligence. However, this also makes students lack the opportunity to think independently, which is not conducive to cultivating their independent thinking ability and critical thinking.

Furthermore, students' reliance on generative artificial intelligence may affect their face-to-face communication with teachers and classmates, hindering the improvement of language and communication skills. In this case, teachers should encourage students to actively participate in learning activities and communication, to think creatively and make reasonable judgments, instead of passively accepting information. If students become overly dependent on generative artificial intelligence, they will struggle to develop critical thinking and innovation skills. Therefore, teachers should focus on cultivating students' abilities of independent thinking and communication.

4.4 Educational Unfairness

Although generative artificial intelligence has brought some positive effects to foreign language teaching, not all schools can enjoy its convenience. Some schools in poor or remote areas are unable to purchase advanced equipment, do not install high-speed networks, and lack the relevant knowledge and training to use generative artificial intelligence, which makes people in these areas unable to access the technology, let alone use it in language teaching^[6].

Compared with those areas with perfect teaching facilities, these areas lack abundant teaching resources and technical support, which means that teachers and students in the areas are not able to keep up with the development of the technology and enjoy the advantages it brings. Over time, this will exacerbate differences in the quality of education between regions.

5. Conclusion

In the process of foreign language learning, each student's learning difficulties and needs are different, and traditional teaching methods are difficult to provide personalized learning plans for each student. Some students with weak foundation may lose interest in language learning because they cannot keep up with the teaching progress. They are afraid that they will make mistakes in class and they often keep silent. However, generative artificial intelligence can not only create a more personalized learning experience for learners, but also assist teachers in improving teaching efficiency and quality. It can generate appropriate learning materials according to students' abilities and interests, enhancing students' learning motivation and improving learning outcomes. Besides, generative artificial intelligence can provide teachers with rich teaching resources to make the teaching process more efficient.

In general, generative artificial intelligence has a positive impact on foreign language teaching, but there are also some potential problems in the application process, such as data leakage or misuse, the difficulty of verifying the authenticity of information, over-reliance on technology and educational unfairness. In order to make full use of the advantages of generative artificial intelligence while dealing with these potential problems, people should work together to reasonably utilize generative artificial intelligence and supervise its application, taking into account the comprehensive development of people and social ethical norms while ensuring the pursuit of teaching efficiency. This will make generative artificial intelligence a useful assistant in education. People need to conduct in-depth research on the functions of generative artificial intelligence and its specific applications in the field of foreign language teaching, so as to better understand its impact on foreign language education.

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