Journal of Education and Educational Research
ISSN: 2957-9465 | Vol. 12, No. 1, 2025

Vocabulary Instruction for Chinese Middle School Students Empowered by GPT

Shengsheng Zheng *

Xianghu Future School, Hangzhou, China
*** Corresponding author Email:** Locking4life@163.com

Abstract: The purpose of this paper is to explore how GPT (Generative Pretraining Transformer) technology can play a role in teaching English vocabulary to Chinese secondary school students. First, with the differences in students' vocabulary mastery levels, it is often difficult for traditional teaching methods to provide personalized learning support for each student, while GPT can provide customized, interactive and scalable vocabulary learning solutions. Second, this paper provides an in-depth analysis of the specific applications of GPT in vocabulary teaching, including how students can interact with GPT to understand the meaning of words, practice in sentences, and participate in simulated conversations. In addition, GPT is able to provide follow-up learning suggestions based on students' progress, helping students to make continuous progress in the process of vocabulary learning. Finally, the paper highlights the potential impact of GPT on vocabulary instruction, particularly in terms of improving students' long-term memory of vocabulary learning and enhancing flexibility and accessibility of learning. By combining with traditional teaching methods, GPT provides teachers with a richer set of pedagogical tools to promote a more personalized and interactive education and to meet the diverse needs of secondary school students in vocabulary acquisition. Overall, GPT technology can effectively improve Chinese secondary school students' English vocabulary acquisition and memorization and promote the transformation of vocabulary teaching mode.

Keywords: GPT; English Vocabulary Instruction; Personalized Learning; Interactive Learning.

1. Introduction

With the rapid development of artificial intelligence technology, the application of GPT (Generative Pretraining Transformer) in the field of education, especially in the teaching of English vocabulary, has gradually become an important tool to enhance learning effects. Traditional vocabulary teaching methods have certain limitations, especially in the aspects of personalized learning and interactive learning[1].

This article comprehensively studies the application of GPT (Generative Pretraining Transformer) in English vocabulary teaching, exploring how it can meet the needs of different students through personalized learning and how it can enhance students' engagement and learning effects through interactive learning. First, the article analyzes the fundamentals of GPT technology and its potential in education, emphasizing its advantages in providing personalized learning experiences. Then, it examines the relevant theories of interactive learning and discusses how to promote effective interaction between teachers and students and among students through GPT, so as to enhance the fun and effectiveness of learning. In addition, this paper also demonstrates the specific application of GPT in English vocabulary teaching by combining with practical cases, verifying its effectiveness in enhancing students' vocabulary and language use ability. In summary, this paper not only provides new perspectives and methods for English vocabulary teaching, but also provides theoretical support for educators to apply advanced technology in teaching practice, which has important practical significance and promotion value.

2. Vocabulary Teaching Analysis

2.1. Vocabulary Acquisition

Vocabulary acquisition is a fundamental aspect of language learning[2]. Several theories provide insights into how vocabulary is learned. The semantic network theory suggests that words are stored in the brain through interrelated meanings that help learners establish associations with new vocabulary. In second language acquisition, the attention hypothesis emphasizes that learners must consciously notice new words before they can actually master them[3]. In addition, the incidental learning hypothesis proposes that vocabulary is usually acquired through natural exposure to reading or listening without explicit instruction.

For Chinese secondary school students, these theories emphasize the importance of providing context and meaningful vocabulary exposure. However, traditional teaching methods often fail to create such rich contexts, limiting students' ability to effectively retain and use new vocabulary. In light of these challenges, integrating technology, particularly AI-driven tools, has emerged as a promising solution for enhancing vocabulary acquisition.

2.2. Technologies for Vocabulary Instruction

In recent years, various studies have explored the use of technology in vocabulary instruction, emphasizing its potential to improve vocabulary learning. Multimedia tools such as vocabulary apps, digital draw cards, and interactive exercises have been shown to improve retention by engaging multiple senses (audio, visual, and interactive). These tools provide students with repeated, varied exposure to words, which aids memorization and contextual understanding.

AI-based tools, in particular, are gaining attention for their ability to provide personalized and adaptive vocabulary

instruction. These tools provide customized practice and real-time feedback tailored to the learner's proficiency level, ensuring that each student receives targeted practice. Additionally, AI-driven platforms can create context-rich scenarios, such as simulated conversations or interactive tasks, to help students learn how to use vocabulary naturally in real-world settings. Research has shown that AI tools can significantly improve the quantity and quality of vocabulary knowledge by providing contextualized examples and instant corrections.

2.3. GPT in Education

The use of Generative Pretraining Transformers (GPT) in education, especially for language learning, has shown promising results. GPT models, such as OpenAI's GPT-4, are capable of generating human-like text, making them well suited for interactive and dynamic language learning environments. In vocabulary instruction, GPT can generate personalized exercises that simulate realistic conversations and provide immediate feedback, which is key to improving vocabulary acquisition.

Research has demonstrated the effectiveness of GPT in educational settings. For example, GPT creates exercises that adapt to a student's learning pace, providing targeted practice opportunities based on individual needs. In addition, GPT's ability to simulate real-life communication allows students to apply vocabulary in context, resulting in improved comprehension and active use. The model's real-time error correction feature further enhances learning by resolving errors in a timely manner, reinforcing correct usage, and supporting deeper understanding.

By integrating GPT into vocabulary instruction, educators can provide students with a more personalized, interactive, and engaging learning experience. This is consistent with Task-Based Language Teaching (TBLT), which emphasizes meaningful, authentic tasks to engage students in authentic language use. the ability of GPT to simulate a variety of linguistic contexts and provide immediate feedback offers a promising avenue for improving vocabulary instruction, especially in environments where traditional methods may not be adequate.

3. Application and Practice of GPT in Vocabulary Instruction

3.1. Principle of GPT

GPT (Generative Pretrained Transformer) is a high-level language model designed to understand and generate human language[4]. By processing large amounts of text data, GPT can interact with users in natural language, making it an ideal tool for language learning. For vocabulary instruction, GPT creates customized vocabulary exercises tailored to students' needs and proficiency levels. It generates dynamic exercises and provides instant feedback, enabling students to engage in vocabulary learning in a personalized way.

3.2. Personalized Vocabulary Learning

One of the main advantages of GPT for vocabulary instruction is its ability to personalize learning. The model adapts to each student's progress and focuses on comprehension and production. GPT identifies gaps in students' vocabulary knowledge and designs targeted exercises to address these weaknesses. This personalized approach helps students learn more effectively by focusing on areas that need improvement. As students' progress, GPT can adjust the difficulty of the exercises to ensure continued challenge while preventing frustration. This adaptability is crucial in vocabulary instruction because it ensures that learning stays relevant and is tailored to the individual, leading to better retention and comprehension of new words.

3.3. Interactive Practice

GPT enhances vocabulary learning by providing interactive real-time exercises. Rather than relying on rote memorization, these exercises encourage students to actively use new vocabulary in context. For example, GPT can create fill-in-the-blank tasks in which students must choose the correct word based on context or simulate conversations that require students to practice new vocabulary. These activities engage students in active learning, increase their motivation and help them apply vocabulary in different scenarios. By making vocabulary practice more interactive, GPT promotes deeper learning and greater engagement.

3.4. Instant Feedback

Another important feature of GPT is its ability to provide immediate feedback. When a student makes a mistake in vocabulary use, GPT quickly recognizes the error and explains why the word was used incorrectly. This immediate correction helps students understand their mistakes and reinforce correct word usage. Instant feedback prevents incorrect language habits from being reinforced and promotes more accurate vocabulary use.

3.5. Contextual Learning

Context plays a critical role in understanding vocabulary, and GPT excels at providing real-world examples. By generating sentences and conversations using new vocabulary, GPT enables students to understand how words are used in different contexts. This exposure helps students grasp the nuances of word meanings and understand the role of vocabulary in real-life communication. Contextual learning not only enhances vocabulary comprehension, but also helps students to apply words appropriately in different communicative situations, making their language use more natural and flexible [5].

3.6. Vocabulary Teaching Practices Using GPT

3.6.1. Overview of Practice

GPT can be effectively integrated into vocabulary instruction in the classroom. Students can then use GPT to practice interactively, participate in dialog simulations, or complete exercises to enhance their understanding. Integrating GPT into the curriculum allows students to learn vocabulary in context, which improves retention and real-world usage.

3.6.2. Step-by-Step Implementation

(1) Pre-lesson activity: GPT can be used to generate lists of vocabulary related to the lesson topic. It can also provide sample sentences to introduce new words.

(2) In-class exercises: The GPT can create a variety of exercises to practice vocabulary, such as fill-in-the-blank tasks or sentence generation exercises. Students can also simulate conversations with GPT using new words in context.

(3) Post-class practice: After class, GPT can provide vocabulary quizzes with immediate feedback, allowing students to test their knowledge and receive explanations for

incorrect answers. Such after-class exercises help reinforce learning and promote long-term memorization.

3.6.3. Student Interaction with GPT

Students interact with the GPT in a variety of ways during the vocabulary learning process. They can ask the GPT to clarify the meaning of words, practice using them in sentences, or participate in dialog simulations. In addition, the GPT can recommend further study materials based on students' progress and direct them to areas that require more practice. This interaction encourages students to take responsibility for their own learning and provides a more active and personalized approach to vocabulary acquisition.

3.6.4. Vocabulary Development Assessment

GPT can track students' progress by monitoring their engagement with exercises and assessing the accuracy of their responses. For example, the model can identify words that students have difficulty learning and adjust exercises to target those areas. Teachers can use this data to assess each student's performance, track improvements in vocabulary retention, and identify areas that need further attention. This data-driven assessment allows for a more individualized assessment of each student's vocabulary development.

4. Pedagogical Implications

4.1. Integration with Traditional Methods

Integrating GPT with traditional methods of vocabulary instruction combines the strengths of both methods to significantly enhance the learning experience. Traditional methods, such as classroom exercises, writing assignments, and instructor-led discussions, provide structured and foundational learning opportunities. GPT complements these methods by providing personalized and interactive exercises that meet the needs of individual students. In addition, GPT can help create diverse learning materials that support a variety of instructional strategies. It can generate context-rich sentences for classroom exercises, provide prompts for writing tasks, and simulate real-life conversations for discussion.

4.2. The Role of the Teacher

Despite the advanced features of GPT, the role of the teacher in the vocabulary learning process remains critical. Teachers provide the necessary guidance, context, and emotional support that cannot be replicated by AI. They help students interpret the feedback generated by GPT and ensure that corrections are properly understood and applied. In addition, teachers can explain complex vocabulary nuances in greater depth, encourage critical thinking, and create a positive learning environment.

4.3. Curriculum Design

Incorporating GPT tools into existing English programs for secondary students requires thoughtful curriculum design to ensure a balanced and effective approach. Curriculum planners should identify specific areas where GPT can enhance vocabulary instruction, such as individualized practice, interactive practice, and contextual learning. In addition, curriculum design should emphasize how GPT complements traditional teaching methods. Educators should develop modules that seamlessly blend AI-driven exercises with traditional activities to ensure that students benefit from personalized learning and structured instruction. Training for teachers is also essential to equip them with the skills to effectively use GPT tools and interpret the feedback provided to students.

5. Strengths and Limitations of GPT in Vocabulary Instruction

5.1. Strengths

5.1.1. Personalized Learning

GPT excels at customizing vocabulary lessons to meet the unique needs of each student. By analyzing individual performance, GPT can identify areas in which students are struggling and provide targeted exercises to address these weaknesses. For example, if a student struggles with synonyms, GPT can generate specific practice tasks to enhance understanding. This tailored approach ensures that each learner receives the appropriate level of challenge, thus promoting more effective and efficient vocabulary acquisition.

5.1.2. Scalability

One of the significant advantages of GPT is its ability to support many students at once. In large classrooms where individualized attention is often limited, GPT can provide individualized vocabulary practice for each student without overwhelming the teacher. This scalability makes GPT a valuable tool in diverse educational environments, ensuring that all students receive the customized support they need to improve their vocabulary skills.

5.1.3. Instant Feedback

GPT provides immediate correction and explanation when students make errors in vocabulary use. This real-time feedback is critical to learning because it helps students understand their mistakes and learn correct usage immediately. For example, if a student incorrectly uses the word “affect” instead of “effect,” GPT can promptly highlight the error and explain the difference. This immediate feedback reinforces correct vocabulary use and prevents the formation of bad habits.

5.1.4. Supporting Functions

The GPT-based vocabulary tool is available 24/7, providing students with the flexibility to practice outside of regular school hours. This constant accessibility allows learners to practice vocabulary at their own pace and convenience, whether they are at home or on the go. The ability to practice at any time enhances continuous learning and helps students consolidate their vocabulary knowledge on a regular basis.

5.1.5. Engagement

GPT increases student motivation and engagement through interactive and gamified vocabulary practice. While traditional methods often involve repetitive exercises that can be tedious, GPT provides engaging activities such as vocabulary quizzes, games, and simulated conversations. These interactive exercises make learning more fun and encourage students to actively apply new words in a variety of contexts, thereby improving retention and application[6].

5.2. Limitations

5.2.1. Contextual Understanding

Despite its advanced features, the GPT sometimes struggles to understand complex grammatical or cultural nuances. This limitation can lead to occasional errors or misunderstandings, especially when dealing with idiomatic or culturally specific language. These errors highlight the need

for teacher supervision to ensure that content remains accurate and contextually appropriate.

5.2.2. Over- Reliance on Technology

Students may become overly reliant on GPT for vocabulary learning. While the GPT provides valuable support, overreliance on the tool may hinder students' ability to self-correct or develop critical thinking skills related to vocabulary use. It is important for educators to balance the use of the GPT with traditional teaching methods that encourage independent learning and problem solving.

5.2.3. Accuracy Issues

As advanced as GPT is, it is not immune to error. The model may occasionally provide incorrect examples of vocabulary or inappropriate contexts, especially for complex or uncommon words. These inaccuracies can confuse students and disrupt the learning process. Therefore, it is important for teachers to review and validate GPT-generated content to maintain the accuracy and reliability of vocabulary instruction.

6. Conclusion

This paper explores the use of GPT (Generative Pretrained Transformer) in enhancing vocabulary instruction for Chinese secondary school students. By examining how GPT functions as a high-level language model capable of generating and understanding text, its ability to provide personalized and interactive vocabulary exercises tailored to individual student needs is highlighted. When integrated with traditional teaching methods, GPT enables educators to combine the benefits of an AI-driven tool with proven teaching methods. GPT has the potential to transform vocabulary instruction by making it more personalized, interactive, and accessible. It can significantly enhance the learning process by adapting to each student's learning pace, providing instant feedback, and delivering engaging exercises. By complementing traditional methods, GPT can support students in achieving higher levels of language proficiency while creating a more engaging and supportive classroom environment. As artificial intelligence technology continues to evolve, the role of GPT in education may expand to provide more sophisticated tools for language learning. The use of GPT in vocabulary instruction can lead to a more effective and enjoyable learning experience, enabling students to excel in their mastery of the English language.

References

[1] Gu Yuanhua. Problems and improvement strategies in English vocabulary teaching[J]. Teaching and Management,2011, (36): 110-111.

[2] Dai Min. Exploration of Vocabulary Teaching Methods in English Teaching in Colleges and Universities--A Review of Research on English Vocabulary Teaching and Acquisition in Colleges and Universities[J]. Exploration of Higher Education, 2019, (01):136.

[3] Dai Manchun! 100089.On the study of second language vocabulary acquisition[J]. Foreign Language Teaching and Research, 2000, (02):138-144+160.

[4] Qinao, Du Shangheng, Chang Yuanyuan, et al. The working principle, key technology and future development trend of ChatGPT[J]. Journal of Xi'an Jiaotong University, 2024,58 (01): 1-12.

[5] Guo Hongyan, Ren Donghong, LI Huifang. Creating Contexts around Themes to Enhance the Effectiveness of Vocabulary Learning[J]. Foreign Language Teaching in Elementary and Middle Schools (Middle School),2022,45(10):49-54.

[6] Huang Yining. The View of English Vocabulary Learning and its Teaching Implications[J]. Foreign Language Teaching in Elementary and Middle Schools (Middle School),2016,39(05): 18-22.