



Exploring Differentiated Instruction in College English Teaching in the Context of ChatGPT

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Abstract: The rapid development of artificial intelligence technology has brought new opportunities and challenges to the field of education. As a large language model, ChatGPT has demonstrated powerful capabilities in language understanding and generation, providing new possibilities for differentiated instruction of college English. This paper aims to explore the paths of differentiated instruction of college English in the context of ChatGPT, analyze its advantages and challenges, and propose corresponding teaching strategies. The research adopts the literature research method and case analysis method. By analyzing the technical characteristics of ChatGPT and its educational application scenarios, it explores the differentiated instruction of college English based on ChatGPT. The research shows that ChatGPT can effectively support the differentiated instruction of college English, enhance students' learning interest and learning effectiveness, but there are also challenges in terms of data security, ethics, and other aspects.

Keywords: ChatGPT, college English, differentiated instruction

Introduction

With the acceleration of globalization and the rapid development of information technology, society's demand for talents has become increasingly diversified and personalized. The traditional "one-size-fits-all" teaching model can no longer meet the needs of cultivating innovative and versatile talents in modern society. The education sector has increasingly recognized that respecting students' individual differences and providing diversified teaching content and methods are key to achieving educational equity and promoting students' comprehensive development. Differentiated development mainly emphasizes the "different development" of students, which is based on the differentiated development of individuals and the achievement of different development by different people, so as to meet the requirements of future society for the diversity of talents^[1]. As an important component of higher education, college English teaching shoulders the critical mission of cultivating students' comprehensive English proficiency. However, traditional college English teaching models commonly suffer from issues such as monotonous teaching content, outdated teaching methods, and one-sided evaluation approaches. These problems make it difficult for teaching to adapt to students' personalized learning needs and fail to meet the high demands for cross-cultural communication and language application abilities in the context of globalization. Additionally, uniform examination standards and evaluation methods overlook students' individual progress and special circumstances, further exacerbating the unevenness in teaching outcomes.

The concept of differentiated instruction can be traced back to the 1920s, with its core philosophy centered on safeguarding every citizen's right to education and meeting diverse student learning needs through approaches like group teaching. In the late 20th century, educator Tomlinson further systematized the idea, proposing that differentiated instruction should design and arrange teaching activities based on students' unique characteristics to maximize each student's potential. This philosophy has gained widespread adoption in Western multicultural contexts and gradually become a critical guiding principle in modern education. The academic community broadly acknowledges the significance and effectiveness of differentiated instruction. Studies also indicate that while differentiated instruction can enhance student performance, motivation, and learning environments, teachers face challenges in effectively responding to and leveraging these differences in practice. It requires teachers to possess competencies in diagnosing student differences, designing diversified teaching activities, and providing timely feedback, posing significant workload challenges and increased responsibilities for educators.

The rapid advancement of artificial intelligence (AI) technology has brought new opportunities and challenges to the education sector. As an AI tool based on large language models, ChatGPT demonstrates formidable capabilities in language understanding, generation, and reasoning. Its application in education opens up new possibilities for differentiated college English instruction. For instance, ChatGPT can support teachers in delivering customized teaching services tailored to students' individual differences through functions such as personalized learning path design, intelligent learning resource recommendation, real-time interaction and feedback, and learning data analysis and assessment. This technology not only addresses the limitations of traditional teaching models but also provides students with a more flexible and efficient learning experience.

In the context of rapid globalization and technological advancement, college English teaching urgently needs to adopt



differentiated instruction to meet students' personalized learning demands and adapt to the era's requirements for talent cultivation. According to the requirements of the University English Teaching Guidelines issued by the Ministry of Education in 2020, universities should determine the teaching objectives in accordance with the new grading objectives and requirements, and determine the teaching objectives in line with the situation of the university, and carry out stratified and categorized teaching according to the actual English language level of the students^[2]. The introduction of artificial intelligence technologies like ChatGPT provides new tools and approaches for differentiated college English teaching, offering promising opportunities to drive innovation and optimization in teaching models. Therefore, exploring practical pathways and theoretical frameworks for differentiated college English instruction in the era of ChatGPT holds significant academic value and practical implications.

Literature Review

With the demand and development of multiculturalism in western society, Tomlinson, C.A. proposed in the late 20th century that differentiated instruction can meet the learning needs of different students, requiring teachers to design and arrange instructional activities according to the uniqueness of the students in order to meet the differences of students, so that the potential of each student can be maximized. She believes that differentiated instruction is both an approach and a philosophy in which teachers acknowledge the existence of differences among students and respond to those differences in classroom instruction with the goal of providing optimal learning opportunities for all students and expanding each student's learning potential^[3]. To this end, she first proposed that teachers adapt the content, process, and product of instruction to students' learning interests, readiness levels, and learning styles, and attempted to construct a first-generation model of differentiated instruction. Later, she expanded differentiated instruction into an active pedagogy, and the corresponding theoretical model also requires teachers to have a positive mindset, take the initiative to create a harmonious classroom environment, use diverse teaching tools to maximize students' learning needs, and increase each student's learning opportunities, which highlights teachers' active behavior.

"Differentiated instruction" is an instructional philosophy that effectively addresses student differences and meets the learning needs of diverse students^[4]. This philosophy recognizes that learners learn better when their individual learning levels are supported accordingly, or when lessons are connected to learners' real-life experiences, or when the classroom creates an environment in which learners feel valued and appreciated. The fundamental mission of schools is to maximize the potential of each learner so that all learners continue to make progress. The implementation of differentiated instruction is a fundamental requirement and path to achieving this goal^[5]. Differences in learners can be manifested in a variety of ways such as readiness, learning styles, achievement motivation, personal interests, knowledge and experience, and life circumstances^[6].

Differentiated instruction actually emphasizes the importance of teaching students according to their aptitude, and the idea of "teaching students according to their aptitude" can be traced back to the time when Confucius set up a class at the apricot altar about 2,500 years ago in China. Confucius paid great attention to observing the individual differences in the learning qualifications and receptive abilities of his disciples, and adopted appropriate teaching methods based on their different learning conditions. In the 1980s, China began a new exploration of teaching according to the aptitude of the students, i.e., hierarchical (graded) teaching. Graded teaching emphasizes that there are often great differences in the knowledge, abilities, emotions and attitudes displayed by each student, and that teachers must respect students' individual differences, understand their strengths and abilities, and help them to find learning goals and learning methods suitable for themselves according to their differences. Graded teaching produced an important positive effect at that time, and the research results show that: graded teaching helps to improve English CET4 scores^[7]; the implementation of graded teaching significantly reduces the dispersion of students' learning achievements, indicating that the teaching effect is better than before^[8]. However, the traditional Graded teaching model also has some drawbacks, such as the one-size-fits-all "two-point method" and "three-point method", which will lead to the majority of students not being included in the "excellent students" (fast class) and produce inferiority complex, anxiety and other "negative labeling effects". Experiments have shown that graded instruction has a greater impact on the psychological environment of the classroom^[9]. The authors believe that "simply dividing students into high and low levels for classroom learning lacks scientific basis and is likely to demoralize learners at the middle and low levels"^[10].

Over the past 40 years, the research on grading teaching is generally characterized by overemphasis on theory and neglect of practice, lack of in-depth thinking and focused reflection, and the wisdom of replicable and generalizable experience has not been formed, and the theory based on it is relatively single, in addition to the theory of linguistics, the grading of English teaching at university level involves many other disciplines such as pedagogy, psychology, statistics, etc., so it is necessary to draw on the advanced concepts of various disciplines^[11]. It is a common task for the foreign language community in the new era that universities should improve the efficiency of graded teaching and create a graded teaching mode and curriculum system with school-based characteristics according to the requirements of the Guide to Teaching English at Universities in the new Era. Under the new situation, universities and colleges should take the opportunity of implementing the requirements of the Guide to optimize and refine the graded teaching, and to form "school-based courses with more characteristics and personalized implementation courses". They should determine the teaching objectives in accordance with the actual teaching situation in their own schools, and carry out hierarchical teaching according to the actual English language level of the students^[12].

It is widely recognized in academia that learner differences can be a teaching resource, but exactly how to respond to and utilize differences is a major challenge for teachers^{[13][14][15]}. By analyzing the research on the application of differentiated instruction in practice, it was found that although the implementation of differentiated instruction is conducive to

improving student achievement, interest, enthusiasm and motivation in learning, improving the learning environment as well as improving the status of the school, it actually puts higher demands on the ability of teachers to implement differentiated instruction in practice, and teachers are required to possess many skills to diagnose student differences, design rich instructional activities, use a variety of instructional tools to meet the learning needs of diverse students, and provide appropriate and timely feedback to students. Novice teachers, in particular, face significant difficulties in the early stages of implementing differentiated instruction.

With the development of artificial intelligence, Chat GPT provides new ideas for English teaching and new possibilities for differentiated instruction. Scholars at home and abroad have conducted extensive research on the application of artificial intelligence technology in the field of education. In the field of language learning, AI technology has been applied to speech recognition, machine translation, intelligent writing, etc., and has achieved certain results. For example, AI-driven speech recognition technology can help students improve their oral expression ability; AI-based machine translation technology can help students quickly understand foreign language texts; AI-powered intelligent writing tools can help students improve their writing skills. These functions can not only meet the new requirements for talent cultivation in the development of the times, but also provide the possibility of differentiated instruction.

The research on applying ChatGPT to college English differentiated instruction is still in its infancy. Existing studies mainly focus on the technical characteristics, educational application scenarios, and potential risks of ChatGPT, lacking a systematic theoretical framework and practical cases. Therefore, this paper aims to explore the path of college English differentiated instruction in the context of ChatGPT, analyze its advantages and challenges, and put forward corresponding teaching strategies, with a view to providing references for college English teaching reform.

Methodology

This study adopts the literature research method and case study method to construct a differentiated instruction model of college English based on ChatGPT by analyzing the technical features and educational application scenarios of ChatGPT. Through a systematic analysis of both domestic and international researches, this study examines the technical principles, functional features, and application scenarios of ChatGPT. Simultaneously, it synthesizes the theoretical underpinnings, current state, and challenges of differentiated instruction in college English education, establishing a conceptual framework for integrating AI technologies into language teaching.

Additionally, by systematically analyzing representative cases of AI-driven language teaching practices worldwide, this research identifies critical success factors, innovative implementation strategies, and potential pitfalls. Thematic analysis of these cases generates actionable insights, which inform the development of a ChatGPT-based differentiated instruction model tailored to the specific needs of college English learners.

Research Findings

Effectiveness of ChatGPT in supporting differentiated instruction in college English

ChatGPT, as an advanced artificial intelligence tool, is able to provide highly personalized learning support based on students' individual differences (e.g., language level, learning style, interest preferences, etc.). Through natural language processing technology, ChatGPT is able to generate learning content that meets students' current abilities, design paths that fit their learning progress, and provide immediate and accurate learning feedback. This personalized support not only meets the diverse learning needs of students, but also significantly improves students' interest and learning outcomes.

Feasibility of differentiated instruction in college English based on ChatGPT

Personalized Learning Path Design: Based on students' initial level, learning goals and learning progress, ChatGPT is able to dynamically adjust the learning path to ensure that each student learns at a pace that suits him/her.

Intelligent Learning Resource Recommendation: ChatGPT can recommend appropriate learning resources (e.g., articles, videos, practice questions, etc.) based on students' learning behaviors and performances to help students master knowledge more efficiently.

Real-time Interaction and Feedback: ChatGPT can engage in real-time dialog with students, answer questions, provide instant feedback such as grammar correction and writing suggestions, and help students improve in a timely manner.

Learning Data Analysis and Evaluation: By analyzing students' learning data (e.g., correct answer rate, learning hours, etc.), ChatGPT can provide teachers with detailed learning reports, helping teachers better understand students' learning status and adjust teaching strategies.

Challenges of differentiated instruction of college English in the context of ChatGPT

Although ChatGPT shows great potential in college English differentiated instruction, its application still faces some urgent problems:

Data security and privacy protection: ChatGPT needs to collect and analyze students' learning data for personalized support, which may involve students' private information.

Ethical issues: The content generated by ChatGPT may be biased or inaccurate, which may mislead students' learning. For example, there may be bias in the representation of certain cultures and values.

Technology dependency: Over-reliance on AI tools may weaken students' critical thinking and independent learning skills. Students may be less willing to think and explore on their own initiative.

Educational equity issues: The application of ChatGPT requires stable technical support and infrastructure, but in districts or schools with limited resources, it may be difficult to achieve a full-scale rollout. This may exacerbate the inequality in the distribution of educational resources, leading to further widening of the education gap between urban and rural areas, and between rich and poor areas.

Discussion

ChatGPT has significant advantages in college English differentiated instruction, which can effectively improve teaching efficiency and learning effect. However, its application still requires in-depth research and optimization at the technical, ethical and practical levels to ensure that it can truly serve the improvement of education quality. Future research should focus on issues such as data security, ethics and educational fairness to provide theoretical and practical support for the wide application of ChatGPT in college English teaching.

Advantages and potentials of ChatGPT in differentiated instruction of college English

ChatGPT, as an advanced artificial intelligence tool, offers brand new possibilities for college English differentiated instruction. Its core advantage lies in its ability to provide highly personalized learning support based on students' individual differences (e.g., language level, learning style, interest preferences, etc.). Through natural language processing technology, ChatGPT is able to dynamically generate learning content that meets students' abilities, design paths that fit their learning progress, and provide immediate and accurate feedback. This kind of personalized support not only meets the diverse learning needs of students, but also significantly improves students' interest in learning and learning outcomes. For example, in traditional classrooms, it is often difficult for teachers to take into account the needs of all students, especially in large classes, where individual differences are easily overlooked. The introduction of ChatGPT can effectively alleviate this problem. For students with a weak foundation in English, ChatGPT can provide more basic grammar and vocabulary practice, while for high-level students, it can recommend more challenging reading materials or writing tasks. This differentiated support helps each student learn at a pace that suits him or her, thus improving overall teaching effectiveness.

College English differentiated instruction model based on ChatGPT

The college English differentiated instruction model based on ChatGPT has a high degree of feasibility, the core of which lies in personalized, intelligent and data-driven teaching support through artificial intelligence technology. First, ChatGPT is able to dynamically design personalized learning paths based on students' initial levels, learning goals and learning progress, ensuring that each student learns at a pace that suits him or her. Second, by analyzing students' learning behaviors and performance, ChatGPT can intelligently recommend appropriate learning resources (e.g., articles, videos, practice questions, etc.) to help students master knowledge more efficiently. In addition, ChatGPT's real-time interaction and feedback features enable it to engage in instant conversations with students, answering their questions and providing accurate feedback such as grammatical corrections and writing suggestions to help students make timely improvement. Finally, ChatGPT provides teachers with detailed learning reports through learning data analysis and evaluation, helping teachers better understand students' learning status and adjust teaching strategies. This model not only enhances teaching efficiency, but also significantly improves student learning, especially in large classes, which can effectively make up for the problem of insufficient teacher resources.

Challenges and strategies of ChatGPT in differentiated instruction of college English

Although ChatGPT shows great potential in college English differentiated instruction, its application still faces some problems that need to be solved: firstly, the issues of data security and privacy protection should not be ignored. ChatGPT needs to collect and analyze a large amount of students' learning data, so how to protect the security and privacy of students' data is an important issue. Second, ethical and moral issues need to be emphasized: the content generated by ChatGPT may be biased or incorrect, so how to guide students to use ChatGPT correctly and avoid its negative impacts needs to be correctly guided by teachers. Then, the issue of technology dependence deserves vigilance, over-reliance on ChatGPT may lead to the decline of students' thinking ability and independent learning ability, so it is necessary to use ChatGPT reasonably, as an auxiliary tool rather than a substitute. Finally, the use of ChatGPT relies on stable technical support and infrastructure, however, it is difficult to achieve full promotion in resource-poor regions or schools, which may increase the uneven distribution of educational resources, resulting in the continuous widening of the education gap between urban and rural areas, rich and poor regions.

Future research directions and practical suggestions

In order to give full play to the potential of ChatGPT in differentiated college English teaching, future research can be conducted in the following areas. The first is to develop more secure data storage and transmission technologies to ensure the safety of students' private information. The second is to establish an audit mechanism for AI-generated content to ensure the accuracy and fairness of the content. At the same time, the development of students' critical thinking skills should be strengthened to avoid over-reliance on AI tools. Third, strengthening the construction of technological infrastructure, especially in resource-limited areas, to ensure the wide application of ChatGPT. In addition, it is necessary to provide technical training for teachers and students to help them better adapt to new technologies. Fourth, through policy support and technical assistance, to ensure that all students can equally enjoy the educational dividends brought by ChatGPT.

Conclusion

This study explores the pathways for differentiated instruction in college English under the context of ChatGPT, analyzes its advantages and challenges, and proposes corresponding teaching strategies. The findings suggest that ChatGPT can effectively support differentiated instruction in college English, enhancing students' learning interest and outcomes, although challenges such as data security and ethical concerns remain. Future research should further explore the application scenarios of ChatGPT in education, refine related technologies, and establish ethical guidelines to promote the deep integration of AI technology and education, thereby advancing educational equity and quality.

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