

Research on the Application of AI technology in College English Teaching models

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ABSTRACT

The rapid development of AI technology has provided technical support for the innovation of college English teaching models for non-English majors. AI technologies such as facial recognition, voice recognition, big data, large language models, and language processing have presented brand-new experiences and breakthrough changes to the current college English teaching models with real-time capability, ubiquity, personalization, and multidimensions in the design, management, interaction, feedback and evaluation of college English teaching. This paper briefly introduces the concept of AI technology, reviews the previous researches on the application of AI technology in college English teaching models, discusses the application of AI technology in college English teaching models for non-English majors, and the roles AI technology plays in promoting innovative teaching for teachers and personalized autonomous learning for students.

KEYWORDS

AI technology; College English teaching model

1 Introduction

1.1 The concept of AI technology

AI technology, the remarkable driving force for industrial and technological revolution, studies and develops the theories, methods, technologies, and application systems for simulating and expanding human intelligence. It attempts to simulate certain cognitive processes and intelligent behaviors of humans, such as learning, thinking, analyzing, and planning, and studies how to enable computers to perform intelligent behaviors that were previously only possible for humans. In 1956, McCarthy, Minsky, and Rochester first proposed the concept of AI while researching and discussing how to simulate intelligence with machines. AI technology can be applied in robotics, speech recognition, image recognition, natural language processing, expert systems, machine learning, and computer vision.

1.2 Previous researches on the application of AI technology in college English teaching models

Experts and scholars in China have conducted in-depth researches and discussions on the application of AI technology in college English teaching models, including the application of AI technology in students' autonomous learning, the learning data analysis, the evaluation and feedback of students' learning tasks, and the limitations of AI technology's application in college English teaching models as well as the challenges AI technology poses to college English teachers. However, some studies are still focused on the use of learning software and platforms in blended teaching models for college English teaching.

Besides, there is a lack of researches on the technical support of AI technology in teaching design and innovation, the integration of AI technology in teaching applications, the role, extent and boundaries of its application in college English teaching, and the role of teachers in the application of AI technology.

1.3 The role of AI technology in innovating college English teaching models

In April 2018, the Ministry of Education in China released the "Action Plan for Innovation in Artificial Intelligence in Colleges and Universities" and the "Education Informatization 2.0 Action Plan", laying emphasis on integrating AI technology with teaching to drive innovation.

The "College English Teaching Guidelines (2020)" emphasized the importance of integrating the latest information technology with course teaching, highlighting the significant role of modern educational technology, especially information technology, in foreign language teaching.

AI technology's capabilities in big data processing, large language models, and machine learning can provide technical support for the innovation in college English teaching models, for it can analyze all the indicators of teaching activities, assess and provide feedback on learning tasks, recommend personalized learning resources and plans, and facilitate human-computer interactions, thus stimulating students' enthusiasm for learning while making the learning process more natural, scientific, personalized, and efficient.

2 The application of AI technology in college English teaching models

AI technologies, such as big data, speech recognition, and language processing, have significantly advanced the smartness, personalization, interactivity, and immersion of blended teaching models in college English teaching. It can offer tailored learning experiences by analyzing students' needs, pace of learning, competency and learning styles, recommend customized learning resources, and suggest personalized learning plans, thereby fully facilitating students' individual development. With the help of AI devices, students can use Augmented Reality to scan their surroundings and access relevant English learning resources. This allows them to easily integrate learning content with practical application, experience simulated language environment at any time, enhances their interest in learning and improves their learning experience, leading to a better understanding and mastery of language skills. Moreover, AI technologies such as Virtual Reality and Augmented Reality can create immersive and experiential virtual cultural contexts, fostering students' cultural awareness and enhancing their cultural experiences and capability in cross-cultural communication. AI's blockchain technology can trace all teaching activities, share educational resources, and promote innovation and protection of copyrights. Facial recognition and voice recognition can effectively reduce proxy attendance, proxy homework completion, and cheating in exams by proxy.

With the aid of AI technology, teachers can integrate a variety of the latest, most suitable and effective teaching resources to guide students in personalized autonomous learning, transforming themselves from transmitters of knowledge to designers and organizers of AI-assisted teaching. Teachers can also, by making rational use of AI technology, tailor teaching plans and activities to individual differences, provide personalized guidance and feedback. They can adjust and expand teaching content according to students' needs and abilities as well, building a multi-dimensional and diversified AI-assisted teaching model. In addition, while adjusting their own roles, teachers should guide students to take advantage of AI technology, fully utilize the learning resources provided by AI to continuously improve their language competency, and form personalized autonomous learning systems. Meanwhile, teachers should manage the relationship between traditional and modern teaching methods, pay attention to the interpersonal interactions and emotional exchanges between teachers and students, and provide students with appropriate feedback in terms of thoughts, emotions, personality, and so on.

2.1 The application of AI technology in the teaching preparation

AI technology provides teachers with new tools of designing teaching plans, promoting the renewal of teaching theories and the broadening of perspectives. In practice, teachers can set specific parameters or conditions and then pose questions or requests to AI-assisted Chatbot, whose vast database and large language models will immediately respond with matching results of teaching designs or activities. If the results are not satisfactory, teachers can adjust or refine their requirements until they obtain the desired response. This significantly reduces the time teachers spend on lesson preparation, allowing them to focus more on considering the macro structure of teaching plans from a more diverse and profound perspective. This means that teachers must actively learn and master the application of AI technology in teaching, and try to apply it to various teaching scenarios and stages. They should fully leverage its role in the innovation of college English teaching models. For example, teachers can use AI technology to set personalized learning tasks and plans with different levels of difficulty and content for individual student, like the settings of a game. Students must complete the tasks at one level before moving on to the next. In this sense, students can be more aware of what they have achieved and what they are expected to achieve. Regardless of time and space, such learning tasks and plans can fully achieve the purpose of personalized autonomous learning. In this teaching model, knowledge acquisition is integrated with participatory activities and exercises, online autonomous learning with offline classroom learning, and teacher-student interaction with human-computer interaction, presenting a multi-dimensional learning experience.

2.2 The application of AI technology in the teaching process

2.2.1 The application of AI technology in the instruction of listening skills

AI technology has revolutionized listening instruction in college English teaching by providing a more personalized and adaptive learning experience. Unlike traditional one-fits-all textbooks, AI's speech recognition technology can generate listening materials with varying accents, speech rates, and difficulty levels. This allows for the creation of customized listening practices that cater to each student's proficiency level, thereby meeting their personalized learning needs and helps students to focus on what they need to devote more time to practice to improve their overall listening skills. Moreover, AI technology enables students to practice listening in simulated real-life settings to better understand the language context in daily use. It can also assess students' listening abilities, command of vocabulary, and weak points. Its instant feedback on students' listening tasks can not only alert them to their mistakes and weak points, but also urge them to correct their mistakes immediately and practice constantly. By analyzing these data, teachers can gain real-time

insights into each student's specific needs, before adjusting the focus of their teaching to address common mistakes, weaknesses and challenges. This ensures that the content is both universally applicable and targeted to individual needs. Currently, teachers can adopt AI-assisted listening practice and assessment software, as well as platforms and public accounts, to guide students in personalized autonomous learning. This approach not only enhances the effectiveness of listening skill development but also fosters a more engaging and interactive learning atmosphere.

2.2.2 The application of AI technology in the instruction of speaking skills

AI technology can leverage its machine learning capabilities, databases, and language corpora, to create virtual roles and real-life oral communication scenarios, such as daily conversations and business negotiations. It can record and assess students' preparation time, vocabulary use and fluency in expression, as well as correct their pronunciation and intonation. It can also offer real-time feedback and suggestions, and recommend personalized oral practice and learning plans according to each student's specific needs. Through real-time dialogue with AI, students can improve the accuracy and fluency of their oral expression. Moreover, human-AI interaction can help some students overcome the shyness or embarrassment they might feel when communicating with real people, boosting their confidence to speak, and stimulating their interest and motivation to learn. Additionally, the involvement of AI technology cannot only save teachers the time and effort of grading oral assignments but also ensure a higher standard of pronunciation and accuracy in language output.

2.2.3 The application of AI technology in the instruction of reading skills

For most students in China, reading is the easiest language skill to practice individually and is often the best mastered. In such case, AI technology can also make a difference by recommending personalized reading materials based on students' command of vocabulary, reading skills and interest, encouraging them to complete reading tasks on time, and then providing evaluation and feedback. Research indicates that to acquire the vocabulary range of 3000-6000 words, students need to read nearly a million words of reading materials. The timely, personalized, and quantified push from AI can ensure that the students are constantly exposed to new vocabulary while not frustrated by too many or too difficult reading materials. In addition, AI-generated exercises and interactive activities can help students continuously improve their reading skills. For example, AI can provide vocabulary exercises and reading comprehension questions related to the reading materials, helping students consolidate what they have learned, thus ensuring the simultaneous improvement of students' reading skills and vocabulary.

2.2.4 The application of AI technology in the instruction of writing skills

Before writing, AI technology can provide topic suggestions and brainstorming to stimulate students' thinking and inspiration. After writing, AI's large language models can automatically and instantly grade writing assignments based on parameters such as grammar, word choice, collocation, coherence, sentence length and so on. They can instantly identify and correct errors, immediately provide comments and suggestions for improvement, and offer guidance on vocabulary selection, collocation, sentence optimization, and coherence. Based on the theory of dynamic assessment, AI technology can provide instant dynamic process evaluation for students' drafts and revised writing during the writing process, contributing to the gradual and steady improvement of their writing skills as well as critical thinking. Also, It can recommend suitable reading materials, questions or exercises based on students' writing styles and common mistakes, helping them to improve their writing skills in a personalized manner. This allows students to promptly focus on the weaknesses in their writing and more quickly master and accumulate authentic and standardized expressions. For students with smaller vocabularies, AI can suggest personalized vocabulary learning plans and provide immersive vocabulary learning scenarios. At the same time, teachers' time spent on grading writing assignments is greatly reduced, freeing them to provide one-to-one guidance and feedback to students. Additionally, teachers can analyze the grading data from AI in real-time to identify common mistakes and conduct focused explanations and analyses. Besides, they can analyze and showcase sample essays along with the AI's grading data.

2.2.5 The application of AI technology in the instruction of translation skills

With the help of machine translation technology powered by AI technology, students can compare and analyze their own translations with those produced by machines, as well as compare translations by renowned translators with their translations or machine translations. By appreciating and exploring the differences, students can accumulate accurate and authentic expressions to enhance their language sense and translation skills. Moreover, thanks to AI technology, this comparative analysis can be focused solely on the differences, making it more efficient to accomplish. Besides, students

can refine translation drafts from AI translation tools to improve the accuracy and fluency of the translation. In this process, AI technology can also help students broaden their knowledge. For instance, through language processing and knowledge graph technologies, AI translation tools can automatically identify and integrate terminology and concepts from different disciplines, providing students with more comprehensive translation resources and background knowledge. Of course, teachers need to remind students to avoid over-reliance on machine translation and pay attention to the practice of their own translation skills and the cultivation of their analytical thinking skills.

2.3 The application of AI technology in the teaching interaction and evaluation

The involvement of AI technology adds an important part to the teaching interaction. In addition to the widely implemented teacher-student and student-student interactions in blended teaching models, teachers can interact with AI to keep track of students' language abilities, learning dynamics and pace. Students can engage with AI for personalized autonomous learning, accessing customized learning resources, suggestions, and answers, thus increasing their participation in the learning process.

Since many learning activities and tasks can be evaluated instantly by AI technology, the proportion of formative assessment in the final evaluation can be significantly increased. This not only allows for an objective and accurate evaluation of students' participation, efforts and progress, but also motivates students to study daily and routinely, reducing the phenomenon of last-minute cramming before exams. At the same time, the workload of teachers for grading and evaluating learning tasks is greatly reduced, allowing them to have more time for personalized guidance and feedback, as well as innovation of teaching theories and perspectives, which is more conducive to improving teaching effectiveness.

3 Conclusion

The application of AI technology in college English teaching models has greatly enriched teaching resources and evaluation tools, and expanded the methods for teaching feedback. The large databases and language models of AI can not only answer students' questions but also provide suggestions and plans for different learning requirements and stages. This enhances students' learning engagement, changes the ways and channels of knowledge and skill acquisition, and helps students establish personalized autonomous learning systems. The use of AI technology in college English teaching models also increases the interest of learning tasks, boosts students' confidence, and stimulates their enthusiasm for learning. It better meets students' personalized learning needs and forms a new real-time interactive teaching and evaluation system involving the dynamic participation of teachers, students, and AI technology.

About the Author

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