

Integration of Mobile Learning and Artificial Intelligence: Multidimensional Exploration of Improving College Students' English Autonomous Learning Ability

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ABSTRACT

With the continuous development of economic globalization and the continuous iterative updating of artificial intelligence, China's higher education is facing unprecedented challenges. Mobile learning and artificial intelligence have changed students' learning modes, from analog learning to digital learning and then to mobile learning. The change of learning methods has ushered in a new topic in English teaching. Based on the theory of autonomous learning, combined with the characteristics of mobile learning and artificial intelligence, this paper discusses the path of improving college students' English autonomous learning ability under the integration of mobile learning and artificial intelligence, in order to provide a useful reference for the reform of English teaching.

KEYWORDS

Mobile Learning; Artificial Intelligence; Autonomous Learning Ability

1 Introduction

With the continuous development of economic globalization and the rapid development of Internet and artificial intelligence technology, students' learning style has been completely changed. The traditional teacher-centered classroom teaching has been far from meeting the needs of English teaching development. Teachers must update the teaching concept, keep up with the trend of the times, and take science and technology as the fulcrum to reform the teaching mode. Nowadays, mobile learning is quietly changing the mode of English teaching and learning. The essence of mobile learning is the specific application of mobile Internet technology in education and teaching, which is of great significance to promote human self-improvement and fragmented time arrangement, and is an important development direction of future learning. At the same time, the rapid development of artificial intelligence makes mobile learning more personalized and interactive.

2 Core concepts

2.1 Mobile Learning

Mobile learning is a kind of learning that can occur at any time and any place with the help of mobile devices. The mobile computing devices used in mobile learning must be able to effectively present the learning content and provide two-way communication between teachers and learners. Mobile learning has the following characteristics: mobility, real-time interaction, small modular learning content, diversified presentation forms, personalized teaching activities.

Mobile learning appeared as early as in the 1990s. Carnegie Mellon University in the United States established a project called Wire Andrew. This research aims to provide corresponding technical support for teachers and students on campus to enjoy mobile learning supported by wireless communication technology. Domestic research and practice began at the beginning of the 21st century, but the development is very rapid. At present, the research and application of mobile learning pay more and more attention to practicality, and many beneficial attempts have been made in the effectiveness of mobile learning resources, implementation methods, application scenarios, auxiliary learning, teaching management and so on.

In the current college English classroom teaching practice, the traditional English teaching method has exposed a series of problems. For example, the number of students is too large to form effective teacher-student interaction. Teachers' teaching cannot take into account the personalized needs of students. Students' participation in class is low, and they can't concentrate for a long time. The classroom is dull and students lack interest in English learning. Limited class hours cannot meet the growing learning needs of students.

Mobile learning has the characteristics of mobility, real-time interaction, multimedia function to build situational teaching. The features of small modular learning content, diversified presentation forms and supports the construction of

personalized teaching activities can improve the vividness of classroom teaching, and make up for the lack of classroom teaching knowledge intake.

2.2 Artificial Intelligence

The application of artificial intelligence in the field of teaching can be traced back to the 1960s. In 1961, researchers at the University of Illinois at Urbana Champaign developed an intelligent tutoring system that allowed students to interact with educational materials through a graphical user interface. By the 2020s, with the emergence of Chatgpt, artificial intelligence had been widely and rapidly applied to various aspects of society, particularly in the field of education. For example, AI chatbots can serve as practice partners for language learners, digital humans can take on some of the teacher's work in the teaching field, and AI writing tutoring tools can provide real-time feedback to students. Artificial intelligence has penetrated into all aspects of teaching and learning, playing an increasingly important role.

Artificial intelligence, like mobile learning, can develop personalized learning plans. Artificial intelligence can monitor learning progress, evaluate learning levels, and optimize learning paths. Appropriate practice materials can be provided according to the progress and level of learners, which can better consolidate the knowledge learned, more scientifically develop personalized learning plans, and effectively improve learning effectiveness. Artificial intelligence can perform sound recognition, provide one-to-one oral practice with learners, provide real-time feedback on pronunciation, provide rich learning scenarios and materials, and enhance students' interest in learning. At the same time, artificial intelligence can achieve real-time correction of homework, provide feedback on the completion of homework, and provide reference answers, greatly improving students' ability to learn independently. In addition, AI also provides useful help in the cultivation of cross-cultural communication skills.

3 Related Theoretical Research

3.1 Constructivist Learning Theory

The constructivist learning theory originated in the field of philosophy in the 18th century and was applied to modern education in the 1960s. Constructivist learning theory is a very important foundation of mobile learning theory. Constructivist learning theory emphasizes the subjective competence of learners in the process of knowledge formation. Learners need to actively explore and exert their subjective initiative in the learning process, rather than passively receiving knowledge. Constructivist learning theory also emphasizes the important role of context in learning. Real context needs to be constructed to build the knowledge learned.

3.2 Autonomous Learning Theory

Autonomous learning theory derives from humanistic psychology, which is both a learning mode and a learning ability that emphasizes learners' control over their own learning process. Self-directed learning emphasizes cultivating students' strong learning motivation and strong interest in learning, so as to engage in active learning, that is, actively and voluntarily learning, rather than passively or unwillingly learning. The ability of autonomous learning requires learners to have the ability to formulate and adjust learning goals. It requires the ability of choosing learning materials and content and the ability of monitoring and evaluating the learning process and outcomes. At the same time, it demands the ability to adjust learning attitudes and emotional factors.

Mobile learning and artificial intelligence are well suited to the development of autonomous learning abilities. Mobile learning expands learners' learning space and tools, and artificial intelligence assists learners in developing learning plans, selecting learning materials, monitoring learning outcomes, and maintaining learning interest through more scientific methods. The deep integration of artificial intelligence and mobile learning terminals empowers English learning and enhances learners' autonomous learning abilities.

3.3 The Impact of the Integration of Artificial Intelligence and Mobile Learning on English Teaching

The integration of mobile learning and artificial intelligence has a significant positive impact on English teaching.

Firstly, students are more proactive in autonomous learning through mobile learning. Students can not only learn English anytime and anywhere through mobile devices, but artificial intelligence can also aggregate multimedia resources such as images, videos, and audios. The utilization of these resources can provide learners with a multi-dimensional and intuitive English learning environment, making their English learning no longer boring but lively and interesting.

Secondly, there is diverse and interactive communication between teachers and students. Mobile learning is a learning

method based on mobile terminals. And mobile terminals have strong mobile communication functions, which enable students to communicate with teachers in a timely manner, facilitating teachers to provide corresponding assistance for students' learning difficulties in a timely manner. It also facilitates brainstorming and English learning communication within the entire class or English learning organization. This not only solves students' English learning problems in a timely manner, but also strengthens teachers' grasp of students' learning progress, making it easier for teachers to make good teaching design arrangements.

Mobile learning platforms are not limited by traditional classroom teaching methods. Students can engage in self-directed learning based on their own learning needs, with the support of artificial intelligence and network coverage of mobile learning devices. They can flexibly control their learning progress, create personalized learning systems, and improve the learning effectiveness of university students. At the same time, artificial intelligence can provide reasonable learning information based on learners' learning needs, consolidate basic knowledge, and receive new knowledge to make learning more free, efficient, and high-quality.

Of course, AI-driven mobile learning also has undeniable shortcomings. For example, the learning materials are not systematic enough. Secondly, the learning outcomes are unstable. Artificial intelligence-driven mobile learning not only provides convenience for learners, but also has the problem of fragmentation, which is not conducive to students' systematic learning. During this process, learners are usually in an "unstable" learning state and can only use scattered time for mobile learning. In this learning state, the time is short and learners are easily influenced by external factors. At the same time, learning on mobile devices is also susceptible to interference from other information on mobile platforms, making it difficult for college students to focus on browsing learning information and easily consuming a lot of energy on leisure and entertainment software.

4 Exploration of the Path to Enhancing Autonomous English Learning Ability Under the Integration Mode

4.1 Artificial Intelligence Empowers New Teaching Models for English Mobile Learning

Teachers should fully recognize the convenience brought by mobile learning, while also avoiding the potential negative impacts of mobile learning. Teachers should guide students to have a correct understanding of artificial intelligence and mobile learning, and achieve a combination of online autonomous learning and offline classroom teaching. Guide students to carry out planned English mobile learning, focus on formative assessment of mobile learning, test the effectiveness of mobile learning, and implement appropriate reward and punishment mechanisms. By adopting online courses, WeChat, and other platforms to achieve real-time communication between teachers and students, as well as among students, collaboration among students can be achieved, creating a collaborative and competitive atmosphere within groups, peer, and improving learning efficiency.

4.2 Constructing Intelligent Multimodal Mobile Learning Environment

Select online learning materials according to the learning data and learning characteristics mastered by AI. According to the characteristics of Post-2000s Generation' learning state, with the help of sound recognition and natural language processing technology, mobile learning terminals can provide learners with real-time voice interaction functions, and build a real language scene with multi-modal learning resources such as audio, video and pictures, so as to acquire language naturally in experiential learning. Because the autonomous learning environment is complex and attention is vulnerable to external interference, mobile learning resources can be designed into small learning modules. The content of each learning module is short and concise, and the duration is controlled, so that the fragmented knowledge is convenient for students to learn relatively independent and complete knowledge modules in scattered time.

4.3 Develop Personalized Learning Schedule

By analyzing the behavior data of learners on mobile learning platforms or mobile devices, AI can optimize the learning schedule. By analyzing learners' learning progress, interests, learning objectives and learning resources, personalized learning paths are designed for them on the mobile learning platform. Using knowledge mapping technology, the intelligent analysis system recommends the most appropriate learning resources and arranges reasonable learning tasks. At the same time, it can provide instant problem solving and learning help through the mobile platform. Through intelligent counseling and feedback, students' in-depth learning can be promoted, and their high-level thinking and problem-solving ability can be improved. At the same time of fragmented learning, let learning become a habit and improve the ability of autonomous learning.

5 Conclusion

AI-empowered mobile learning breaks the limitations of traditional teaching mode on time and place, maximizes students' initiative and enthusiasm in learning. It turns the limited classroom into mobile learning that is not limited by time and space, so as to improve students' autonomous learning ability and achieve better learning effect. Learning is no longer just static words, but also flexible pictures and real situations. Personalized and independent learning content is conducive to students' autonomous learning of relatively independent and complete knowledge modules in scattered time. Therefore, the rational and effective use of artificial intelligence and mobile learning terminals can improve the learning effect, improve learners' autonomous learning ability, and achieve better learning effect.

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