

Research on the Application of Digital Educational Technology on Modern Classroom Teaching

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Abstract

With the rapid development of information technology, the application of digital educational technology in daily teaching has become an important way to enhance teaching quality and efficiency. This study aims to explore the practical applications of digital educational technology in classroom teaching and analyze its impact on student learning outcomes, teaching methods of educators, and the distribution of educational resources. Through case studies across different educational stages and interviews with teachers and students, the research finds that digital educational technology not only enriches teaching content and enhances student engagement but also promotes personalized learning. However, the study also reveals challenges in the application of technology, such as insufficient professional competence among teachers, uneven distribution of educational resources, and inadequate funding for technological equipment. Based on the findings, a series of constructive suggestions are proposed to promote the more effective application of digital educational technology in teaching, thereby fostering educational equity and quality improvement.

Keywords: Digital educational technology; Classroom teaching; Educational resources; Personalized learning.

Introduction

In the information age, the development of educational technology has ushered in unprecedented opportunities. The rapid advancement of digital technology has made access to teaching resources more convenient, allowing both teachers and students to easily access a wealth of resources from around the globe, including online courses, virtual laboratories, and open educational resources. This greatly enhances the flexibility and diversity of learning [1]. Moreover, information technology provides a foundation for personalized learning, enabling educational technology to tailor teaching content according to students' learning styles and progress, thereby improving learning outcomes and student engagement [2]. However, the innovation of educational technology is indispensable. With the continuous changes in educational demands and the diversification of educational environments, traditional teaching methods are increasingly inadequate to meet the needs of modern students

[3]. Ongoing innovation in educational technology not only introduces new teaching models, such as flipped classrooms and blended learning, but also fosters the professional development of teachers, helping them effectively integrate new technologies into classroom instruction [4]. Therefore, in the face of the challenges and opportunities presented by the information age, the innovation of educational technology is essential to ensure equity and quality in education.

The development history of digital educational technology

The development of digital educational technology began in the early 20th century and has undergone several significant stages alongside advancements in information technology. Initially, educational technology primarily used media such as films and slides to assist teaching, helping educators convey knowledge more effectively. In the 1950s, television emerged as a new medium in the classroom, becoming part of education

and providing students with visual and auditory learning experiences [5]. By the 1980s, the rapid development of computer technology revolutionized educational technology. The proliferation of personal computers enabled educators to create multimedia teaching content, enriching teaching methods and learning experiences [6]. During this time, Computer-Assisted Instruction (CAI) began to rise, offering students personalized learning experiences through programmed teaching and practice. The advent of the internet in the 1990s opened up new opportunities for digital educational technology. Online learning platforms and e-learning became widespread, allowing students to learn anytime and anywhere. Notable platforms from this period, such as Coursera and edX, provided open online courses and facilitated the globalization of education [7].

In the early 21st century, with the popularization of mobile devices, mobile learning gradually became an integral part of digital education. The widespread use of smartphones and tablets made learning more flexible and convenient, enabling learners to engage through various applications and platforms [8]. Furthermore, social media began to play a role in education, promoting interaction and collaborative learning among students. In recent years, emerging technologies such as Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) have further advanced the development of digital educational technology. These technologies not only provide immersive learning experiences but also offer personalized recommendations based on learners' needs, enhancing learning outcomes [9]. For example, the application of VR technology in fields such as medicine and engineering has been shown to significantly improve students' practical skills and learning interest.

Challenges in promoting digital technology in daily teaching

Insufficient funding

In the promotion of digital technology in daily teaching, a significant challenge is the lack of sufficient funding, which manifests in several aspects. First, many schools, particularly in resource-poor areas, lack adequate financial support to purchase advanced digital devices and software, limiting the effective implementation of educational technology [10]. Second, training and ongoing professional development for teachers often require additional funding; however, in budget-constrained situations, such training is frequently overlooked, resulting in teachers being unable to fully utilize digital tools in their teaching. Furthermore, the costs of maintaining and updating technical equipment are often underestimated. Many schools fail to allocate sufficient budgets for maintenance after acquiring new devices, ultimately affecting the normal use of technology. Additionally, schools often lack systematic funding planning when undertaking digital projects, leading to funding shortages during implementation and preventing the achievement of expected outcomes. In summary, insufficient funding severely restricts the promotion and application of digital technology in education, impacting educational equity and the improvement of teaching quality.

Insufficient development of a high-quality teacher workforce

The promotion of digital technology in daily teaching is also constrained by the inadequacy of a high-quality teacher workforce. This issue is primarily reflected in teachers' insufficient understanding and ability to utilize digital technology. Many teachers lack the necessary training and

professional development opportunities, leaving them feeling overwhelmed when using digital tools. Additionally, variations in teachers' attitudes toward and adaptability to educational technology also affect the implementation of digital teaching. Research indicates that only teachers with solid technical knowledge and adaptability can effectively utilize digital tools to enhance teaching effectiveness [11]. Therefore, improving teachers' digital literacy and professional skills, and establishing a high-quality workforce capable of actively promoting digital teaching reform, becomes a crucial prerequisite for achieving educational modernization.

Uneven distribution of educational resources

The promotion of digital technology in daily teaching faces the issue of uneven distribution of educational resources, which is primarily reflected in the differing access to digital resources among various regions, schools, and students. There is a significant disparity between urban and rural schools, with urban schools typically equipped with more advanced digital devices and a wealth of online learning resources, while rural schools often lack basic technological support [12]. Furthermore, students from different socioeconomic backgrounds also experience variations in their access to technology at home; students from low-income families may not have sufficient devices or internet connectivity, leading to reduced participation in digital learning and exacerbating issues of educational equity [13]. To address this problem, policymakers need to take measures to ensure that all students can equally benefit from digital educational resources.

Suggestions for promoting digital educational technology

Strengthening educational technology infrastructure

When promoting digital educational technology, special attention should be paid to issues of educational equity. Governments and schools should take measures to ensure that all students have equal access to technology [14]. For example, establishing dedicated funds to help economically disadvantaged students obtain necessary learning devices and resources can help eliminate the digital divide. Additionally, governments and educational departments should increase investment in school networks and hardware facilities, especially in remote areas, to ensure that all students have equal learning opportunities [10]. This includes providing necessary computers, projection equipment, and high-speed internet connections to create a conducive learning environment. Teachers are key to the promotion of digital educational technology. Schools should regularly organize professional training to enhance teachers' skills and confidence in digital teaching [11]. Training content could include effective use of educational software, designing interactive lessons, and integrating digital technology with classroom instruction.

Designing interactive learning activities

Designing interactive learning activities can be achieved through multiple strategies to enhance student engagement and learning outcomes. First, teachers can adopt cooperative learning formats, dividing students into groups to discuss and present on specific topics, thereby promoting teamwork and communication. Secondly, introducing gamified learning elements, such as points and reward systems, can increase student motivation and competitiveness. Additionally, role-playing activities allow students to assume different roles in real-life contexts, enhancing their understanding and application of course

content. Utilizing online discussion platforms provides students with a space to express their opinions and engage in dialogue, further stimulating intellectual exchange. Project-based learning is also an effective approach, encouraging students to conduct in-depth research on real-world problems, thus cultivating their problem-solving abilities. Finally, incorporating digital tools (such as online polling and interactive Q&A applications) can add fun and interactivity to the classroom, creating a positive and engaging learning environment. Through these practices, teachers can create more attractive and effective learning experiences [15].

Conclusion

This study provides an in-depth analysis of the history of educational technology and explores its role in advancing contemporary education. The promotion and application of digital educational technology are not only trends in educational modernization but also essential pathways to improving teaching quality. The introduction of this technology enables teachers to adjust their teaching methods more flexibly and provides students with diverse learning resources, thereby enhancing overall learning outcomes. Despite the numerous advantages that digital educational technology offers in teaching, challenges such as insufficient funding, a lack of highly qualified teaching staff, and uneven distribution of educational resources hinder the widespread and deeper application of the technology.

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