ISSN 2522-6398 Vol. 7, Issue 3: 126-130, DOI: 10.25236/FER.2024.070321

Analysis of the Advantages and Disadvantages of the Application of Internet Technology in Teaching Field

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Abstract: *The outbreak of the COVID-19 has had a profound impact on the global education system, forcing schools and educational institutions to turn to Internet technology to maintain teaching activities. This article aims to analyze the advantages and disadvantages of the application of Internet technology in the teaching field during this special period. Through in-depth research and comparison of online teaching implementation, we can better understand the impact of this transformation on students, teachers, and the entire education system.*

Keywords: *Internet technology; teaching application; resource sharing; digital divide*

1. Introduction

The outbreak of the global COVID-19 pandemic has led to widespread social lockdowns and isolation measures, including the closure of schools and educational institutions. Billions of students were forced to learn from home, posing significant challenges to the traditional face-to-face education model. In order to maintain continuity in learning, countries worldwide turned to internet technologies, adopting remote teaching and online learning methods.

Before the COVID-19 pandemic, internet technologies had already made significant progress in the field of education. Virtual learning environments, online education platforms, digital textbooks, and other tools were widely used in educational practices in some regions. However, after the outbreak of the pandemic, these technologies were forced into large-scale application, driving the digital transformation of the education system. This paper aims to comprehensively explore the application of internet technologies in the field of education during the COVID-19 pandemic, in order to understand the impact of this digital transformation on students, teachers, and the entire education system. Through a detailed analysis of the pros and cons, the paper aims to provide targeted recommendations for educational institutions and policymakers to better cope with similar challenges that may arise in the future.

2. Application of Internet Technologies in Education During the COVID-19 Pandemic

2.1. Remote Online Teaching Platforms

Under the impact of the COVID-19 pandemic, the education sector underwent an unprecedented digital transformation, with remote online teaching platforms emerging as a crucial tool for the continuity of education. The rise of these platforms was not only a response to school closures caused by the pandemic but also accelerated the rapid development of the education sector towards digitization and onlineization. Before and after the outbreak, educational institutions had to quickly adopt remote online teaching platforms to ensure uninterrupted learning for students. Understanding the background of this adoption helps reveal the urgency and significance behind the application of this technology.

Various software platforms played the role of educational communication media during this phase, such as Tencent Meeting, DingTalk, and others. These platforms typically provided diverse tools, including real-time video conferences, online lecture sharing, and assignment submission and grading functions, to simulate various aspects of traditional face-to-face teaching. Through in-depth research into these features and functionalities, we can understand how this tool meets different teaching needs and its role in digital education.

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2.2. Cloud-based Educational Resources

In the context of the COVID-19 pandemic, cloud-based educational resources became a crucial support for uninterrupted teaching. Cloud-based educational resources refer to various education-related materials and tools stored on cloud servers, including but not limited to textbooks, video lectures, interactive learning applications, and online quizzes. The advantage of cloud-based educational resources lies in their convenient accessibility; educators and students can easily access these resources via the internet, regardless of their geographical location. The digital nature of cloud-based educational resources also makes the learning process more interactive and engaging. Through online platforms, students can participate in virtual experiments, discussion forums, online group projects, etc., enhancing their interaction with course content.

However, the widespread use of cloud-based educational resources also faces some challenges, such as the digital divide and technological inequality. In some regions, students may be unable to fully utilize these resources due to a lack of proper devices or internet connectivity, leading to unfair learning opportunities. Additionally, educators and students may require additional training and support to proficiently use these technologies. Overall, cloud-based educational resources played a crucial role during the COVID-19 pandemic, providing education with a more flexible, diverse, and accessible learning experience. However, it is essential to recognize the challenges they face and work towards addressing the digital divide to ensure that every student can benefit equally.

3. Advantages of Internet Technologies in Educational Application

3.1. Flexibility and Convenience

Flexibility and convenience are two prominent features of internet technologies in educational application during the COVID-19 pandemic, providing new dimensions and possibilities for education. Flexibility lies in the freedom to choose learning time and location. Through internet technologies, students can learn at their chosen time and place, no longer constrained by the traditional classroom schedule and geographic location. This flexibility provides students with more opportunities for self-directed learning, helping them adapt to different learning styles and lifestyles. The convenience of internet technologies also makes learning more accessible. Students can access course materials, participate in discussions, and submit assignments through online platforms, while educators can provide feedback and assess students' academic performance more quickly. This reduces the time and space barriers between students and educators, improving the efficiency of the learning process.

The convenience of internet technologies is also reflected in the seamless access to diverse learning resources. Students can access a wealth of learning materials, including text, images, videos, etc., through cloud-based educational resources. This diversity makes learning more dynamic and interesting, helping stimulate students' interest in learning. [1]It is important to note that the improvement of flexibility and convenience is accompanied by some potential issues. For example, students may face the challenge of procrastination due to a lack of self-discipline, and educators may need more flexible strategies to maintain student engagement and motivation. Additionally, for some subjects, especially those requiring hands-on practical work, online learning may not completely replace traditional face-to-face teaching.

3.2. Resource Sharing

Resource sharing is a crucial aspect of internet technologies in educational application during the COVID-19 pandemic, providing education with more extensive and sustainable learning resources. The sharing of cloud-based educational resources allows educational materials to be disseminated in a more open manner. Educational institutions, educators, and students can share, upload, and download teaching materials through online platforms, forming an open knowledge-sharing network. This model helps eliminate geographical and social barriers, promoting academic collaboration and resource circulation globally.

Resource sharing, through providing diverse learning resources, meets the needs of different subjects and teaching requirements. Students and educators can access various forms of resources, including text, images, videos, simulated experiments, etc., through cloud-based educational platforms. Resource sharing is a significant advantage of internet technologies in educational application. Through an open and flexible sharing model, students and educators can fully leverage global academic resources, promoting the globalization and innovation of education. In the future development of education,

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resource sharing will continue to play a crucial role, driving the construction of a more open and accessible education system.

4. Disadvantages of Internet Technologies in Educational Application

4.1. Digital Divide and Inequality

The digital divide and inequality emerge as a critical issue in the application of internet technologies in education during the COVID-19 pandemic. This issue involves differences in the use of internet technologies among students and educators, potentially leading to inequality between different groups.

The digital divide manifests on geographical and economic levels. Some regions may lack sufficient infrastructure to support stable internet connections, or students and educators may not have access to appropriate digital devices. This disparity results in some students being unable to fully utilize online teaching resources, exacerbating the gap between them and classmates with better technological conditions. The digital divide is also evident in unequal levels of digital skills. Some students and educators may lack the skills to use online learning tools and platforms, making them feel unsuitable in a digital teaching environment and affecting their learning and teaching experiences. This skill disparity may be related to factors such as socio-economic status and educational background, amplifying inequalities between different groups.

Addressing the issues of the digital divide and inequality requires a comprehensive strategy. This includes providing broader internet infrastructure, promoting digital skills training, and implementing inclusive online teaching strategies to ensure every student can equally benefit from digital education. When implementing these strategies, special needs of different regions, cultures, and social groups should be considered to ensure solutions are comprehensive and sustainable. Through such efforts, the digital divide and inequality can gradually be reduced, achieving a more inclusive and just digital education.

4.2. Decline in Student Engagement and Motivation

A widespread issue encountered in the application of internet technologies in education during the COVID-19 pandemic is the decline in student engagement and motivation. The fundamental reasons behind this issue involve multiple aspects.

Firstly, remote online teaching often requires students to have higher levels of self-discipline and management skills. [2]As students learn from home, lacking the supervision and norms present in traditional classrooms, some students may face challenges in time management and creating study plans. This leads to a decrease in learning motivation and participation in learning tasks. Secondly, technological barriers may negatively impact student participation. Students lacking sufficient digital technology and internet connectivity may struggle to participate smoothly in online teaching. This technological barrier marginalizes some students, preventing them from fully experiencing the new teaching mode and reducing their learning enthusiasm. Additionally, the lack of face-to-face interaction and direct feedback from teachers may also contribute to a decline in student motivation. In a traditional classroom environment, students can engage positively in learning through class interactions, asking questions, and receiving timely feedback from teachers. In remote teaching, these elements may reduce, causing students to feel isolated and lack motivation.

4.3. Teacher Training and Technical Challenges

Teacher training is a crucial aspect of ensuring educators can fully utilize internet technologies. Many educators may not have received training in remote teaching or online education tools, making it essential to master the effective use of digital tools and online teaching strategies. Teacher training needs to cover various online teaching tools' operation, principles of instructional design, and best practices for online interaction and feedback to help educators adapt to the new environment of digital education.

Secondly, technical challenges are another obstacle in the digital transformation process. Some educators may face a steep learning curve when using new technologies and encounter issues such as compatibility problems with software and hardware, unstable network connections, and other technical difficulties. These problems not only affect educators' teaching effectiveness but also directly impact students' learning experiences.

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5. Strategies and Recommendations

5.1. Improve Digital Inclusivity

Enhancing digital inclusivity is a crucial goal to ensure internet technologies in educational application serve all students and educators more equally. Improving digital inclusivity involves various levels, including training, policies, and societal support.

Enhancing digital inclusivity also requires a focus on educator training. Providing educators with systematic training in digital teaching, including the use of online teaching tools and best practices in instructional design, helps improve educators' digital literacy to better cope with the digital teaching environment. Policies and societal support are also key to improving digital inclusivity. Governments and schools can establish and implement inclusive digital education policies to ensure every student benefits equally. Social organizations can initiate various support programs, including grants for internet connections, device donations, and free sharing of online learning resources, to promote the improvement of digital inclusivity. Recognizing cultural and language diversity is also an essential aspect of digital inclusivity. Ensuring educational resources and online teaching content meet the needs of students from different cultural and language backgrounds helps promote the widespread adoption and accessibility of digital education.

Through a comprehensive consideration of technology, training, policies, and societal support, digital inclusivity can gradually be improved, ensuring that digital education better serves the entire learning community, reducing inequality, and promoting fair and sustainable development in education.

5.2. Educator Training and Support

Ensuring educators possess sufficient digital teaching capabilities and support is a key factor in the successful implementation of digital education. Educator training and support cover multiple aspects, from technical operations to teaching strategies, requiring targeted training and ongoing support.

Training should cover educators' basic skills in using online teaching tools. This may include training in the use of video conferencing platforms, online whiteboard tools, learning management systems, etc. Training programs should be practical to enable educators to truly master these tools and flexibly apply them in actual teaching. Support should also provide ongoing technical and teaching support. This includes regular updates on technical training to help educators address technical issues encountered in actual teaching. Additionally, establishing online communities or providing professional mentors allows educators to share experiences, learn the latest teaching methods, and receive timely guidance.

To enhance educators' digital literacy, encouraging them to participate in professional development activities such as workshops, webinars, academic conferences, etc., is beneficial. This helps educators maintain a learning attitude, continuously update their knowledge, and improve their adaptability in digital education.

5.3. Develop Effective Online Teaching Strategies

Developing effective online teaching strategies is the core to ensure the success of digital education. Educators need to adopt a series of effective strategies in instructional design, interactivity, assessment, and feedback to enhance students' learning experiences and academic outcomes.

In instructional design, educators should focus on the structure and clarity of courses. In an online environment, students are more prone to distraction; therefore, a well-designed course structure helps students better understand and absorb knowledge. This may include clear learning objectives, logically organized content, and well-defined tasks and assignments. Interactivity is key to online teaching. Educators can promote interaction and collaboration among students through real-time video conferences, online discussion forums, virtual group projects, etc. This not only helps develop students' collaborative skills but also increases participation and depth of learning. Assessment and feedback are also crucial aspects of online teaching. Educators can employ diverse assessment methods, including online quizzes, essay writing, virtual experiments, etc., to comprehensively evaluate students' academic abilities. Timely and specific feedback is significant for students' learning, helping them understand and improve.

To ensure the effectiveness of teaching strategies, educators should regularly reflect on and adjust strategies. This may include periodic teaching assessments, collecting student feedback, monitoring teaching effectiveness, and making adjustments based on actual situations.

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6. Conclusion

Against the backdrop of the COVID-19 pandemic, the widespread application of internet technologies in the field of education has garnered extensive attention. The use of internet technologies in education presents both new opportunities and challenges. While overcoming technological hurdles, mitigating digital divides, and enhancing digital inclusivity, educators must continually innovate and adjust teaching strategies to ensure that digital education better serves the comprehensive development of students and the educational sector.

Looking ahead, we can anticipate that digital technologies will continue to play a role in innovating and driving transformative changes in education. This evolution holds the promise of providing students with a more enriching, flexible, and personalized learning experience. As educators, policymakers, and technologists collaborate, it becomes crucial to foster an environment where the benefits of digital education are maximized while addressing the challenges to create a more equitable and accessible educational landscape.

Acknowledgement

This research was supported by the special training project of middle-aged and young teachers of Sanya College "Research on the optimization of online teaching mode under the background of COVID-19 epidemic -- based on the investigation of online teaching practice in the School of Social Sciences of Sanya College" (SYJPZQ2022053).

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