



Reflection and Exploration on the Application of Modern Network Technology in Teaching

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DOI: 10.32629/jher.v5i5.2929

Abstract: The development of modern network information technology and computer science has ushered humanity into the information age, making educational digitization a vital goal across various sectors globally. Higher education institutions nationwide have adapted to this trend, actively promoting the digitization of education. Online courses have emerged as a distinctive, open form of network-based teaching that differs from traditional methods, exerting an undeniable influence on the conventional approaches in universities and colleges. Online courses represent a new mode of integrating China's public education resources with the school education system, blending traditional classroom instruction with network technology. This new course model presents both significant opportunities and challenges for the development of China's educational system.

Keywords: new era; higher-educational institutions; online teaching

1. Introduction

In today's era of information development, network-based media, such as televisions, computers, and mobile phones, have already permeated many aspects of human activity, becoming an essential part of daily life. To some extent, we have entered a new era of development, which could be referred to as the "new media era" or the "network era". While this network model has introduced innovative ways of learning for university students, online education is still in its early stages and has many shortcomings. How to effectively address these issues and enhance the effectiveness of online education has become a focal point for the education industry today.

2. Overview of Online Teaching

2.1 Definition of Online Teaching

Online teaching is an online education program that uses specific software technologies to implement remote teaching over the internet. It involves a series of courses delivered on a network platform. Online teaching encompasses well-defined course objectives, teaching strategies, and a set of new educational methods supported by technological systems. In stark contrast to traditional classroom education, online teaching features openness, inclusivity, interactivity, and flexibility in course selection.

2.2 Advantages of Online Teaching

2.2.1 More Flexible Teaching Time and Space

With the accelerated pace of modern life and the increasing academic pressure on university students, time has become increasingly scarce. Traditional education primarily relies on face-to-face teaching, confined to specific time frames and spaces. Online courses break these limitations by uploading educational resources and relevant content to servers where they can be dynamically stored over long periods. Learners can complete their coursework via the internet, enabling them to manage their study time more flexibly without being constrained by location. The openness of the internet also creates favorable conditions for resource sharing, helping students and teachers transcend the traditional time and place restrictions, allowing learners to organize their study time and progress according to their own needs.

2.2.2 Enhancing Students' Ability for Independent Learning

Conventional classroom teaching relies on a one-way transmission of knowledge from teacher to student, often without sufficient two-way communication. This "cramming" method lacks engagement and interaction, making it difficult for students to stay focused for long periods. In contrast, online classes use computer and internet technology to foster self-interaction, interactions between students and the knowledge system, and human-computer interactions, encouraging learners to participate actively in the teaching process. Additionally, the use of multimedia formats such as images, video,

and sound helps explain abstract or complex concepts that are difficult to convey in a traditional classroom setting, making the material more accessible and engaging. This modern teaching method can effectively stimulate students' interest in learning and improve their academic performance.

2.2.3 Flexible Evaluation Methods

Online education also offers more diverse and flexible assessment methods. After each session, students are assigned exercises, allowing them to self-test and evaluate their understanding of the material. Through online assessment platforms, students can more easily gauge their mastery of the subject and adjust their study methods accordingly. This system overcomes the limitations of traditional methods, where evaluations were conducted through centralized exams graded by teachers. Online assessment allows for immediate feedback, helping students promptly identify and address their knowledge gaps. Additionally, online platforms facilitate interaction between learners and teachers, as well as among students themselves, promoting discussions that resolve learning difficulties. This interaction helps learners stay informed about others' progress and comprehension, guiding their own learning direction and fostering better self-awareness.

2.3 Development of Online Teaching

Since 2012, when China's top universities collectively launched Massive Open Online Courses (MOOCs), the field of online education in China has grown rapidly. By 2019, China's online education market had reached 346.8 billion yuan, with 269 million users. The online education market has gradually become more segmented, catering to adult education, university education, and integrated schools through different online teaching platforms tailored to various needs. During special circumstances, such as when universities suspend in-person classes, online learning platforms have played a critical role in ensuring "no class suspensions" by facilitating continued education through online teaching. As we move into the 5G era, new technologies such as artificial intelligence and big data analytics have had a noticeable impact on online education. While online courses increasingly rely on network platforms, these platforms require the support of new technologies to improve teaching and classroom experiences. Therefore, online education platforms need to push for technological upgrades to enhance the quality of teaching.

3. Implementation of Online Teaching

As our higher-educational institutions gradually transitioned into online teaching models, the workload for teachers has significantly increased. For many educators, online classroom teaching represents a brand-new experience. Five key factors directly influence the effectiveness of online teaching: teaching methods, online course platforms, teachers, students, and interactivity. A comprehensive summary of relevant aspects, including course preparation, live classroom monitoring, and the actual effects of online teaching, is provided below.

3.1 Course Preparation

To improve teaching quality, platforms like Tencent QQ groups and WeChat were utilized, along with the creation of "student groups." In accordance with the learning needs of the courses, diversified online teaching methods were adopted, combining "video courses + national university MOOCs + QQ groups." Online educational resources were also effectively utilized. It is important to emphasize the authority and reliability of the materials being used. Teachers should consider the specific characteristics of students and focus on achieving the classroom teaching objectives, aiming to break through key and difficult points, while clearly distinguishing between primary and secondary content.

In addition, teachers must shift their roles in online course teaching. Classroom settings should be more focused on student education by analyzing course objectives, course content, and students' understanding of the material. Teachers should set up the class to focus on key points and difficult concepts, breaking down important material within a limited time. Secondary knowledge points can be treated as supplementary content for more advanced students. Class advisors should promptly ensure that course objectives are met. Students, based on their needs, can study independently using electronic teaching materials, PPT presentations, and video resources shared in QQ groups. They selectively watch video lectures and reflect on the tasks at hand. Schools should actively develop online video classes, facilitating real-time interactions with students to explain key points, address questions, guide classroom discussions, conduct quizzes, and provide feedback on assignments. This method is a reasonable continuation of traditional classroom teaching.

3.2 Monitoring of Live Teaching

To ensure the accuracy and effectiveness of information received by students, attention should be given to managing every detail of the class. Before the semester begins, students can be shown relevant "reminders" in the virtual classroom. These reminders may include necessary materials for the class, teaching resources, or rules to follow during activities. For

monitoring attendance, teachers can send the live class link 30 minutes before class and take attendance within the virtual classroom. Additionally, timed assignments can be given, and students are required to submit their work within the specified time. To create a positive learning environment, teachers should encourage student interest in learning, promote engagement during lectures, and foster active participation in assignments. In live classes, teachers may introduce key concepts from the textbooks based on the assignments and showcase outstanding student work.

3.3 Effectiveness of Online Teaching

Teachers often use educational software and the university's MOOC platform, though some courses may rely on other software. For example, during the pandemic, when most universities implemented online education, the frequent use of online platforms sometimes led to system instability. Issues such as network lag and system crashes occurred, which not only disrupted the teacher's lectures but also significantly reduced students' motivation to learn, thus negatively impacting teaching quality. These challenges call for the development of corresponding technical solutions to prevent such occurrences and ensure the quality of online teaching.

4. Ways to Improve the Effectiveness of Online Teaching

4.1 Establishing an Online Teaching Management System

First and foremost, it is imperative for schools to establish an online teaching management system. In higher education institutions, a dedicated department for ensuring the quality of online teaching must be set up. This includes organizing teams of online course instructors and establishing a system for managing student courses. The key task of higher education institutions is to implement the administrative system set by the teaching authorities, establish an Online Course Quality Assurance Committee responsible for creating a quality management system for online courses, assessing the quality of online teaching, reporting on evaluation results, and gathering feedback on the courses. These reports should be regularly submitted to the school's online course administration and ensure that questions about the course content are answered. Additionally, all departments in higher education institutions are required to take part in managing online teaching, fulfilling tasks set by their respective faculties, and adhering to the relevant regulations for managing online courses. This system should also include a team of online teaching staff composed of video instructors and technical personnel responsible for recording lectures, monitoring student progress, answering questions, and managing technical operations. Students can choose their courses based on their preferences and use the online platform, student evaluation system, and feedback mechanisms to provide effective input on the quality of online teaching.

4.2 Timely Updates to Online Course Content

Online courses should not only stimulate students' interest in learning but also train their independent learning, communication, and collaboration skills. Course managers should update and enrich online course content as needed to ensure that it continues to meet educational goals. Focusing on the core competencies required for employment, the course content should be regularly revised to align with societal demands. Additionally, students should be encouraged to actively understand the educational objectives of online courses and related social policies, and they should be involved in formulating and revising course objectives. When students actively participate in this process, they develop a deeper understanding of the objectives and acquire greater autonomy in choosing to engage in online learning. This, in turn, allows them to purposefully and consciously acquire the professional knowledge and skills they need, thereby enhancing the teaching methods and achieving the educational objectives of the online course.

4.3 Improving the Course Assessment and Monitoring System

The grading of online courses is essential for credit assignment and obtaining degrees, so the fairness of online exams is crucial for the success and effectiveness of educational programs. Higher education institutions should pay close attention to this issue and take necessary measures to address it. Building a comprehensive teaching and examination system is essential, and with the development of mature online information technologies, online platforms can now seamlessly integrate teaching and examinations. For example, human-computer interaction technology can be used to monitor the teaching process. The advancements in virtual reality (VR) and augmented reality (AR) technologies have reduced the cost and complexity of human-computer interactions. These technologies can be used in online teaching to gradually improve teaching methods, enhance student interaction, and provide necessary guidance and monitoring throughout the learning process. Additionally, standardized assessments can be conducted for online courses by organizing review schedules and increasing the rigor of evaluations, such as using multiple sets of exams and setting strict exam dates to ensure the effectiveness of the assessment process.

4.4 Joint Efforts by Universities and Teachers for Online Teaching

Teachers should receive proper training in online teaching methods, and teachers in higher-educational institutions should work with network institutions to improve their internet infrastructure, enhancing the performance of online courses. Teachers need to closely monitor students' learning progress, maintain communication with students, adjust teaching methods based on student engagement, and guide students to use classroom resources effectively. Online live classes should be staggered to reduce downtime and ensure more efficient use of class time. Furthermore, teachers should adjust their teaching style to enhance the quality of instruction.

In higher-educational institutions, teachers must keep paces with the information era and utilize the advantages of online platforms to guide classroom teaching. They should master various online teaching tools, make full use of educational resources, and ensure the effectiveness of online resources. Continuous monitoring and feedback are essential, with teachers analyzing students' issues and providing timely online assignments and clarifications.

4.5 Enhancing the Operational Support Functions of Online Teaching Platforms

The operational support, system capabilities, and network technology of online platforms play a critical role in the success of online teaching. A well-supported platform improves the efficiency of online education. To avoid issues like network congestion or system crashes, it is essential to improve the performance of online teaching platforms and enhance their operational capacity, ensuring the smooth delivery of courses.

5. Conclusion

In conclusion, online teaching is a new educational model that offers flexibility in terms of time and space, improves students' independent learning abilities, and provides diverse assessment methods that traditional methods may lack. However, due to the characteristics of online courses and the challenges associated with managing online learning systems, the current online teaching model can complement traditional teaching methods. It is essential to recognize the historical development of online education while addressing its shortcomings, continuously improving it in the future.

References

- [1] Zhang Leqiong, Wang Hui. Strategies for Enhancing College Students' Autonomy in Online Learning under the Background of Educational Informatization [J]. *Dashiye*, 2019(2): 49-53.
- [2] Zhou Wang, Yang Xiujie. On the Fundamental Relationship between Education and Internet+ - Reflections on Education during "Suspension of Classes, No Suspension of Learning" [J]. *Engineering Technology and Development*, 2020(34).
- [3] Li Zhangjun. Exploring Classroom Teaching Models to Improve Classroom Teaching Efficiency [N]. *Jiangsu Education Daily*, 2020-06-12.
- [4] Chen Hong. Exploring New Media Information Literacy of Teachers and Students in Higher Education under the Epidemic Based on Online Courses [J]. *Journal of Ningbo College of Education*, 2020(22): 6-8.
- [5] Feng Yiqiang, Yu Zhihui. A Study on Problems and Countermeasures of College Students' Online Learning - Based on the Usage Data of Three Online Course Platforms [J]. *Shanxi Agriculture Economy*, 2017(19): 124-126.