Research on the Improvement and Innovation Paths of Teaching Quality in Private Universities in Zhejiang Province in the Digital Era

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Abstract: In the digital era, the education and teaching of private undergraduate universities in China are undergoing innovative reform. This article uses the literature review method to conduct a survey and research on the quality of teaching resources, teaching platforms, and literature reserves, and proposes a series of strategies and innovative paths to improve the teaching quality of private undergraduate universities. The research results show that the rational use of digital technology can improve the quality of education and teaching, and achieve innovative development in education and teaching. The research results have certain theoretical value and guiding significance for the teaching reform of private undergraduate universities under the background of digital teaching.

Keywords: Teaching quality; Digital technology; Undergraduate universities; Innovation path

1. Introduction

With the rapid development of digital technology, the education sector in China is undergoing unprecedented changes. Private undergraduate universities, as an important component of higher education, are also a hot topic of concern. Domestic and foreign scholars have also conducted various studies on the improvement of teaching quality in private undergraduate universities.

China is promoting the digitalization of education and building a learning society with lifelong learning for all, making it a learning-oriented country. As an important force in the development of higher education in China, private universities in China inevitably need to move towards national major decisions, develop digital education, and achieve digital transformation. Therefore, many Chinese scholars have also provided suggestions and guidance. Lu believed that it is necessary to understand the different characteristics and functions of various information-based teaching tools, efficiently use information-based teaching tools, and maximize their role [1]. Yang *et al.* proposed to promote the construction of artificial intelligence-assisted teacher teams in universities, strengthen data mining and analysis, and deeply explore the application of digital and intelligent technologies

in education [2]. Both studies revealed the benefits of educational digitalization from the perspective of digital resources.

Foreign universities are also actively promoting digital teaching systems. Scholars such as Wang and Liu argued that the pandemic has accelerated the digital transformation planning work of American universities, including accelerating IT-related procurement and system updates, which has promoted interdepartmental cooperation and better supported the school's strategic development goals through its digital teaching system [3]. EDUCAUSE conducted research on digital transformation in universities in 2019 and 2021, respectively. The data showed that the proportion of American universities that put digital transformation on the agenda increased from 45% to 71%. Taking Duke University in the United States as an example, using Power BI to turn student tables into visual cloud dashboards has promoted the efficiency of daily decision-making [3]. Scholars such as Yang and Ma argued that since 2010, the United States has developed a progressive strategy and top-level design for the development of digital education. By deepening the empowerment of higher education through information technology, it has greatly promoted teaching efficiency and become one of the countries with the strongest level of teaching informatization [4].

Issues on how to seize opportunities, improve teaching quality, and achieve innovative development in the digital age have become urgent problems to be solved. As an important support for digital teaching, digital software and hardware resources are both challenges and opportunities for private undergraduate universities. This article explores the improvement and innovation paths of teaching quality in private undergraduate universities from the perspective of digital software and hardware resources, in order to provide useful references for practical applications in related fields.

2. Teaching difficulties of private universities in Zhejiang Province in the digital era
2.1. Complex teaching platform settings
To study the setting of teaching platforms in private colleges in Zhejiang Province, taking Ningbo University of Finance and Economics as an example, a field interview survey was conducted on teachers of Ningbo University of Finance and Economics. The survey results are as follows.

The digital teaching system of Ningbo University of Finance and Economics includes many platforms such as Smart Classroom, Cloud Classroom, Rain Classroom, Xueyin Online, AOA System, etc. Various platforms are developed and designed by multiple companies, and data integration is not completely harmonious, which brings some inconvenience to their daily use by teachers and students, mainly reflected in the following aspects.

Firstly, the layout settings and functional modules within each platform are different, and sometimes functional modules may overlap or have mismatched data formats. The operation guidelines and steps for multiple platforms are complex, and some functional modules have inconsistent terminology, making it difficult to remember them in a short period of time. This results in many students not being proficient in using them and needing to frequently try different teaching platforms. Adapting to the layout and operation steps of each platform takes time, leading to low efficiency.

Secondly, the requirements for registering accounts and passwords on each platform are different, and due to system updates and other reasons, teachers and students often cannot log in smoothly, spending a lot of time entering and changing passwords, which increases the difficulty and workload of use.

Lastly, effective information communication cannot be achieved between various platforms, and even due to a lack of overall planning, data duplication and information silos may occur, making it challenging to achieve effective data sharing. This not only reduces work efficiency but also affects user experience, and even results in decimal deviations between student scores inputted on one platform and those displayed on another platform.

2.2. Low-quality digital teaching resources

According to the second batch of national first-class undergraduate courses announced by the Ministry of Education of China in 2023, a survey was conducted on the online first-class courses, virtual simulation experimental teaching first-class courses, and mixed online and offline first-class courses selected by multiple universities. The survey results show that due to factors such as teaching resources and teaching staff, private colleges still have significant room for improvement in creating high-quality information-based teaching resources.

Firstly, there is still some room for improvement in the information technology level of many teachers on campus. Some teachers are unable to fully present their professional knowledge and theoretical content from textbooks to students through online platforms for their understanding and acceptance, and even encounter problems such as unclear recording and a small amount of blank content, which affects students' efficiency in using online platforms.

Secondly, the curriculum resources provided by teachers are somewhat formalistic. Many course videos have blurry audio and visuals and do not provide subtitles, making it difficult to grasp the course content while listening. There are also some important courses that only use the progress bar as the standard for students to finish listening to the class. Some students with low enthusiasm will cope by manually adjusting the progress bar or playing videos while doing other things, resulting in low implementation effectiveness of online courses.

3. Improvement path of the teaching quality and management level of private schools in Zhejiang Province under the background of digital transformation

3.1. Integrating multiple digital platforms to achieve data unification

Firstly, we need to conduct an in-depth analysis of existing digital platforms, clarify the roles, functions, and importance of each platform, and determine which platforms are necessary and which are redundant. Next, we need to develop an integrated and collaborative work plan. This includes establishing a unified digital platform management center, integrating the functions and interfaces of various platforms, and achieving one-stop services. At the same time, we need to establish a data-sharing mechanism, break down data silos, and improve the availability and value of data. In addition, it is necessary to establish a collaborative working mechanism between platforms to ensure seamless cooperation and improve work efficiency.

In order to further optimize the user experience of the platform, it is necessary to evaluate and optimize the existing platform. This includes functional optimization, interface improvement, and performance enhancement. At the same time, we need to consider merging platforms with similar or duplicated functions, or choosing more powerful and comprehensive platforms to replace redundant ones. This can reduce the number of platforms and improve overall operational efficiency.

Lastly, we need to establish a mechanism for continuous monitoring and dynamic adjustment. Through data analysis and user behavior monitoring, we can understand user usage habits and preferences, providing a basis for platform optimization and improvement. Based on monitoring results and user feedback, we need to dynamically adjust and optimize the platform to ensure that it always meets the needs of users.

3.2. Increasing capital investment and building diverse and distinctive database resources

Firstly, schools should increase their funding investment in libraries. Consulting relevant experts can improve the category of electronic books on campus, ensuring that students have sufficient book resources to use, whether solving learning problems in various majors or relaxing for leisure, in order to enhance their reading enthusiasm and learning ability. Introducing a large number of high-quality databases can ensure that students have sufficient academic resources to complete research tasks.

Secondly, schools should actively build distinctive databases. Taking the professional advantages of each university as the focus, combined with the development plan of internal majors, we will develop targeted database construction work related to flagship majors. On the one hand, flagship majors have richer teaching experience and academic resources, which can alleviate the pressure of database construction work; on the other hand, it can accumulate resources for key majors to achieve greater benefits.

3.3. Strengthening teacher training and enriching and innovating teaching resources

Firstly, by strengthening training and participating in assessments, we can effectively enhance the digital teaching proficiency of the teaching community to ensure the quality and completeness of online resources. We also need to regularly verify the curriculum resource platform on campus, and promptly remove duplicate and irrelevant teaching resources from the shelves.

Secondly, it is necessary to innovate the content and format of the course and try to mobilize students' enthusiasm for listening as much as possible. We need to ensure the basic quality of the course, improve its visual and audio quality, and increase viewing comfort. Additionally, objective questions can appear from time to time during the course playback and a countdown can be added, forcing students to take the teaching content of important courses seriously and watch the entire video. Based on the teaching content of each session, original questions can be created and included in daily grades to consolidate students' learning outcomes and increase their enthusiasm for watching the videos.

4. Summary

Through in-depth research on the improvement and innovation paths of teaching quality in private undergraduate colleges and universities in Zhejiang Province in the digital era, this article draws the following conclusions. Firstly, digital platforms play an important role in teaching in private undergraduate colleges and universities. By selecting an efficient and unified digital education platform and establishing a continuous monitoring and dynamic adjustment mechanism for the platform, teaching quality and student learning experience can be effectively improved. Secondly, private undergraduate universities in Zhejiang Province can fully utilize digital resources, strengthen the reserve of information resources, innovate teaching methods and means, and achieve a comprehensive improvement in teaching quality. Lastly, focusing on the deep integration and application of digital resources in teaching and improving the quality of self-built teaching resources can promote the high-level development of private undergraduate universities in Zhejiang Province in the digital era. This study provides certain inspiration and reference for the teaching reform of private undergraduate universities in the digital era.

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