

Information Construction of Higher Education in Teaching Practice

Yang Meng, James L. Patnao

Abstract—With the rapid development of information technology and the impact of the epidemic environment, the traditional teaching model can no longer meet the requirements of the development of the times. The development of teaching mechanisms is the inevitable trend of the future development of higher education. We must further promote the informatization of higher education in teaching practice, let modern information technology penetrate and practice in classroom teaching, and provide promising opportunities for the high-quality development of higher education. This article, mainly through the distribution of questionnaires to teachers of colleges and universities, aims to understand the degree of informatization in the teaching of colleges and universities. And on the basis of domestic and foreign scholars' research on higher education informatization, it analyzes the existing problems, and finds the optimal solution based on the needs of education and teaching development. According to the survey results, most college teachers will use information technology in teaching practice, but the information technology teaching tools used by teachers are relatively simple, and most of them use only slides. In addition, backward informatization infrastructure and less informatization training are the main challenges facing the current teaching informatization construction. If colleges and universities can make good use of information technology and multimedia technology and combine it with traditional teaching, it will definitely promote the development of college education and further promote the modernization and informatization of higher education.

Keywords—Higher education, teaching practice, informatization construction, e-education.

I. INTRODUCTION

IN recent years, the rapid development of network information technology has promoted the progress of all walks of life, including higher education. Especially after the outbreak of the COVID-19, the rise of online distance learning makes the construction of higher education informatization particularly important. Under the guidance of the educational concept, information construction has become the main trend of the innovative development of higher education. Information technology not only provides opportunities for higher education, but also puts forward a major topic. According to a survey in the United States, most universities in the country have fully implemented information-based teaching, and students can obtain learning resources anytime, anywhere, and conduct various academic exchanges through information platforms [1]. However, the informatization level of higher education in China is not mature enough, so that the development process of higher education in the country is very slow. Liu et al. investigated and studied that most teachers and students in universities have

insufficient understanding of information-based teaching, and are not familiar with the information-based equipment and information-based learning software of universities, which makes the construction of teaching informatization in universities very slow [2].

Teaching mode is the main framework of higher education teaching. The application and popularization of information technology in higher education teaching can not only change the traditional classroom teaching mode and teachers' teaching methods, but also improve students' learning environment, so as to promote students' learning [3]. In terms of teaching practice, major universities in China have carried out informatization construction to varying degrees, and have also achieved certain results. However, there are still many problems to be solved and broken through in the teaching practice of universities. Only by deeply understanding and analyzing the current problems can we further promote the informatization construction of higher education in teaching practice.

This research adopts the form of questionnaire to investigate the informatization construction in teaching practice, aiming to provide the problems existing in the informatization construction in current university teaching practice and possible challenges in the future, and put forward corresponding solutions, so as to provide a theoretical basis for further promoting the construction of teaching informatization and comprehensively constructing the university informatization teaching system [4].

II. RESEARCH METHODS

This paper adopts quantitative descriptive design to solve the research purpose, and the survey method adopts the form of questionnaire. The research adopts random sampling survey, and the sampling objects are mainly teachers in major universities. The questionnaire uses a web version, and the respondents scan the QR code to view and answer relevant questions. The questionnaire is divided into two modules. The first module is the basic personal information of the respondents. Basic information includes age, school, highest education background, courses taught and teaching years. There are six questions in the second module. The first four questions are multiple-choice questions, and the last one needs to write your own ideas:

1. As a university teacher, how do you understand the concept and meaning of educational informatization?

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2. As a university teacher, how often do you use information technology to assist teaching in your usual teaching process? (single choice)
3. What are the information-based teaching tools you often use? (multiple choice)
4. In the following information-based teaching mode, choose the type you often use? (multiple choice)
5. In your opinion, what are the main challenges facing the construction of teaching informatization? (select up to three)
6. As a teacher in universities, how do you think your university should speed up the construction of informatization in teaching practice?

The survey received 280 questionnaire responses. Teachers' majors involve engineering, science, literature, medicine and other major fields, and their teaching years range from two to three decades.

III.RESULTS AND ANALYSIS

According to the survey results in Fig. 1, 64% of the questionnaire participants are vague about the concept of teaching informatization. Only 25% of the participants said they had a basic understanding of this concept, and 11% of the participants were very familiar with or even completely mastered the concept of "Educational Informatization". From this, it can be inferred that the teaching informatization awareness of college teachers in China is generally not high, and only a few teachers will take the initiative to pay attention to news and policies related to teaching informatization. Although the vast majority of teachers can use information technology for teaching assistance, in fact, only a very small number of teachers can discover the essence of it and use it flexibly. Most teachers still have a relatively shallow understanding of the role of information technology. This may be because the school has not organized relevant learning activities related to teaching informatization, and has no given corresponding guidance in a timely manner.

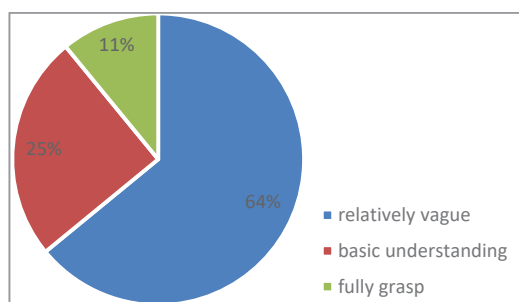


Fig. 1 Understanding of the basic concept of "Educational Informatization"

According to the survey results in Fig. 2, 76.8% of teachers often use information-based means to assist teaching. According to the relevant survey of the Ministry of Education, from 2018 to 2022, the number of teachers in universities using information-based means for teaching has increased significantly. The results of this survey further verify this

conclusion. It can be seen that most college teachers in China have gradually popularized information-based teaching, especially the outbreak of the COVID-19 in 2020 and the rapid development of online teaching, making information-based teaching gradually normalized [5].

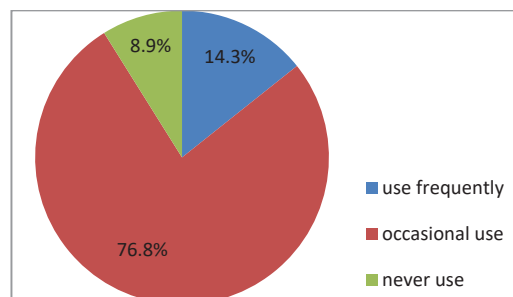


Fig. 2 Frequency of Respondents Using Information-based Teaching Methods

According to the survey results in Fig. 3, among various information-based teaching tools, PowerPoint (PPT) has the highest utilization rate among the types of teaching tools surveyed by teachers, reaching 140, accounting for 50%. For teachers, PPT can clearly show the main teaching content of this lesson, while other tools similar to virtual simulation software are not used frequently, although they are obviously helpful to education and teaching. The reason may be that the college is not equipped with relevant free software, or it may be that the relevant software operation process is relatively complex, and the school has not given relevant learning guidance and training, resulting in teachers being unfamiliar with or unable to use it.

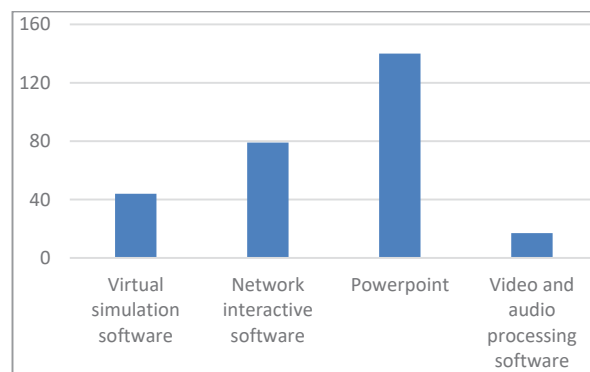


Fig. 3 Types of Tools for Information-based Teaching of Respondents

Fig. 4 shows the information-based teaching mode often used by college teachers. According to the survey results in Fig. 3, the number of teachers who use the four teaching modes of WeChat, flipped classroom, Massive Online Open Course (MOOC) and e-book bag is small. Among the four modes, MOOC is a large-scale online open course with rich resources, so it is used relatively frequently. Micro classes, flipped topics, e-book bags, etc. may be due to the need to spend more time on teachers, resulting in a large workload, so they are not used frequently in universities at present [6].

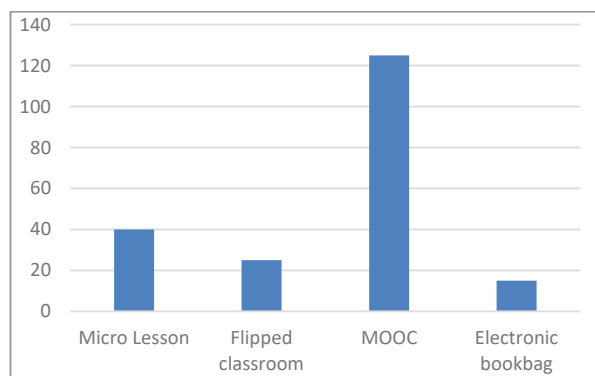


Fig. 4 Information Based Teaching Mode Often Used by Teachers

According to the survey results, in terms of teaching practice, although major universities have made some achievements in information construction, they still face many problems. It can be seen from the data in Fig. 4 that the main challenges faced by the current construction of teaching informatization are the backward construction of school informatization infrastructure, less informatization training, and the heavy workload brought to teachers, accounting for 62%, 50% and 45% of the respondents, respectively.

IV. CONCLUSION AND DISCUSSION

In order to better promote the development of education, in recent years, universities have actively established efficient and perfect information work systems and integrated information technology into teaching practice [7]. Although the informatization construction has also been greatly improved, there are still some problems in the informatization construction in teaching practice in China, such as uneven, insufficient construction, blind construction and so on [8]. Peng et al. believe that some universities invested a lot of money in the initial stage of promoting the informatization of teaching, but the subsequent maintenance funds are insufficient, resulting in the low utilization rate of hardware facilities and other problems [9]. According to the survey results of this paper, 76.8% of the teachers surveyed in universities often use information-based means to assist teaching; PPT has the highest utilization rate among the types of teaching tools surveyed by teachers, reaching 140, accounting for 50%. MOOC is used more frequently. The main challenges faced by the construction of teaching informatization are backward infrastructure, less informatization training, and a large workload for teachers. This research result shows that the current lack of informatization construction in universities and the lack of a perfect construction system are still common. Facing these challenges, combined with the actual situation of most universities, the following solutions are proposed:

1. Universities should speed up the construction of digital teaching infrastructure; continue to promote the use and management of intelligent classrooms and information equipment in universities, timely update campus network equipment, and reduce the aging rate of campus equipment; introduce various e-learning software to improve the

ability of resource sharing. Ordinary universities can seek resource sharing from well-known universities, so that students in ordinary universities can also enjoy a higher level of teaching quality [10].

2. Universities should regularly organize special training on informatization teaching. Through special training, teachers can master the use of relevant software and hardware. To strengthen and improve teachers' ability to use information technology, we should not only master these theories and knowledge, but also be able to screen these knowledge [11]. Innovative training forms can set up some online teaching and training systems, so that teachers can use fragmented time for self-study and improve learning efficiency.
3. Universities should establish a professional team to provide technical support for information-based teaching, reduce teachers' workload and avoid teachers doing repetitive work.
4. Universities should provide corresponding technical services for students. Schools should provide special network teaching classrooms, equipped with special network teaching teachers, provide students with complete information-based teaching hardware equipment, and create a good external environment.
5. College teachers should master multimedia teaching, online classroom, flipped classroom, micro class and other information-based teaching means, make use of the advantages of multimedia equipment, fully mobilize students' enthusiasm, and truly teach students in accordance with their aptitude. At the same time, teachers should play a main role in the interaction between teachers and students, actively guide students to correctly summarize the reasons after learning on the mobile terminal, and make use of attribution effect to ensure the achievement of information-based teaching goals in a controllable or uncontrollable learning environment [12].

In addition, the informatization construction in teaching practice also depends on the full cooperation of teachers and the importance of a school [13]. Only when schools, teachers and students support and cooperate with each other, can the informatization construction in teaching practice be steadily promoted.

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