A Research on Quality Improvement of Online Teaching in Higher Education

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Abstract: Chinese colleges and universities have vigorously developed online teaching with the help of online teaching platforms established during the epidemic. It is of great significance for colleges and universities to improve the quality of teaching in higher education through the mutual supplementation of online teaching and offline teaching. This study concludes from the questionnaire research that online teaching exists with insufficient online teaching concepts, insufficient motivation, and low self-discipline. This study also concludes that there is a difference in the level of information technology between teachers and students, and the satisfaction of online teaching is yet to be improved. Therefore, this study proposes to improve the "experience" of online learning and strengthen the "interactivity" of the physical classroom. At the same time, this study suggests the implementation of hybrid online and offline teaching, the reconstruction of teaching modes with the concept of a flipped classroom, and the improvement of the evaluation mechanism of online teaching. Thus, Chinese universities can improve the teaching quality of online teaching and even the quality of online and offline teaching.

1. Introduction

Online teaching is gradually becoming a mainstream trend in the education industry in the face of new opportunities following the end of the new crown epidemic. At present, online teaching has reached a certain level nationwide. Particularly worth mentioning is that MOOC and learning platforms allow online teachers and students to experience the charms of famous schools, courses and teachers at home and abroad, and at the same time make up for the shortcomings of our teaching resources. More people have begun to accept and trust the learning content obtained from third-party teaching platforms, which makes the traditional education model produce a more comprehensive and powerful education model with the power of the Internet. In addition, online vocational education has also shown rapid development momentum [1]. As far as the development direction is concerned, the integration of industry, education and research has become its core point. According to the "2021 China Comprehensive Lifelong Education Platform Big Data Report" published by Tencent Classroom. Online education is expected to maintain a growth rate of about 20% in the future. At the same time, the age structure of network online education users is also changing. In the future, with the gradual popularization of vocational education learning platforms, it is possible for students of all ages to enjoy high-quality vocational education resources through more convenient ways. This will realize the beautiful vision of "learning for all, learning

everywhere, and learning all the time" that we are looking forward to. We must realize that the rapid development of Internet technology is profoundly affecting various fields. In this context, the traditional classroom teaching mode has been transformed into a novel online teaching mode centered on the Internet. This undoubtedly greatly breaks through the limitations of the original offline teaching mode [2]. Therefore, improving the quality of online teaching is not only of great practical significance during the current fight against the epidemic, but also of great significance for the healthy development of education in the future.

2. General information and methods

2.1. General information

This questionnaire is used to understand the current situation of students' online teaching, to understand students' ideas about online classes, and to analyze the factors affecting students' online classes. The questionnaire puts forward corresponding countermeasure suggestions for the current situation of online classes and students' ideas. This questionnaire effectively solves the distress of students' online teaching, improves students' learning efficiency, and better absorbs the knowledge taught by teachers.

2.2. Research method

The survey was mainly conducted by using the internet questionnaire method, which was utilized to create and distribute the questionnaires. Questionnaire distribution period: March 1, 2023, to March 31, 2023.The distribution of this online questionnaire is relatively decentralized, focusing on understanding the students' online teaching. The results of the questionnaire will help to better understand what students think, so that we can know how to improve it.

2.3. Statistical analysis

In this survey, a total of 650 questionnaires were collected, and 626 questionnaires were valid, with a recovery rate of 96.3%. The valid sample statistics of this questionnaire are shown in Table 1.From the gender ratio, it can be seen that the gap between men and women is relatively small, accounting for 47.58% and 52.42% respectively. This indicates that the questionnaire was relatively evenly distributed among the respondents. The average proportion of men and women makes the statistical results of the questionnaire more credible. On the basis of men and women, a detailed comparative analysis is also done on the distribution of grades. As seen from the table below, the number of respondents to this questionnaire, sophomore accounted for the largest number of people in the three grades. The proportion reaches 50.81%, which shows that sophomore is still more concerned about college students' online classes.

Table 1: Statistics of effective sample situation

Symbol name	number of people	percentage
male	149	47.58%
women	164	52.42%
first-year university student	50	16.13%
second-year university student	159	50.81%
third-year university student	103	33.06%

2.4 Reliability testing

In order to determine the credibility of the questionnaire, the final reliability value obtained through the reliability test formula is 0.84. Usually, the value of cronbach is between 0 and 1, and if the coefficient is more than 0.8, the reliability is generally considered reliable.

3. Results

3.1. Trouble with cell phone lessons

As seen in Table 2, 88% of the tools used by the school's students for online classes are cell phones. Of course there must be students here who use multiple tools for online classes along with their cell phones. However, from my own situation, it is actually very inconvenient to use only my cell phone for classes. For example, the teacher posts discussions and brainstorms during class. You can't see the topic when you answer, you can't answer when you look at the topic, and you need to memorize the topic in your head. Sometimes the questions are long and it is hard to catch the main points. This shows that many students may need to buy computers this year to boost the economy.

Table 2: Highest use of cell phones

options	Status of responses
desktop computer	11%
Laptops	54%
Pad	15%
Cell Phone	88%
None of the above	5%

3.2. The plague of too much learning software

As shown in Table 3, there are many learning software used by students for learning. It is easy to get confused in class. It is really easy to get dizzy when you open several software at the same time to look up. Although there are a lot of learning software, the software is still easy to crash when learning. It can't withstand so many students studying online at the same time. Especially the 73.58% of the study pass, this year is even more teased as "study plug". It is a great obstacle to students' learning. Therefore, the learning platform should be improved. Although the compatibility of 67.92% of the nails platform is large, there are too many learning software for students. The ratings quickly fell into a trough, followed by an immediate response to keep it from being forced to close. From Table 3 and the above mentioned, it is easy to see. Students do not like to download too much software in their cell phones. First, there may be only one teacher using one software, and the various ways of signing in on various software does make one dizzy; second, too much software can also cause the learning tool to get stuck.

Table 3: The plague of too much learning software

Options	Status of responses
Nail	67.92%
Learning Channel	73.58%
Cloud Classroom	56.60%
Other	30.19%

3.3. Students prefer live lectures

As shown in Table 4, 63% of the students prefer live courses. Because students can interact with the teacher or raise their hands to answer questions if the teacher runs a live broadcast.37% of students prefer recorded courses, but recorded courses can only be watched and cannot be interacted with. In fact, those who follow the live learning are more likely to stick with it and complete the learning task. People who just make time to watch recorded videos often procrastinate and don't learn as efficiently. So, compared with blindly watching tutorials for self-study, I think live teaching may have the following benefits. First, the teaching process is more flexible, secondly, there is an atmosphere when learning, and thirdly, the teaching effect can be personally checked by the teacher. In addition to operating the course, answer all kinds of operational and career development questions from students. There are some questions that the teacher cannot prepare in advance, and only after the students raise them will the teacher realize that he or she does not know those. Doing so also allows the teacher to have a greater sense of participation, live teaching allows both teachers and students to feel a good teaching and learning atmosphere.

Table 4: Students' preferred classroom style

Options Status of responses	Status of responses
Live lessons (you can interact with the teacher or raise your hand to answer questions, etc.)	63%
Recorded lessons (recorded lessons, can't interact only watch)	37%

3.4 Advantages of online classes for students

As shown in Table 5, 79% of the students felt that the benefit of online classes was that they could watch playback for review. 53% of the students felt that online classes were quick and convenient. From these two data, many students are studying even at home, so it doesn't matter whether the teacher is in the form of recording or live broadcasting. The best thing is to have the conditions to play back the learning content, so that students can play back many times. The place do not know thoroughly understand. There are also a small number of students who find the online class attractive, indeed, before this, few students should have experienced this type of class.

Table 5: Advantages of online classes

Options	Status of responses
You can watch playback for review	79%
Quick and easy	53%
Attractive approach	26%

3.5 Disadvantages of online classes for students

Table 6 shows that 67% of the students reported that the learning software was unstable, and a small number of students felt that the online classes were not updated in a timely manner and that the quality of the online classes did not meet expectations. Only a very small number of students indicated that they did not have any problems. This shows that there are still many problems with online classes. These problems can lead to students not being able to hear important information in time, not being able to learn the follow-up knowledge in time, and perhaps not learning substantive knowledge.

Table 6: Disadvantages of online classes

Options	Status of responses
Unstable software	67%
Online lessons are not updated in time	36%
The quality of the online lessons did not meet expectations	45%
No problem	10%
Other	0%

4. Discussion

4.1. Teachers teach in a unique and distinctive way

In this research, it was found that students generally preferred courses in the form of live broadcast. Because live teaching can realize the interaction between teachers and students and improve the learning effect. Some students also love recorded video lessons. They think they can choose the viewing time as they like and can rewind and rewatch. However, both have certain troubles. Live courses lack the recording function and may miss important content when encountering problems such as network delays [3]. At the same time, it is difficult for the teacher to control the words and behavior of the students, which may lead to chaos in the classroom. As for recorded video lessons, these problems are avoided though. However, the unrestricted freedom may lead to inertia of some students and affect their learning progress.

4.2 Insufficient understanding of the concept of online education and insufficient enthusiasm for online teaching

Some teachers encounter difficulties in understanding and practicing the concept of "Internet + Education". They show a less positive attitude towards online teaching. They also lack interest and action on how to study the knowledge and skills in this area in depth. As a result, they may not be able to fully utilize the functions of the e-learning platform. They also fail to make targeted instructional design based on the platform features. In the synchronous teaching session of the course. Some teachers are prone to give only simple lectures. Or they may copy the content of the usual lessons directly onto the Internet. At the same time, the learning materials of the course are not uploaded to the teaching platform in advance. In the classroom, they seldom lead the discussion. After class, there is even a lack of effective guidance and answering questions, resulting in an overall low degree of teacher-student interaction.

4.3 Self-discipline to be improved and enthusiasm for learning to be stimulated

Due to the influence of unclear learning objectives, insufficient self-management ability and lack of enthusiasm for learning. Some students perform poorly in online learning. Lack of subjective initiative. These students will be distracted by matters not directly related to the classroom. Coupled with the loose learning atmosphere and the temptation of online entertainment. It is difficult to stay focused on the online class for a long time [4]. Some students even resist online learning. The phenomenon of absenteeism without a valid reason occurs frequently. Students attend classes only to cope with the learning tasks by signing in. Students are not able to enthusiastically participate in various online customized self-study activities. Students have not tried to actively explore and utilize various intelligent learning tools for the combination of online and offline learning modes.In the process, they also failed to take the initiative to find out the problems and solve them by making

full use of the rich and diversified resources on the Internet.

4.4 Teachers and students have different levels of information technology, and the satisfaction of online teaching needs to be improved.

At the beginning of online teaching, our teachers and students still need to understand and master the theoretical knowledge about online teaching and the corresponding technical means. We found that the potential advantages of online teaching were not fully understood. At the same time, they lacked the skills to operate the teaching platform or related software in depth. As a result, teaching may be ineffective at the beginning. Some teachers may be limited by their own abilities when using information technology. They fail to skillfully integrate intelligent teaching tools into teaching and innovate the teaching process and forms. In view of these problems, we hope that all teachers can strengthen the preparation work before class [5]. Teachers improve their instructional design and enrich their lessons. Students are better motivated to learn. In addition, there are some professors who are not familiar with the online teaching mode. There are difficulties in choosing teaching platforms and utilizing educational technology. It is difficult to accurately screen out the appropriate course resources according to the needs of the course and the characteristics of students. This is also one of the reasons that affect our satisfaction with online teaching.

4.5 The evaluation system of online education is still to be perfected, and quality supervision still needs to be strengthened.

While online teaching brings convenience, it also faces spatial inconvenience. It causes direct intervention and monitoring to become difficult. To this end efforts have been made to adopt a variety of methods and strategies to monitor and evaluate teaching outcomes. First, it is important to note. Since teachers who play the role of classroom managers. It is not possible to remotely observe the learning status of each student. It is difficult to give management advice for each individual's specific situation. Secondly, due to the many and complex platforms for online teaching. The courses are rich in variety and the learning materials are huge. A perfect monitoring system has not yet been established. It is difficult for schools to assess the quality of teachers' teaching immediately and accurately in this process. It is also difficult to ensure that the teaching effect is fully guaranteed.

5. Conclusions

5.1. Advocating online learning and leading online education

Compared with traditional teaching, the online classroom brings higher challenges for teachers. Instead of simply moving offline courses to online without any changes. Here, they need to carefully prepare rich teaching resources. Then reorganize the existing tutorials and integrate them into a set of organic and unified learning materials. At the same time, they will create personalized teaching materials for each knowledge point. Rich in content and exquisite pictures, making learning lively and interesting. In order to better grasp the students' learning situation, teachers will also set matching quizzes for each knowledge point. For those courses that involve experiments, teachers will also provide clear videos or live demonstrations of the experiments. Eventually, they will finish organizing the information [6]. So that teachers can post in real time in the classroom to ensure that teaching and learning are maximized.

5.2. Enhance the "sense of experience" of online learning and strengthen the "interactivity" of the physical classroom.

The attempts of online education and online teaching do not signal the demise of the traditional education model. On the contrary, it is emerging a wave of innovation to deepen and reshape the teaching system. This change is mainly manifested in the fact that theoretical knowledge learning has shifted more to online. Practical sessions are steadily shifting to more comprehensive core elements of vocational education, such as the cultivation of correct values, emotional communication and practical innovation. In career development, it is important to acquire knowledge. But how to understand, deepen and apply knowledge. As well as shaping an individual's healthy personality and effective communication skills are equally our focus.

5.3. Implement hybrid online and offline teaching.

Online and offline teaching have their own unique advantages. We advocate the implementation of a new teaching mode that integrates the two organically. Online teaching is not simply moving offline teaching to the Internet. It should combine the respective strengths of the two modes of education. Utilizing the advantages of network resources, while combining offline interaction between teachers and students. Play the role of teachers' guidance, and build a new teaching mode together.

5.4. Reconstruction of teaching mode led by the concept of flipped classroom

We advocate that students should be able to organize their own study time before or after class. Classroom time should be mainly used to hold interactive seminars between teachers and students, among peers, answering questions and solving problems. Learning activities that stimulate student creativity. Classes move away from the traditional lecture-based delivery method [7]. Classes shift to a two-pronged approach of lecture and discussion. The classroom completely changes the inherent notion that teachers dominate everything and honors the spirit of student-centered education.

5.5. Improve the assessment mechanism.

For the assessment of online teaching, we call for more attention to be paid to "quality" than just "quantity". More attention should be paid to "quality". Assessment scores should take both online and offline performance into consideration. Assessment mechanisms include a combination of multiple forms, such as faculty and student ratings and automated records. Not only can it automatically generate learning progress notes. It can also collect the teacher's detailed examination of the student's academic performance. Colleges and universities take into account that online teaching is currently in its infancy. The difficulty and frequency of assessment and evaluation should be adjusted moderately. Schools should aim to maintain students' mental health and enthusiasm for learning.

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