

Some Thoughts on Network Teaching and Evaluation of Higher Mathematics

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Abstract

As colleges and universities across the country carry out network course teaching on a large scale, network teaching has become an important teaching method, how to evaluate teachers' network teaching process reasonably, how to evaluate the network teaching effect properly, has become an important subject that all colleges and universities are facing. Based on the characteristics of network teaching of advanced mathematics, this paper puts forward some problems that should be paid attention to in the evaluation of network teaching. This paper discusses the teachers' basic teaching ability, teaching preparation, teaching reform and innovation ability, teachers' help to improve students' learning ability and teaching effect feedback. Some suggestions on how to evaluate the network teaching quality of college teachers are put forward.

Keywords

Higher mathematics network teaching, teaching effect, teaching evaluation.

1. Introduction

Since the COVID-19 outbreak in 2019, universities across China have launched the largest-ever experiment of online teaching reform. Although in the information age, network teaching as a teaching mode of education modernization, is not a new thing, but such a large scale network teaching has put forward a series of important issues for the majority of educators: how should teachers improve network teaching ability? How can administrators effectively supervise the teaching work of teachers? How to evaluate the effect of network teaching accurately? How to guarantee the quality of network teaching? In this paper, teachers' basic teaching ability, teaching preparation, teaching reform and innovation ability, teachers' help to improve students' learning ability and teaching effect feedback are discussed. It is pointed out that teachers should pay more attention to teachers' performance and ability when evaluating online teaching, and should pay more attention to the evaluation of teaching process rather than the evaluation of results.

2. Characteristics of network teaching

2.1. The characteristics of advanced mathematics curriculum

Advanced mathematics is one of the required courses for science and engineering students in colleges and universities. It is a major course in colleges and universities and the basis for students to learn subsequent professional courses such as physics, chemistry and computer. It plays an important role in cultivating students' logical thinking ability and professional skills, and is also a key factor in cultivating students' application ability and innovation ability. Its importance is self-evident. How to organize network teaching of advanced mathematics course also has its differences. In recent years, the mathematics literacy of college students in local colleges is polarized. Some students have weak mathematical foundation, lack of systematic

knowledge, fear of difficulties in the theoretical proof of knowledge, and the whole learning efficiency is not high.

2.2. The main difference between network teaching and classroom teaching

The traditional higher mathematics classroom teaching is mainly in the form of teachers lecturing and students listening to lectures, but also in the form of students doing exercises, and then discussing with teachers. Teaching mainly use blackboard, multimedia and other tools to display knowledge analysis, logical reasoning and other processes. There are face-to-face verbal and physical interaction between teachers and students in class, and the communication between teachers and students is barrier-free, which is a natural advantage of classroom teaching.

The main forms of network teaching include simultaneous live online teaching between teachers and students, teachers push personalized learning resources to students, including text, pictures and videos, for students to learn independently, and watching recorded videos and interacting with teachers and students offline.

Unique advantages of online learning are that resources are carefully selected and designed for students to watch and learn repeatedly anytime, anywhere. Micro videos are short and concise, with knowledge points or questions as the core of a series of explanation series, for students to demand, review and other targeted repeated learning.

There are, of course, huge limitations to online teaching. The first is that communication between teachers and students is no longer smooth. Students are unable to communicate with teachers about problems they encounter in learning. Secondly, the online learning environment has too many temptations for students and high requirements for students' self-control, so it is difficult for most students to insist on their independent learning for a long time.

3. How to evaluate the effect of network teaching properly

3.1. Evaluate teachers' basic teaching ability correctly

As a college teacher, we should not only have good moral character, rich professional knowledge, high cultural accomplishment, but also have good teaching ability. The basic teaching abilities include cognitive ability, design ability, transmissibility, organization ability and communication ability. Whether classroom teaching or network teaching, the basic teaching ability of teachers are undoubtedly the first important. For example, teachers should master professional knowledge proficiently, reasonably design teaching content, appropriately describe the knowledge taught, flexibly use modern education technology, reasonably organize and manage teaching classes, and have good interaction and communication with students.

3.2. Attach importance to teachers' teaching preparation

An excellent online teaching course must be based on sufficient teaching preparation. Teaching preparation includes preparing textbooks, teaching methods and students. Preparing textbooks means reading textbooks carefully, reading teaching reference materials extensively, and mastering teaching contents. Preparation teaching method refers to doing a good job in teaching design, understanding the characteristics of knowledge, using appropriate methods to express the content of knowledge, and guiding students to learn correctly. To prepare students means to fully understand the law and characteristics of students' physical and mental development, flexibly arrange teaching according to students' characteristics, and teach students according to their aptitude.

3.3. Teachers should have good ability of teaching reform and innovation

An excellent educator must have his own thoughts and opinions when engaged in teaching activities, rather than teaching according to dogma. New attempts and changes in all aspects of

teaching belong to teaching reform and innovation. In recent years, the rise of massive open online courses, or MOOCs, is a major change in the education model. It integrates various social network tools and various forms of digital resources, forms diversified learning tools and rich course resources, breaks through the limitation of traditional course in time and space, the limitation of the number of students, and greatly improves the autonomy of students to participate in the course learning. Thus also greatly promoted the network teaching model. Flipped classroom is considered to be an effective way of MOOCs learning. In other words, students first learn the teaching materials pushed by teachers online to obtain preliminary knowledge, and then they can better keep up with the teaching progress in class and discuss with teachers about problems which they don't understand, thus greatly improving the learning effect of students.

As far as the advanced mathematics course is concerned, its knowledge content is much, the definition, the theorem is very rich, the theory is difficult. The advantage of flipped classroom is that it reverses the traditional learning process and allows students to have a preliminary cognitive learning of mathematical definitions and theorems before class, so that students can communicate and discuss with teachers in class and deepen their accurate understanding and mastery of knowledge. For example, the definition of functional limit is the basis of higher mathematics, but also a difficult point for students to learn. From the definition of the contact function limit to the understanding and internalization of their own thinking mode, students need to constantly try to figure out and understand, which requires a longer digestion process, not in the classroom to listen to the teacher a few lessons can be achieved.

With the perfection and maturity of the network teaching model, it is no longer easy for educators to launch major teaching reforms. Therefore, new attempts and subtle changes in lesson preparation, teaching, homework arrangement and correction, exercise explanation and other links are worth encouraging teaching reform and innovation, reflecting teachers' hard work.

3.4. Encourage teachers to guide students to improve their learning ability

Research learning should be advocated in network teaching to encourage students' initiative in learning. Online teaching generally requires students to complete self-directed study before class. Students should have their own thoughts and opinions about what they are studying. Students who are better at autonomous learning have better memories, better understanding, and more accurate insights. They are more courageous to express their opinions when communicating with classmates or teachers, and their mastery of knowledge is more stable. On the contrary, students with poor independent learning ability find it difficult to accept and understand the new learning content, often dare not speak up in communication and discussion, and gradually lose their enthusiasm for learning the course, and the learning effect is getting worse and worse. Therefore, teachers should pay attention to the cultivation of students' autonomous learning ability and teach students the conventional methods of thinking in the process of network teaching. An excellent teacher is not only a disseminator of knowledge, but also a guide for students to improve their learning ability.

3.5. Evaluate the teaching effect of students

The quality of the teaching effect of teachers often depends on the learning effect of students as feedback. In fact, it is a very complicated work to evaluate the teaching quality of teachers. Commentators should pay more attention to the teaching process, not just the teaching effect. For example, there are many factors affecting the quality of a student's exam results, which cannot accurately reflect the teaching effect of teachers. The teaching effect should also include the improvement of students' learning ability and cultural literacy, which is closely related to students' foundation, subjective efforts and individual differences. Thus, the measurement of teaching effect is also a complex process.

Commentators should pay more attention to teachers' performance and ability when evaluating network teaching. For example, whether a teacher has a positive work attitude, full of enthusiasm for work, tirelessly engaged in teaching and educating fully reflect the performance of teachers. Whether the teaching methods of teachers are advanced, whether the teaching content is reasonable, whether the teaching design is appropriate, whether the teaching ability is outstanding, whether the teaching is admitted by students and so on all reflect the working ability of teachers.

4. Conclusion

Managers' evaluation of network teaching should be aimed at promoting teachers' teaching level, rather than just ranking teachers' work performance. Therefore, the results of teaching evaluation should be fed back to teachers in an appropriate way, which is helpful for teachers to reflect on and improve their subsequent teaching. In order to make an objective, fair and true evaluation of teachers' teaching and students' learning effect, commentators should follow up and participate in the whole process of teaching.

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