

University Mathematics Education in the Internet Age

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Abstract: The reform of university mathematics curriculum has always been an important research work in the education sector in China, but it has not been a satisfactory solution for a long time. Nowadays, the Internet era has realized the sharing of high-quality teaching resources in the world. This paper proposes several kinds of university mathematics Internet education methods at home and abroad, and proposes three directions for its future development.

1. Overview

The University Mathematics Series is an important public basic course for university science and engineering also economic students. And the system is set up rigorously, aiming at training students' logical thinking ability and the ability to solve practical problems with mathematical theory, and laying a solid mathematical foundation for students to engage in professional related work. However, for a long time, the teaching content of college mathematics courses in China has become more rigid than before, focusing on the transfer of concepts and knowledge points, and ignoring the establishment of mathematical ideas and logical thinking and the cultivation of practical ability. In the form of teaching, the teacher is taught, the students are passively accepted, and also the content is difficult to understand. The students are apt to be afraid and tired of learning.

In recent years, with the rise of the Internet, many universities at home and abroad have experimented with Internet plus. Now we can easily see the videos of many top-level universities on the Internet. Many teachers have revealed themselves on their personal homepages. For the relevant materials of the course, we can get the curriculum resources of top-level universities without going to school in person. Therefore, the teaching mode of traditional universities in China, especially the teaching of mathematics courses with particularly strong theoretical theory, has been greatly challenged. Based on the above background, it is necessary to study the development direction of university mathematics in the Internet age.

2. Several Internet education models at home and abroad

2.1 MOOC

MOOC (Massive Open Online Course) is not only a collection of learning content and learners, but also a way to connect teachers and learners through a common topic or discussion in a certain field. Compared with traditional education, MOOC has the characteristics of large scale, openness, on-line, wide coverage of curriculum content, high quality teaching resources and complete teaching materials. Students can study the courses offered by top universities independently. The scale here is mainly reflected in three aspects, what is, the large-scale online registration of students, the large number of universities participating in the MOOC platform, and the large number of high-quality courses available for students to choose. The openness is reflected in the overall openness of learning objects. Compared with the threshold of traditional education, it achieves the true meaning of "teaching without class". However, many opponents believe that MOOC curriculum is decentralized, which makes learning not the right way, and whether or not to complete the curriculum can only be judged by themselves, which is not conducive to students'overall grasp of knowledge. It is

undeniable that MOOC has indeed triggered a major change in global higher education to some extent. It is not only a new development in the field of distance education, but also a new development in the concept of open education advocated by open educational resources.

2.2 Flipped classroom

Flipped Classroom or Inverted Classroom refers to re-adjusting the time inside and outside the classroom and transferring the decision-making power from the teachers to the students. In the flipping classroom, the typical classroom explanation time is replaced by activities such as experiment and in-class discussion, while classroom explanations are completed by students in extra-curricular activities in the form of videos and other media. It can be said that the reversal of the classroom has subverted the traditional teaching of knowledge imparting and knowledge internalization, the traditional classroom teaching structure and teaching process. The reversal of the classroom makes teachers from the traditional classroom knowledge imparter to the promoter and instructor of learning, students become self-paced learners, and the role of teachers and students has changed. But the video of the reversal of the classroom to teach. In fact, this is a typical receptive learning. In addition, the characteristics of flipping classroom are short and concise video, clear and clear teaching information, but also need network.

2.3 Khan Academy

Khan Academy aims to provide free high quality education to the world by means of online video courses. At present, Khan Academy has launched thousands of teaching videos, from the basic core courses of mathematics, to physics, biology, chemistry, finance, also to the "Napoleonic war", "the aliens kidnapped secrets." These courses are all free, and Khan intends to keep them free forever. Khan Academy is considered by the news media and academia to open the dawn of "future education."

Many people think that the significance of Khan Academy is that students' individualized learning has been realized. Khan Academy recognizes the difference of students and truly realizes layered teaching, so that each student can learn at his own pace. Of course, some people pointed out the lack of "Khan Model". Khan Academy only focuses on intellectual education, but has little effect on important moral education, sports and aesthetic education. The Khan Academy curriculum is limited by hardware and network environment. But no matter what, Khan relies on the Internet to use the Internet platform to give "family teachers" free of charge to those who are eager for knowledge, and indeed gives more inspiration to modern education.

3. The reform plan of university mathematics curriculum under the Internet era

3.1 School reform

With the advent of the Internet age, students can easily access the excellent teaching resources of the world's top universities. In order to conform to the development trend of the Internet, the common practice of traditional universities is to actively carry out the construction of micro-courses, MOOC, open online courses, and support teachers to learn and record courses. However, in practice, because many university mathematics teachers are busy, and many teachers will feel inadequate in the face of unfamiliar areas, which leads to the uneven quality of a large number of online mathematical resources. Therefore, the influence of the school should not be underestimated. Schools should formulate sustainable development strategies according to their own conditions.

3.2 Reform of teacher teaching methods

At present, the teaching methods of mathematics classrooms in universities are too singular. Although the current methods have made great progress compared with the past, in the original mode of chalk and black pen, multimedia and other auxiliary teaching tools were introduced. But most mathematics teachers still use traditional teaching methods. Teachers think more about the progress of the curriculum content, the logic, rigor and integrity of the teaching content itself, but do not take

into account the students' acceptance, and fail to give students the time and opportunity to think independently, which leads to students' lack of initiative in learning. In addition, multimedia can not be used correctly in classroom teaching. Multimedia, as a modern teaching method, can play a very good auxiliary role in teaching. For example, the drawing of three-dimensional graphics in space analytic geometry and vector algebra originally requires teachers to draw graphics on the blackboard. The quality of graphics directly affects students' analysis. For example, some interesting probability experiments can stimulate students' interest in learning by using animation. However, in recent years, students have gradually held a negative attitude towards multimedia teaching, because many mathematics teachers simply display the teaching content with multimedia courseware, and only browse to students like a movie, without their own subjective explanation, and even some teachers just read PPT perfunctorily, losing the essential characteristics of Mathematical Science and the basic requirements of learning mathematics. Finally, mathematical culture exists widely in the process of teaching practice in a penetrating, recessive and potential form, and its cultural functions are gradually accepted and recognized. But in the process of College Mathematics teaching, mathematics culture is sometimes absent. Therefore, besides their own professional knowledge, teachers should actively learn, expand their knowledge, also keep pace with the times, as well as use multimedia and Internet correctly, then make students convinced, and guide students in the direction. To convince students that for math teachers, the class hours of college math courses are particularly tense. Teachers can use Internet tools, such as Wechat Group, QQ Group, Web Live Software and direct communication with students, to answer questions and solve puzzles for students, to help students learn better, and to record micro-lessons to facilitate students' preview, review the corresponding knowledge points, and so on.

3.3 Reform of students' own learning style

As a university student living in the Internet age, you should learn to make full use of resources. Before the class, you can pre-study through the MOOC and the micro-course, and try your best to thoroughly understand the knowledge, so that you can have important and difficult lectures when you are in classes. Places that you don't understand after class can also search for solutions through the Internet. At the same time, you can use Internet tools to learn other courses you like, and you can share and communicate with like-minded friends online to learn and progress together.

4. Summary

The Internet provides a wealth of information resources for university mathematics teaching and a communication platform for university mathematics teaching and learning. University mathematics teaching under the Internet environment is conducive to cultivating students' practical ability and innovative thinking, and it is conducive to cultivating students' mathematical and cultural literacy. The reform of university mathematics teaching in this context requires the joint efforts and cooperation of the education sector, universities, teachers and students.

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