

University Mathematics Teaching under Modern Educational Technology

Yanmei Hu

Institute of Technology, East China Jiaotong University, Nanchang, China, 330100

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Abstract: University mathematics teaching is different from middle school mathematics teaching. University mathematics classroom is relatively free, and students have more right. University mathematics teaching not just teaches students the basic theoretical knowledge of textbooks. But more importantly, it is to improve students' mathematics ability, improve students' mathematical accomplishment, cultivate students' initiative and creativity, and enable students to form their own thinking habit when they apply mathematics in future, which further enhance their mathematical ability and form knowledge system. With the development of modern educational technology, university mathematics teaching has a new look. This paper makes an analysis of university mathematics teaching under modern educational technology, hoping to offer some help to the university mathematics teaching reform.

1. Introduction

With the development of science and technology in China, the university mathematics classroom has also injected new vitality. In the process of introducing science and technology products into university classrooms, university mathematics teaching has also undergone major changes. However, these multimedia devices have brought convenience to the university mathematics teaching, and also caused some problems for teachers too. Most teachers use PPT to save their own board output during lectures, but PPT goes fast one after another, students can't keep up with the speed of the teacher when they are in class, so they can't take notes. In addition, with large content of the university mathematics, large amount of information, and high difficulty, students can't understand and digest all the content just in class, which does not help to improve the efficiency of university mathematics classroom teaching. But teachers using PPT as an auxiliary of teaching can effectively save their retelling time on the basic definition and theorem, and can apply more time to the proof and application of the definition and theorem to help students understand and memory. In the university mathematics classroom, the introduction of modern technology to assist teaching has its advantages and disadvantages. In the following passage, the author will analyze the teaching problems existing under modern educational technology and provide solutions, which hope to improve the application of modern technology in the university mathematics classroom so as to further improve the quality of teaching in the university mathematics classroom.

2. Problems in mathematics teaching in contemporary universities

2.1. Students lack of initiative and creativity

As we all know, university mathematics classes generally involve many students, but the faculty is not able to be assigned to each class. That resulted in many math classes studying together, which causing class pressure. In the process of large class teaching, teachers have no way to distract their attention on each classmate equally. This makes some students distracted because teachers do not pay attention to them. Students whisper to each other, play mobile phones, and even do homework of other subjects in the classroom. But teachers are helpless about this phenomenon. The biggest problem in the study of modern university students is the lack of initiative and creativity. It is easy to free themselves in university after the middle and high school education that in the background of exam-oriented education. Without the double pressure from parents and teachers, they relax themselves excessively in university. Some students think that as long as they can get enough

credits and they hold the idea that “60 grades are enough, one more point is wasteful.” They relax their learning state and even be late and absent from school, which makes it difficult for teachers to successfully carry out their teaching plans.

In addition, many students attend classes that only follow the teacher's thoughts all the way and did not think and participate in the discussion in the class. They just memorizing notes or numbly listening, which wasting much precious time in classroom. The teacher will lose the passion of teaching because of the low enthusiasm of the students, resulting in a vicious circle in the class and reducing the quality of teaching. In the process of students entering college from high school, some students will be unable to focus their interests into the study because of the lack of understanding and dislike of the assigned majors, which makes them difficult to integrate into the class teaching. Especially in the study of boring mathematical theory knowledge, teachers reading PPT or copying the proof in the book makes the students very repulsive. They think that even they don't listen in class, they can also use the time before the exam to review and recite the book and the knowledge on PPT to pass the exam. So they give up listening in class. University teaching requires students to innovatively explore and actively integrate into the class. Teachers should take care of each student in the course of class, fully mobilize the enthusiasm of the students, and enable students to internalize and learn by analogy from the knowledge in the mathematics class, which finally form their own system of knowledge theory.

2.2. Teacher teaching lack of interaction in class

In the process of university mathematics teaching, most teachers only pay attention to the progress of the course. They do not take care of the students' ability, and do not pay attention to interacting with the students, making it difficult for students to have an interest in the class. In the traditional university mathematics teaching class, the teacher still adheres to the concept of “the teacher first” and starts his own teaching activities in a “one person alone has the say” way. Even the interaction with the students is simply a mechanized question and answer. They asking the students some questions that have no substantive meaning, such as "Yes or no? Is it right or not? Is there any problem?". Most of the university teachers do not directly contact the students. Different from the middle school mathematics teaching, the university teachers can only meet with the students in one or two classes per week. The teachers are only responsible for giving lectures on the platform and do not pay attention to other aspects of the students. Most teachers do not recognize all the students in the class they teach and even some teachers only know the comrade in charge of studies who receives and hands out the assignments, and do not clear about other students.

In the teaching class of university mathematics, teachers should create an interactive environment for students, use the thinking in the process of interaction to allow students to immerse themselves into the class, and guide students to follow the teaching plan to learn the next content. In the process of teacher-student interaction, some teachers like to ask questions and let the whole class to answer, but teachers often say the answers themselves without giving enough time to let students think. This makes it easy for students to be ignored, and students will think that teachers do not paying attention to their answers and ideas, and thus give up the idea of interacting with teachers, this is very unfavorable for students' learning and development. There are some teachers who actively interact with students in the class, but most of the questions they ask are related to the knowledge they have learned and ignore the emotional interaction with the students. This way of asking questions is difficult to mobilize the enthusiasm of students. In addition to the interaction between the teacher and the student, the interaction among students is also very important. However, many university teachers believe that the time for students to interact is to create an overt opportunity for them to chat, thus reducing the opportunities for students to interact in the class. As a result, it makes students' instant inspiration difficult to express and inhibits their creative development.

2.3. Single teaching and assessment methods

The curriculum in the traditional teaching is carried out by using the teacher's blackboard writing. The assessment is just to adopt the stage test in the half-term and the end of the term to let the

students test their own learning results. This makes some students do not attend classes or even skip classes. They burn the midnight oil for a few days before the exam, and pass the exam with the basic definition that memorized in the previous night. Classroom teaching is the most important part in college mathematics teaching. The quality of university mathematics teaching depends on the efficiency of teachers' lectures in the class to a certain extent. College students are different from middle and high school students. They all have their own personality and knowledge system. The teacher's single general teaching method cannot be applied to every student, which limits the development of some students' creative ability in a certain sense. In addition, the teacher's tone is dull in teaching, the teaching content is only explained according to the textbook. Sometimes it even directly used PPT to go over, which is difficult for students to grasp the key points of the class. Some students will give up listening and to do other things because of they can't understand the content what teacher has taught. That leads to the reduction of students' interest in university mathematics learning, and make them out of the class, which making the university math class inefficient.

In the assessment of university mathematics teaching, most teachers only pay attention to the students' memory of knowledge points. In the assessment, it only tests some basic knowledge. Students can easily pass the exams by clearly remembering the theories and definitions on the textbooks. So there are not much requirements for the mathematics ability of students. Such an assessment method is not conducive to the cultivation of students' creative ability. In addition, the university's mathematics assessment is mostly carried out in a close-book examination and teachers only judge the level of students' learning ability based on the results of the examination. However, this kind of assessment method will cause many students to take risks to cheat in exam, which will cause cognitive blind spots in teaching. As a result, teachers can not accurately grasp the teaching effect, and thus cannot formulate corresponding improvement plans.

3. University mathematics teaching under modern educational technology

3.1. Transforming teaching thought and inspiring students' interest in mathematics learning

In the further implementation of the new curriculum reform, teachers should adapt to the teaching trend of the times, change their teaching concepts, hand over the subject position of teaching in class to students, and use modern electronic equipment to assist teaching. Mathematics is different from other disciplines, especially university mathematics. Many theorems are theories that mathematicians have summed up for years or even decades. Students can't only learn how to apply theorems to the excises problems in the process of learning, but also should think by your own in the process of learning and understand the difficult journey of mathematicians. And finally master the basic reasoning thought through teacher's explanation, and make students form their own unique mathematical ideology through internalization. In college mathematics teaching, teachers should cultivate students to learn independently, and let students to discover the beauty of mathematics through independent inquiry, and further improve students' ability of independent exploration instead of let students learn according to the passive learning style of high school.

In the class, teachers should cite some examples of scientific research to make students realize the importance of learning university mathematics, highlight the key points of teaching. And at the same time, teachers should also give students the opportunity to show themselves, so that students can feel their subject position in the class so as to raise the interest in university mathematics learning. In addition, university teachers should make students realize the purpose of learning mathematics through mathematics classes. Maybe some students will ask questions when they enter university, "I am a science and engineering student, why do I study mathematics? I am a liberal arts student, why do I study mathematics? Is it important to study mathematics?". There are some students who have doubts about their majors and do not know the meaning of learning. At this time, teachers should actively encourage students to experience the joy of success in the process of learning mathematics, stimulate students' interest in mathematics learning, and thus improve the quality of teaching in the university mathematics class.

3.2. Strengthening teaching interaction and cooperation to establish a harmonious relationship between teachers and students

In the traditional university class, it is easy for students to give up listening because they are neglected by teachers, and even give up learning because they can't understand what the teacher is saying, which leads to the low efficiency of college mathematics classroom teaching. The university class under modern educational technology provides students with a platform for free speech, so that the relationship between teachers and students has changed from "teacher leads student" to "equality of teacher and student". This kind of teacher-student relationship reform makes the class become more dynamic, allowing students to interact with teachers in the class, further blurring the boundaries between teachers and students, allowing students to eliminate the fear for teachers, and bravely ask questions in the class to better integrate into the class. And finally realize the interaction and cooperation between teachers and students, and among students. In university mathematics teaching class based on modern education, teachers can also use modern educational technology to assist teaching. Micro-classes, MOOCs and other forms of classes allow students to participate in learning at anytime, anywhere. Teachers can also use the online platform to interact with students and meet the needs of students to a greater extent. Through this way can not only effectively establish the harmonious relationship between teachers and students but also make the teaching of university mathematics more efficient. In addition, university mathematics teachers can also use class teaching to allow students to design their own learning content and progress, develop a teaching plan suitable for most students. And carry out teaching activities under the premise of meeting the needs of students, so that students can relax themselves in the class and thus better show themselves to provide a development environment for the cultivation of students' mathematical literacy.

3.3. Combination of teaching and multimedia and teaching methods innovation

The combination of university mathematics teaching and multimedia under modern educational technology is a necessary measure in the reform of university mathematics teaching. University mathematics teachers can use multimedia equipment to carry out teaching, create an open learning environment for students, and enable students to consult the knowledge points and some related teaching resources in time when studying so as to further enrich students' knowledge. Under the modern educational technology, the university mathematics class is no longer the teaching mode of "teacher giving lectures and students passive listening". The college class under modern educational technology presents the teaching content to students by pictures and videos. In this way it can attract students' interest to some extent and make students more easily to enter the learning state. Modern educational technology can also visualize the abstract mathematical theory knowledge. Students can use mathematics software to further sublimate the knowledge, making college mathematics teaching more interesting. College mathematics emphasizes the common development of students' theoretical ability and practical ability, and encourages students to actively participate in series of competitions such as "Internet Plus" "mathematical modeling of university students" and "mathematical competition of university students". The smooth development of these competitions are inseparable from mathematics. Many data analysis relies on the skilled operation of MATLAB, SPSS, LINGO and other softwares. Therefore, it's very necessary to combine university mathematics teaching and multimedia. In addition, teachers can also use both multimedia and blackboard in the class. Some basic definitions in textbooks can be presented to students by PPT while the proof of the theorem and the answers to the questions need to be written by the teacher himself. In this way not only can effectively save the class time, but also allows teachers to interact with students in the process of proof and problem solving, attracting students' attention to the class, and further improving the class efficiency of university mathematics.

3.4. Using Internet products to assist teaching

With the continuous development of China's science and technology, many Internet learning softwares and websites have emerged. Derivatives that aided teaching such as the University

Student Resource Network, the Chinese University MOOC Online Learning Platform, the Blue Ink Cloud Class, and the Rain Classroom are abound. Students can make full use of these software for self-learning. Teachers can also use these softwares to give learning tasks and answer questions that were left over, so that students can use their spare time to study. And these APP teaching does not limit the student's learning location. Students can study in the library or in the dormitory, which reduce the student's learning burden to some extent and let them study at anytime, anywhere. In addition, the micro-course is also a good learning platform. Teachers can post the key knowledge that needs to be emphasized in the class on the micro-class for students to repeatedly study. The micro-courses mostly are short and fine. Students can totally use the micro-class to unite the fragmentation time and further enhance their learning ability. The Internet products have brought convenience to university mathematics teaching, and have also provided assistance for the smooth development of teaching, which has promoted the reform of university mathematics teaching to a certain extent.

4. Conclusion

University mathematics teaching under modern educational technology has brought a new look to the university mathematics class. University mathematics teachers can actively use multimedia equipment to carry out teaching activities, returning the subject position of the class to students, and improve students' mathematics ability in the process of independent learning so as to achieve the teaching goals of university mathematics, and further improve the quality of university mathematics teaching.

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