

Research on Strategies to Improve the Effectiveness of Questions in College Mathematics Classroom

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Abstract

Classroom questioning is one of the commonly used teaching methods in university mathematics teaching, but many questions have problems such as single format, low student participation, and unreasonable arrangement of the difficulty of the questions. This paper studies the current situation and problems of questioning in the college mathematics classroom. This paper studies the current situation and problems of questioning in the college mathematics classroom. Through the exploration and analysis of the actual classroom phenomenon, this paper gives the improvement measures to improve the effective questioning in the college mathematics classroom, and provides theoretical reflection and practical help for the overall improvement of college classroom teaching level.

Keywords: College mathematics, classroom questioning, effective questioning.

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INTRODUCTION

Questioning is an important part of classroom teaching. In Chinese university mathematics teaching, classroom questioning, a teaching method that is often used in middle schools, is relatively rare. At present, there are few class hours in college mathematics courses. Where is there time for classroom questioning? In fact, college mathematics teaching is mainly to cultivate and improve students' thinking ability, so we would rather teach less content than ignore the thinking interaction in the classroom. When students slowly have the discovery and thinking ability of knowledge, many less difficult parts can be completely self-taught. It's not that the more thorough and detailed, the better the student's learning. The key is to teach students the basic methods and skills to acquire knowledge. Classroom questioning can stimulate students' enthusiasm for thinking, play a linking role in the systematicity of the knowledge taught, and sometimes strengthen the depth of students' thinking. It plays an important role in consolidating students' knowledge, activating the classroom atmosphere, and developing students' potential. It is not only the concentrated embodiment of heuristic teaching, but also a way for teachers to understand students' mastery of learned knowledge. In a word, using classroom questioning scientifically, promoting teaching and learning with "asking" is an important way to improve the charm and level of college mathematics classroom teaching [1]. Under the

guidance of problems, teachers should let students think actively, learn to explore, give full play to students' initiative, and promote the effective improvement of comprehensive mathematical literacy and comprehensive ability. Mathematics is a subject that needs continuous demonstration. Only when students have a certain ability to answer questions, can they really analyze and study along with their own thinking, and then obtain new knowledge in continuous exploration and complete the new construction from old knowledge to new knowledge. Therefore, the guiding role of teachers is very crucial. If teachers want to ensure students' mathematics learning ability and effectively improve students' core literacy of mathematics, they must ask questions correctly, efficiently ask questions, and guide correctly, so as to enhance their comprehensive quality and promote the development and improvement of their comprehensive ability.

METHODOLOGY

Single way of classroom questioning

Some teachers just follow the rules to complete the teaching goals, and the questions in the classroom rely on the preset courseware, or just ask the answers to the questions, and the questions lack innovativeness and interestingness. For college students, interest is the first step in learning. Only when they have enough interest in mathematics, can they learn

actively. Therefore, in college mathematics teaching, teachers should start with stimulating students' interests and design questions. It is necessary to create a relaxed and happy problem situation, so that college students can want to learn mathematics and take the initiative to learn mathematics, thereby promoting students to enter the ocean of mathematics knowledge. Mathematics teachers should strive to break the limitations of traditional teaching, cleverly use the diversity of questioning, help students broaden their thinking mode, improve their mathematics literacy, and promote the construction and implementation of efficient mathematics classrooms [2].

The difficult arrangement of the problem is unreasonable and cannot be gradual

In the classroom, many teachers ignore the difficulty of asking questions, and often use questions of the same level of difficulty for all students, which leads to great incompatibility for some students and limits the improvement of their learning efficiency. Teachers should pay attention to the combination of difficulty and ease in problem design, not too difficult or too simple. They should scientifically grasp the difficulty of the problem and design the problem in close combination with students' cognitive level and knowledge mastery level. At the beginning of the class, you can ask some questions that all students can answer and set up situations to bring in, which can arouse students' interest in learning [3]; At the end of a topic, the teacher can ask some quality questions, and the students can think further. Teachers should understand that the teaching process is a changing process, which requires teachers to have pedagogical tact and flexible questions. Many teachers always implement teaching according to their own wishes and teaching policies. During teaching, they always put forward the questions prepared in advance, rather than making changes and adjustments according to the students' understanding at that time. When planning and designing specific questions, if the difficulty of the question is too low, students will complete the answer through intuition and other methods. This kind of question is not challenging. However, the difficulty of setting the problem is high, and it is difficult to summarize a suitable solution based on the student's knowledge level, which will affect the student's self-confidence and high enthusiasm for learning mathematics [4]. Therefore, teachers need to scientifically grasp the difficulty of the problem and flexibly set the content of the problem, so as to implement the teaching link smoothly.

RESULTS AND DISCUSSION

Recognize who to ask questions

As the main body of learning, each student is an independent individual, and each student has his own different personality and characteristics. The concept of college mathematics teaching is to adjust according to students' cognitive characteristics through the principle of step-by-step. Many teachers ignore this point. They

do not consider the differences and needs of students. When asking questions, the method is unreasonable, the attitude is more casual, and the method is relatively simple. This approach is not advisable. Teachers should teach students in accordance with their aptitude. Students' different situations, choose different questioning methods, pay attention to the student's dominant position, pay attention to the exchange of roles, let students think more, speak more, encourage students to have more thought storms, bold guesses, express their own opinions, and think independently to solve the problem. Teachers use effective questions in the classroom to guide students to try and find answers to the questions. For different students, it is necessary to pay attention to the difficulty of the problem, as well as its acceptance and way of thinking. Teachers should understand the differences in the level of mastery of knowledge and concepts of each student, as well as the different speeds of thinking and solving problems.

Focus on the way of asking questions

In the traditional teaching model, teachers often use the same way of questioning frequently, that is, extensive questioning for all students. This single way of questioning limits students' performance in the classroom and reduces the teaching efficiency in the classroom. In college classrooms, it often happens that the enthusiasm of the whole class is not high, and they are unwilling to take the initiative to answer questions. Experienced teachers will divide the class members into groups and apply a point system to the group. If the students in the group answer the questions correctly, they will add points to the group. This questioning method arouses the students' sense of collective honor, and the classroom atmosphere instantly becomes active.

In the form of questioning, heuristic should be the main method, and the way of questioning should be designed according to the content of specific teaching materials. Teachers should appropriately introduce real life things to attract students' attention. In specific teaching practice, teachers should create a more relaxed learning atmosphere for students, leave more space for students to think, and be good at applying heuristics and guided questions, so that students can use their existing knowledge and experience to supplement in the blank space [5].

Master the frequency of asking questions

In the classroom, teachers should master the frequency and number of questions asked, and the number of questions cannot be too many or too few. In order to change the traditional teaching methods, some teachers ask questions frequently, so that the teacher's questioning time occupies most of the classroom time, and the questions asked are also disorderly and aimless. Teachers blindly pursue the number of questions asked, resulting in an inappropriate number and frequency of questions. The effect obtained is not positive, but also affects students' thinking and perception. Therefore, the

frequency of questioning in the classroom has become an important point. Many teachers rarely ask questions in the first half of the classroom, but the number of questions in the second half of the classroom is very large and the frequency is also very high. This method will cause most of the students to have new problems when they have not fully understood and thought about the previous problem. This will make students feel very strenuous in the classroom learning process. Teachers throw too many questions at once, which can easily distract students from learning and fail to grasp the key points. This makes the rhythm of classroom teaching difficult to control and inefficient.

There are still such problems in college mathematics teaching. Some chapters are combined with lectures and exercises. When doing exercises, if the teacher asks questions too quickly, students who have a good grasp of the knowledge points sometimes give the answers to the questions at once. This situation will cause some students who have not yet come up with the answer to be unable to think independently. Therefore, teachers should leave enough space for students to think, actively guide students to become real masters of learning, let them discover the joy of learning and inquiry, and take the initiative to establish a knowledge system and feel the charm of mathematics.

Effective questioning should go from simple to complex, guide students to think about problems step by step, help students understand and learn, and use appropriate methods to increase students' interest in learning mathematics and reflect the value of mathematics education. When teaching the content of a new lesson, teachers need to scientifically distribute the questions in the classroom based on the content in the mathematics textbook, set up questions where there are more difficult points of knowledge, promote students' active thinking, and set the questions to grasp the logic and order of the knowledge. Therefore, when teachers introduce new lesson knowledge, they often ask questions about the new lesson knowledge and common-sense knowledge related to real life. The purpose of this approach is to guide students to take the initiative to think, leading to the theme of the new class. When instructing students to think logically about knowledge points, teachers will also ask similar questions many times to deepen students' memory of knowledge.

Focus on the difficulty of the question

In the process of designing problems, teachers should pay attention to the gradual relationship between the problems and the escalation of the difficulty of the problems, and avoid asking questions repeatedly and from multiple angles around the same problem, otherwise, it will affect the students' interest in learning and inquiry [6]. Because there is no obvious difficulty to advance, the creative potential of students cannot be effectively stimulated. In the process of teaching,

teachers should pay attention to the connection between problems and problems in order to better guide students to apply what they have learned and break through the zone of proximal development.

If teachers do not reasonably arrange teaching according to students' learning reality, learning needs, and learning ability, do not take into account students' learning level and actual situation when raising teaching problems, and lack knowledge coherence and transition in the treatment of problems, it is easy to make students' thinking mode appear link fault and logical confusion, so as to fail to achieve the expected teaching effect. For teachers, the difficulty of asking questions in the classroom reflects the teachers' teaching ability and teaching level. When teaching formulas and algorithms, if the teacher's teaching method is to follow the text, the students will sound boring and uninteresting. This method will even produce resistance to this lesson, which will be more unfavorable to the students' learning, and the classroom efficiency will be very low.

For those students who have higher literacy in mathematics subjects and active awareness of innovative thinking, teachers need to ask more complex and profound questions to help students develop their intelligence, find a way forward, and further improve themselves. Those students who temporarily have a low mastery of mathematics subject knowledge are suitable for simple and clear questions, which makes them feel that mathematics is not so complex and profound, so they are not prone to have a fear of difficulties, so as to protect their enthusiasm for learning mathematics, cultivate them to adapt to the requirements of classroom teaching and keep up with the overall pace of the whole class [7]. Therefore, when designing classroom problems, teachers must analyze the specific conditions of students to design problems. The depth and breadth of the problems must be suitable for use by groups of students with different learning situations.

Focus on the feedback of questions

In the process of college mathematics classroom teaching, teachers should not only pay attention to the right or wrong answers of students, but also pay attention to enlightenment and guidance to students after answering [8]. Teachers should not only focus on the development of students' reaction level and thinking level, but also need to make effective evaluations, supervise and urge students to make positive progress, so that students can be recognized and encouraged by the outside world.

Many times, after the students have answered the class question, the teacher will simply use a simple phrase "sit down" to end the class question. As for the reaction of students, teachers are often easy to ignore. The neglect of the teacher can easily prevent students from getting the attention and respect of the math teacher and timely feedback from the teacher. The

students' enthusiasm for answering class questions will be affected, and their self-confidence will also be affected. When they lose the initiative to answer questions, it is difficult for them to fully integrate into the thinking and exploration of mathematical problems. In this way, the expected purpose of promoting students' thinking and learning in college mathematics class is lost. When students give the correct answer in class, the teacher should give them a positive affirmation and praise, such as "the answer is very good, you can see that it has been carefully considered", "very good, the teacher really feels for you happy", "The answer is correct, your thinking is very clever," etc. In this way, the praised students will enhance their confidence in continuing to learn mathematics, because they also hope to be recognized by the teacher. Other students will take this as an example to promote their own better learning of mathematics, so that they can be encouraged like the praised students. If the students cannot give the correct answer, the teacher should also give a positive response, which can promote the determination and confidence of these students in learning mathematics, so that they will not be discouraged.

CONCLUSION

Teaching has a method, but there is no fixed method. The same is true for classroom questioning. It has a variety of organizational forms and its effects are also different. Teachers can arrange appropriate and effective questioning methods according to the specific content of the teaching and the actual situation of the students. It can be a teacher asking a student, a student asking a teacher, or a student asking a student, or even letting the student find the problem by himself, and then try to solve it by himself. Teachers should make it clear that asking questions is not only a teacher's right, but also a student's right. Teachers should guide students to question boldly, actively explore, stimulate students' enthusiasm for questioning, create a relaxed and active classroom atmosphere, and provide students with a free sky of positive thinking. Therefore, it is very important for teachers to guide students' questions in college mathematics classroom. Through effective, targeted, phased and enlightening mathematics classroom questions, students can not only fully mobilize their enthusiasm for learning classroom content, but also greatly improve the efficiency of mathematics

classroom, and students can fully enjoy the fun of classroom. At the same time, it can improve mathematical thinking and problem-solving ability.

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