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On the Effective Questioning of Junior high School Mathematics——Take a Math Contest as an Example

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Abstract: Effective questioning in mathematics class is to guide students to deepen their understanding of mathematics and question effectively by creating a good question situation on the basis of carefully setting questions.The strategy of effective questioning will be interpreted from several aspects:asking questions at key points,grasping the difficulty of questions,inquiring questions at nodes,and inspiring students'thinking.This paper will better reflect the content through case analysis.
Keywords: Junior high school Mathematics; Classroom quality; Ask Effective Questions

1. The connotation of effective questioning

According to Zhang Hongxia,"The so-called effective questioning specifically refers to the mentality of doubt,confusion,anxiety and exploration caused by the questions raised,which in turn drives individuals to think positively and constantly raise and solve problems".Lu Zhengzhi and Hong Songzhou believed that"effective classroom questioning in a broad sense refers to the process in which teachers,on the basis of elaborately preset questions,create good question situations,form appropriate questions in teaching,guide students to actively think,question and have dialogues,fully realize expected teaching objectives,and timely reflect and practice questions".Gong Haiyan believed that"effective questioning is a commonly used teaching method in modern teaching mode.This effective questioning method can not only play the guiding role of teachers,but also reflect the principal position of students in teaching".

To sum up,it can be seen that effective questioning is a teaching method,which can promote students'understanding of knowledge and questioning of problems.It can also give better play to teachers'guiding role and reflect students'dominant position.

2. Strategies and cases for effective questioning

2.1 Ask questions at key points

In mathematics teaching,teachers should let students think positively,and let students experience the happiness of learning mathematics in their thinking.The time of a math class is very limited.How can teachers not only give students space to think independently but also give teachers time to teach in the very limited time?Therefore,when the teacher throws out a problem in class and asks the students to think,the teacher should first give the students appropriate time to think independently,and then the teacher should use the"midwife technique"of Socrates to communicate with the students and find the places where the students have difficulty in thinking.This is the key place,where teachers can not directly wake up students,but let students find a breakthrough in difficulties through subtle questions,which not only stimulates students'enthusiasm in learning,but also improves their ability to think independently.

2.2 Grasp the difficulty of Asking Questions

When the teacher finds that the students have difficulty in thinking,the teacher should ask the students questions in time,but should adopt the teaching method of teaching students according to their aptitude.If the student in question has a particularly good mathematical foundation,the teacher will selectively ask some difficult and more divergent questions when questioning him.If the student is asked,the teacher will choose to ask some questions that are less difficult and easier to think about.In this way,students with different foundations continue to study according to the different thinking directions provided by the teacher.Finally,the self-ability of various types of students has been developed to different degrees.

2.3 Ask at the node

Questioning in Baidu's explanation is:"inquisitive inquiry,several times to ask."In education and teaching,the definition of questioning is:"For a certain problem,in order to make students grasp it,they usually ask questions again after one question until students can answer it smoothly".Therefore,when asking questions,teachers should not put forward casually,but should have a clear direction,and this question is often very critical.It can not only inspire students to think,but also improve the ability of teachers.For example,teachers can ask students where they have made mistakes.Instead of criticizing students blindly,teachers can redirect their thinking to the right track.

[Case Study]

In the decimal representation of positive integers x,the product of each number is p(x).Find all positive integers that satisfy the equation $p(x)=x^2-10x-22$.

Teacher:Please read the question carefully and see if you can do it.

Student:Sir,do we have any ideas?

Teacher:Let me take you to analyze the topic.Let's take a positive integer x,and they say in decimal notation,so let's set it as a parameter,what should it be set to?

Student:X can be written as $x=a_k10^k+\ldots\ldots+a_110+a_0$.

Teacher:So it's clear from the conditions we gave that there's only one equation here.There's only one equation,so we're thinking,first of all,how do we get the first thing down?

Student:k can't be too high,so we have to argue that k is less than or equal to 1,and if it's not less than or equal to 1,that means k is greater than or equal to 2.

Teacher:Now let's talk about k greater than or equal to 2.

Student:We find contradiction with it by proof,so we conclude that k is less than or equal to 1.

Teacher:How many possibilities are there for k?

Student:k=0 or k=1.

Teacher:Let's consider the k=0 case first.How do you do that?

Student:If k=0,then use the root formula to find a_0,and find that there is no positive integer solution to this equation.So k is not 0.

Teacher:So now we only have k=1.

Student:If k=1,then it's still case by case.When a_1 is greater than or equal to 2,it's a contradiction.So if we figure out that a_1 is equal to 1,we're going to figure out that only one of the positive integers we want is 12.

Teacher:Let's summarize,this problem mainly uses the idea of equation,to solve the variable is to establish an equation,but an equation can only solve one variable,so we have to find a way to reduce the number of this,in which we use the monotone of the function and use proof.

References:

[1]Zhang Hongxia.Text Interpretation and Effective Questioning[J].Primary School Teaching Reference,2021(28):68-69.

[2]Lu Zhengzhi,Hong Songzhou.Teachers'Effective Classroom Questioning:Value Orientation and Standard Construction[J].Educational Research,2010,31(04):65-70.

[3]Gong Haiyan.Construction of Efficient Middle School Mathematics Classroom by Effective Questioning[J].China New Communication,20,22(03):177.

[4]Guan Shaohua,Feng Shaoli.Dialogue research university effective classroom questioning to[J].Journal of higher education in jiangsu province,2017(02):73-75.The DOI:10.13236/j.carol carroll nki jshe.2017.02.018.

[5]Chen Wei,Lu Linhai,Zhu Yuhui.Construction and Application of"Deep Questioning"Model Based on Students'Learning Performance Recognition[J].Course.Teaching materials.Teaching,2021,9(8):105-110.The DOI:10.19877/j.carol carroll nki KCJCJF.2021.08.017.

[6]Zhang Qiongzheng.Asking Excellent Questions and Asking Efficient Questions--Research on Effective Questioning in Middle School Mathematics Classroom[J].Master Online,2022(33):24-26.

[7]Tao Hengxiang.Excellent Questioning and Efficient Classroom--Strategies for Effective Questioning in Junior Middle School Mathematics Teaching[J].Tianjin Education,2022(33):25-27.

[8]Bai Jun.Effective Questioning Makes Wonderful Achievements--Practice and Research of Effective Questioning in Junior Middle School Mathematics Teaching[J].Mathematics Learning and Research,2022(28):20-22.