Research on the Mathematics Problem-Oriented Teaching Strategy Based on Information Technology

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Abstract: In this paper, based on the information technology, the teaching strategy of the mathematical problem is investigated. Taking higher mathematics for example, by the method of literature analysis and research, mathematical problem-oriented teaching under the support of information technology is proposed. In the class teaching, especially before the class, teachers should prepare the class according to the professional background and propose some mathematical problem to guide the students to think about the professional problem.

1. Introduction

The rapid development of information technology and its unique superiority have made all walks of life start to use information technology in the course of development, and the educational undertaking is no exception. At present, the reform in the teaching of mathematics is in the process of fire. The Outline of the Curriculum Reform of the Basic Education (Trial) has pointed out the general application of information technology in the course of teaching, the integration of the information technology and the subject curriculum, the gradual realization of the teaching content, the way of the students undefined learning, the teaching method of teachers and the change of the interaction between the teachers and the students, the advantage of the information technology, the rich and colorful educational environment and the powerful learning tool for the students undefined learning and development. "With the deepening of the educational reform and the continuous updating of the information technology, the information technology is more and more widely used in the mathematics classroom, making the class more and more vivid and wonderful. Give full play to the advantages of information technology, provide a rich and colorful educational environment and a powerful learning tool for the students undefined study and development." Thus, in the primary and secondary education, there are more research results for the integration of the mathematics teaching and the information technology.

2.Integration of Information Technology and Mathematics

The so-called integration of information technology and mathematics teaching refers to a new teaching method which combines information technology, information resources, information methods, human resources and teaching contents organically in the teaching process in order to realize the teaching objectives and complete the corresponding teaching tasks. Information technology, as a modern teaching method, uses text, object, image, sound and other media to transmit information to students. It can not only fully arouse the enthusiasm of students, stimulate students undefined desire for knowledge, activate students undefined thinking and expand students undefined imagination, but also, as the transmission channel and carrier of teaching information, has the advantages of large capacity, high efficiency, saving educational investment and making it the mainstream of teaching technical means at present.

2.1 The integration of information technology and mathematics teaching is the inevitable trend of the mathematics teaching

Modern educational theory holds that mathematics teaching should be fully combined with students

undefined existing life experience and understanding, so that they can have more opportunities to learn and understand mathematics from the familiar things around them. Information and knowledge have become the basic resources in the society, and the information industry has become one of the core industries in the society. Information technology permeates all aspects of social life and work, and information literacy has become a basic quality that every citizen of the information society must possess. The ability to obtain, analyze, process and utilize information is as important as the traditional knowledge and ability in "reading, writing, calculating". It is the most basic requirement for the training of new talents in the information society. The development of modern information technology has had a great influence on the value, goal, content and way of learning and teaching in mathematics education. Therefore, it has made great efforts to develop and provide students with more abundant information resources, take modern information technology as a powerful tool for students to learn mathematics and solve problems, and strive to change students undefined learning style, so that students can devote more energy to realistic and exploratory mathematics activities.

2.2 The integration of information technology and mathematics teaching can improve students undefined interest in learning to a certain extent

Some students think that learning mathematics is a very boring thing, the understanding of mathematics is only boring calculation, no interest in mathematics. In order to enhance students' interest in mathematics learning, more and more scholars have paid attention to these issues. The mathematics curriculum standard emphasizes that mathematics should be closely related to nature and human society, so that students can understand the value of mathematics and enhance their confidence in understanding mathematics and learning mathematics well. They have the initial innovative spirit and practical ability, and can be fully developed in terms of emotional attitude and general ability. With the help of information technology, online media allow students to learn mathematics from books to obtain relevant information from life. Network resources are full of pictures and texts, large amount of information, convenient and fast access to information and are loved by students. If we can effectively use the network and other information technology means will enhance students undefined interest in learning, students will be willing to understand mathematics and study mathematics.

The use of information technology to create interactive learning situations and provide students with rich and colorful materials for mathematical activities has played a great role in promoting the enthusiasm of both teachers and students in learning. The hierarchical display of relevant teaching contents can induce students to understand that knowledge can be understood and actively participate in it, thus truly realizing enlightening reasons, guiding potential, and publicizing student’s undefined personality.

2.3 The use of modern information technology is beneficial to the reform of students undefined learning style and the cultivation of students undefined ability to acquire new knowledge.

In the past, the way for students to study information is mostly from teachers and books. With the use of modern information technology, the learning style of the students is greatly enriched, and the learning approach is greatly widened. Students can access information through modern media, help to think, and promote learning. For example, a student can use a computer to carry out homework design, review the data, complete the task of research-based learning. The modern information technology provides a powerful tool for students to study and explore knowledge, so that students are happy and have more energy to invest in realistic and exploratory mathematical activities.

It can be seen that the full use of the modern information technology teaching in the mathematics teaching can make the whole teaching process not only arouse the enthusiasm of the students undefined learning in all directions, but also promote the students undefined observation and thinking ability, which is beneficial to the development of the students undefined creative thinking.

3.The Research of Mathematics Problem-Oriented Teaching Strategy

The so-called mathematical problem-oriented teaching means that when the classroom teaching is started, the problem is thrown out to the students, so as to inspire the students to think and lead out a new teaching mode. In this paper, we mainly take the teaching of higher mathematics as an example to explore the research of the problem-oriented teaching strategy of higher mathematics under the support of information technology.

3.1 Mathematical problem-oriented teaching supported by the information technology

With the deepening of curriculum reform and the integration of mathematics and information technology, various teaching methods are applied to the teaching of higher mathematics, and the problem-oriented teaching can effectively improve the teaching quality and the teaching efficiency, and arouse the students undefined interest in learning through the exchange of the teachers and the students undefined roles, to improve the ability of the students to study and to improve the application of the problem-oriented teaching in the past.

The so-called mathematical problem-oriented teaching under the support of information technology means that, under the guidance of information technology, teachers raise problems based on the teaching background, effectively guides the students to understand the knowledge background, makes students think, studies and guides the students to explore the mathematical knowledge through teaching problems, so as to be more familiar with the application background of the knowledge in the study, improves the learning interest and learning efficiency, and strengthens the students' exploration ability.

3.2 The advantages of the mathematical problem-oriented teaching supported by the information technology

a) The mathematical problem-oriented teaching method supported by information technology is conducive to the normal implementation of teaching reform, which converts the traditional teacher-centered teaching form into student-centered teaching form. As a guide, teachers guide students to learn, so as to improve the overall teaching level.

b) The mathematical problem-oriented teaching method supported by information technology enhances the thinking space of students, which is beneficial to the improvement of students undefined innovative ability, which is the ability strongly advocated by our country at present.

c) The mathematics problem-oriented teaching method supported by the information technology can effectively improve the overall quality of the students, the students as the main body, the active thinking problem, the problem solving, the improvement of the students undefined ability to study, the ability to solve the problem, the ability to unite and cooperate, etc. In the meantime, it can also improve the teaching level of the teachers. The mathematical problem-oriented teaching method supported by information technology constantly urges teachers to improve the level of professional business and information technology, and constantly grasp the front problems and background of mathematics.

4.The Implementation Strategy of Problem-Oriented Teaching Method in Higher Mathematics Supported by Information Technology

4.1 Making effective use of information technology and combining with knowledge background, design kinds of problem-oriented teaching content

Teachers can create the problem context in the class, put forward the effective question according to the teaching content, attract the students to participate in the thinking, and arouse the students' interest of learning and learning. Teachers can use the multimedia technology to design different teaching forms, guide the students to think about the problem, encourage the students to actively explore the problems, mobilize the teaching atmosphere, and improve the overall teaching quality. For example, in the course of teaching the "definite integral", the multimedia teaching courseware can be designed through the multimedia technology, the teaching goal is clear according to the

teaching content, teachers can integrate the text, the sound, the picture, the animation and the like in the multimedia teaching courseware, and the approximation of the area of the circle can be demonstrated by the animation, to attract the students' attention. And also teachers can design the problem to guide the students to think, such as "the area formula of a polygon", "When does the polygon better approach the circle?" limit, and so on, so that the students can think about the problem in the study, teachers can make the students discuss the problem, and during the discussion, on one hand, it can improve the students' inquiry ability; on the other hand , the interaction and the communication ability of the students can also be improved, If the student has difficulty in solving the problem, teachers can guide the students, help the students, and guide the students to find a way to solve the problem, so as to improve the overall teaching effect.

4.2 Make effective use of "Rain classroom" and other teaching methods to improve the application of problem-oriented teaching mode

Through the teaching tool of "rain classroom ", teachers can push the pre-class preview courseware with MOOC video, exercises and pronunciation to the students' mobile phone in real time through WeChat, and can customize the teaching design according to their own teaching style and teaching rhythm according to the teaching content, as well as the functions of real-time answering questions, playing screen interaction and so on. Teachers can be in the courseware of preview, insert video, handout, etc., these videos and handouts, can be from Tencent, Youku, Tudou video, and can also borrow Tsinghua University MOOC video resources. After WeChat is sent out, teachers can carry on the targeted reminder and the instruction through the phonetic function, lets the student look while the students are listening. After the pre-class preview handout is issued, teachers can also receive the student's preview situation, and can be reminded by setting the time node of the preview reminder time. The pre-course push link can make use of the classroom resources more effectively, and also make up the problem that the basic knowledge of the students is uneven, so that the students have a certain understanding of the background of the knowledge before the class, and reach the level close to or the same before the class.

5.Conclusions

Throughout this paper, we propose the method of mathematical problem-oriented teaching under the support of information technology. It means that, Under the guidance of information technology, teachers can raise problems based on the teaching background, effectively guide the students to understand the knowledge background, makes students think, study and guide the students to explore the mathematical knowledge through teaching problems, so as to be more familiar with the application background of the knowledge in the study, improves the learning interest and learning efficiency, and strengthens the students’ exploration ability.

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