The Application and Innovation Research on Mathematics Education Technology

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Abstract. Mathematics education is not just the technology of modern information technology as an auxiliary tool for teaching mathematics, but emphasized the need to promote information technology as a modern independent learning, and the use of a large number of shared resources provided by modern information technology for self exploration and cooperative learning, which can mobilize students learning autonomy and initiative, which will help improve the innovative thinking and practical ability, so that trained personnel is the modern society needs qualified personnel. Mathematics education is the traditional teaching techniques to improve and optimize the structure, as the implementation of an effective way to cultivate innovative talent cultivation, but also on the basis of current international trends in education reform and new trends.

Introduction

With economic development, popularization and application of modern information technology, and a number of cities in China's vast economic areas with better, even in some less developed economic regions, most schools are equipped with specialized multimedia classrooms and student computer room, and the school also through a variety of ways to develop teacher information literacy degree of information for improving classroom. Our education Encouraged by government policy, many scholars and educators also specific to the integration process of exploration and practice of multi-faceted. Some mathematical software, such as a calculator application, Geometer's Sketchpad, PPT and other software up significant role in mathematics teaching, and achieved certain results. The new curriculum reform since the inception to the present and it has been promoting information technology to integrate according to the characteristics of various subjects so that educators can promote information technology in the classroom to study and practice. Wherein Shanghai and other places in the calculator on how to combine the math test was attempted. During the study, teachers and scholars to integrate reached some consensus, some teachers think that the use of modern information technology in the classroom, you can create a good educational environment for students to stimulate their interest in learning.

The Application Model of Mathematical Educational Technology

The Conventional Mode Based on Classroom. This is a classroom teaching method follows the traditional teaching methods to teach mainly in the form of teachers in the classroom is the main lectures, demonstrations and against proposed to think and solve part left to the students, then the students according to the teacher's presentation and understanding and thinking problems, which would allow students to think of their own prior knowledge and new content network integration, and by answering the teacher's questions to further consolidate what they have learned, to achieve the purpose of education. Now occupied by the teacher in the classroom time is limited, and knowledge within this limited time presented to the students is no longer rigid, but flexible use of multimedia courseware for classroom-based animation and sound coexist simulate the real picture, and by demonstrating static dynamic mathematical process to stimulate students to deepen the impression of the cerebral cortex, while sound shape can increase students' perceptual knowledge, easy to understand abstract mathematical concepts.

The Collaborative Inquiry Mode Based on Classroom. In the environment of the new curriculum reform, some scholars have proposed other modern information technology in generalized pedagogy. They think that since it would have to be innovative innovation highlights, not to reform the traditional teaching model, but to explore the creation of a collaborative model, this class explore collaborative model has four forms:

Competitive collaborative learning means: two or more learners for the same learning content or learning situation, learning to compete to see who can be first to achieve educational goals. We in the experimental teaching, first to ask a question and provide the relevant information to solve the problem, or by the students are free to choose a competitor, or by the teacher pointing competitors, then solve the problem from the start of independence, while the opponent can always monitor problems resolve the situation.

The debate on collaborative learning means: between collaborators around a given topic, first determine their views; within a certain period of time by means of a virtual library or the Internet query information to form their own opinions; tutors (or neutral group) to identify their views, elect square and anti-party, then the two sides around the theme of the debate; the debate by the parties can discuss their respective views and rebuttal against each other's point of view; and finally by the tutors (or neutral group) to rule on the arguments on both sides, views demonstrate adequate wins.

The partnership-based collaborative learning mode means: There are many options available for students learning partners, students choose their own learning content and learners are learning through the network to find the same content and choose one of them married by mutual consent learning partnership, encounter problems when one of the parties, the two sides will discuss with each other, exchange views on the same issue from different angles, and reminders to help each other, until the problem is solved.

Role Playing collaborative learning means: to allow different learners and students were playing the role of mentor, the learner is responsible for answering questions, and mentors to help learners solve problems in the learning process, the role of the parties can mutually change.

Students' Autonomous Learning Mode Based on Network. Due to the development of modern information technology, application of network technology almost every corner of the globe, people can use the Internet to keep abreast of social dynamics and related information, in the face of such a large information network, some people are happy people worry. In order to adapt to modern society, a better grasp of modern information, each of us must join the ranks of information technology. As a high school student, in the face of great contemporary information network, their interactive learning experience should exchange, which can not only get more learning method, you can also listen to some of the teachers to teach online learning classroom. You can use a comprehensive online teaching students to promote students' ability to self-learning, so students can maximize their potential. At the same time the students according to their own interests, to find a lot of relevant data of self-study, the personality development of students has an important role, at the same time gradually strengthen students' reading comprehension, ability to communicate. In this environment, teachers can be targeted to strengthen some of the students do not understand the problem, do not explain all, students are no longer passive recipients of knowledge, but according to its own characteristics for learning.

The Innovation of Mathematics Education Technology

Mathematics Education Technology Can Build Realistic Learning Environment with Diverse Contact. Modern network provided "diversification contact" presentation will help students deepen the knowledge and understanding of mathematics and construction of several aspects. Constructivist scholars believe that students learn not only the knowledge of the learner to a mechanical memory, the most important is to understand the meaning of the final learners the knowledge of the construction. "Diversification contact" method requires learners should learn from various angles, different levels of knowledge to understand the implied meaning of wealth as well as its complexity. A lot of learning resources and methods offered by modern information technology can make students from different forms of mathematical knowledge to understand the perspective of the

object. Meaning "diversification contact" is represented by a variety of learning styles to represent the same mathematical object. The application of modern information technology in teaching junior high school mathematics classroom, makes mathematical objects can be learned with images, graphics, animation and other forms presented to the students, which will help their understanding.

Mathematics Education Technology Can Help Students Discovery Learning. Modern multimedia technology with shape, sound, scenery, combining movement and other diverse forms, with a large capacity, receptive manner by teachers and students alike. Teachers take advantage of traditional teaching methods and modern information technology organic integration, using mathematical software to build a platform for easy understanding of mathematical knowledge for teaching, can learn from each other more efficiently. Using modern information technology and the integration of junior high school mathematics curriculum, not only to help students build the development of cognitive structures, but also makes the students experienced the process of mathematical activity created, it changed the traditional teaching and listen to a single teaching method.

Mathematics Education Technology Facilitates the Exchange of Learning Outcomes. For students in terms of, no matter what course to learn to communicate using appropriate language is an element of learning and application of various disciplines indispensable, it is a way to share ideas and understanding. For junior high school mathematics learning is not only to develop the students' ability to communicate mathematics and the ultimate goal is to teach students decision-making ability. In the exchanges and discussions, the natural use of the mathematical language to learn, and teachers can equal exchange. Due to modern information technology can accurately and easily, diversified features, students can quickly and accurately find their own way of learning according to their range of capabilities and use of office software, Word, PPT, or projector to own interpretation of the mathematical results It presents a variety of ways with mathematical symbols, mathematical charts to teachers and other students to communicate. Of course, everything has two sides, in junior high school mathematics and information technology curriculum integration process, we should recognize that modern mathematics curriculum and information technology play an active role in the implementation of a variety of simultaneous, we should try to overcome the technology itself is difficult to solve the question of mathematics teaching to bring all the adverse effects.

The Problems Should be Pay Attention to in the Mathematics Education Technology

The Problems Should be Pay Attention to in the Mathematics Teaching. In the teaching process, some teachers for the blind pursuit of innovation and the use of modern information technology, ignoring the advantages of traditional teaching, mathematics teaching process weakening the penetration of knowledge, in particular the process of teaching, too much emphasis on the application of multimedia technology. The application of modern information technology in the classroom, after all, only as an aid to classroom teaching, in order to more effectively improve teaching efficiency, but not the entire content of mathematics teaching. Traditional teaching deficiencies, but the best part is not simply arbitrarily denied.

It Prevents People’s Deeper Understanding of Mathematical Concepts. Use of multimedia can quickly produce visual images, but this feature also makes teaching there have been some confusion, the teacher does not need step by step manual drawing or calculation on the blackboard. In the classroom courseware are prepared in advance, students have not had time to think, images and results are out, making it difficult to further arouse students' learning process. Early results also produced, which cannot be implicit expression of mathematical concepts or principles in the image in it, such as a computer input function expression after the image output function, you cannot see the image coordinates of each point. Teaching cannot ignore the students’ hands-on culture of computing and drawing ability.

The Flaws of Mathematics Education Technology Will Produce Many New Problems. Computers with powerful, almost can think of features are included, but the median value represented is limited. For example, in Excel cannot be more than 15 digits, square root, and so on. We all know the effect of dynamic computer software is very strong, but there are still imperfect

aspects. For example, in the case of vertical established only conclusion, if students use mathematical software measurement function, when the angle is very close to 90 °, the conclusion may be established. Modern information technology compared to traditional manual drawing teaching is concerned and the result is much more accurate. Final verification theory or proof obtained by the theory.

It Makes Students Doubt Its Accuracy. Actually it works to a computer program that runs the way designers and the results are pre-designed. Enter a different command, the program will automatically run the appropriate command and outputs the result. This automatic nature of its work on the principle of operation is based and running-related, teachers and students to the principles and methods used are not known. Therefore, from the work of modern information technology it can be said in terms of a "black box." This suspicion has unreasonable and reasonable terms and reasonable because it is the product of a rational guidance. Each teacher in the integration of various applications teaching methods, means and tools to a variety of flexible teaching methods, means and tools combine to enhance students' understanding and knowledge of mathematical theory, not just the use of modern information technology.

Sometimes It Hinders Interaction and Communication between Teachers and Students. Whether the West or the introduction of the theoretical concepts, basic principles, methods of learning and skills training, and sometimes even the most advanced software is often not as good as the good teachers in the classroom with chalk demonstration. In the modern information technology environment only if teachers use technology to advance design demonstrates good problem-solving ideas and not with the idea of change in the students, but not as good teachers top with chalk to write on the blackboard while explaining effective. Because only use Courseware for lack of basic knowledge of the class, the slow response to the classroom students, the teacher cannot keep pace, and difficult to take notes in class did not understand the cause, there is no class note to see the phenomenon is widespread. At this time, teachers need from multiple perspectives, different sides repeatedly explained to understand that if teachers only concerned with teaching courseware, students focus on reducing the response, not the students to discover and solve the problems, this is not conducive to improve the overall level of the students.

Conclusions

In the application process of mathematics education technology, teachers should be based on specific mathematics teaching content and students overall characteristics of the specific circumstances, so deal with specific issues, to do our best. In the use of modern information technology, it was found the problem in time to correct, and the best way to try to apply bold to class, always observe the students' responses and fun, so stay the course, always focus on the needs of mathematics education to promote student learning in mathematics effect.

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