

## **Suggestions on the Integration of Information Technology and Mathematics Curricula of Middle School**

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**Abstract:** Since the beginning of the 21st century, the rapid development of information technology with computer and Internet as the core is affecting people's traditional learning, life, thinking and working methods, and also changes the traditional human society education model. This prompted us to study how to integrate information technology and mathematics curricula of middle school, in order to sum up some new teaching models, teaching methods. It make the structure of mathematics courses more reasonable, more effective and more diverse. In the process of completing the task of learning, students can not only improve the information literacy, but also realize the training of mathematical ability and mathematical thinking. Accordingly, the Integration of Information Technology and middle school mathematics curriculum has become a hot issue.

**Key Words:** information technology; mathematics curriculum; integration; practice; suggestions;

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### **I. INTRODUCTION**

"The new curriculum standards" states: "Modern information technology should change the way students learn, so that students are willing and have more energy into the practical exploratory mathematical activities."

Therefore, the effective application of information technology in the teaching of mathematics education is an important means to realize the modernization of mathematics education and implement the new curriculum reform. The wide application of information technology has a profound impact on the content of mathematics curriculum, mathematics teaching, mathematics learning and so on. In the teaching process, teachers should pay attention to the organic integration with modern information technology, let information technology into the middle school mathematics classroom, play its advantages, help students understand mathematics, enhance students' interest in mathematics learning, improve students' learning method.

### **II. CREATE AREASONABLE SITUATION TO STIMULATE INTEREST IN INQUIRY LEARNING**

A good mathematical situation is a solid foundation for teaching and exploring mathematics. The traditional "a piece of chalk, a blackboard" inculcation of teaching is clearly unable to meet the current teaching requirements. In the past teaching process, due to the long-term use of traditional teaching methods, ignoring the creation of mathematical context, for the existence of a large number of abstract concepts in mathematics or rigorous reasoning process and so on, students are often difficult to understand, but can not accurately grasp. As a result, it is difficult to achieve the desired effect. The application of multimedia human-computer interaction technology effectively complements the teacher's "dictation" teaching deficiencies, can make the image of mathematics more specific. Teachers can use the presentation animation for illustrative teaching, but also can use the dynamic simulation of the trajectory of the formation process to describe the complex abstract mathematical object relationship, static and dynamic combination, both sensuality, so that students understand the mathematical abstract knowledge of the formation and development process, Knowledge of mathematical knowledge. It is better to help students understand the various mathematical ideas and methods, to stimulate students interest in learning, so that students have a strong desire to learn.[1]

For example, in the process of teaching the conic curve, the teacher can show the students' perceptual knowledge of several conic lines by showing the pictures of ellipses in their lives; What's more, it highlights the view that mathematics is the source of life and higher than life, and stimulates students' interest in learning. Then, from the mathematical point of view, the teacher explains the origin of the conic curve deeply. Through the Flash animation design, it can help the students to experience the process of continuous change of ellipse, hyperbola and parabola, and feel the connection between the three. At the same time, the teacher guides the students in the geometric drawing board by personally dragging, changing the focal length and long axis length (or real axis length), a deep understanding of the formation of elliptical and hyperbolic conditions, to grasp the definition of the essence, experience the definition of elliptical and hyperbolic the difference. In the traditional teaching, the students can only understand each position of the center of the circle of motion statically, so it is difficult to imagine the forming process of the center of the circle center of the moving circle. The introduction

of information technology reinforces the first definition of ellipse, highlights the process of knowledge generation, follows the cognitive law of students, and increases the maneuverability of the classroom, fully embodies the idea of combination of numbers and shapes.

### **III. USE INFORMATION TECHNOLOGY TO ENRICH CLASSROOM TEACHING CONTENT**

On the one hand, the combination of information technology and mathematics course teaching mode gives students multiple sensory stimulation, and accelerates the process of students' understanding, which is equivalent to enhancing students' cognitive ability. It shortens the time for students to accept the same content, and provides a good condition for increasing the class capacity. On the other hand, teachers can use slides, according to the needs of some graphics, topics, questions analysis or answer process stored in the computer, etc., timely reproduced in front of students, in the classroom. Teachers can also use the characteristics of high-speed computer information processing, rapid and accurate mapping in the classroom, reducing the time teachers write on the blackboard [2]. In addition, teachers can supplement the teaching content, increase the classroom teaching density and increase the classroom knowledge capacity by using the remaining time. The teacher can realize the real-time control of the teaching target information, can let some text, a graph appear at any moment, or at any time let the objective existence hide, can make a random image, can at any time intervention on the moving object on the screen, like a movie set as the static lattice in a picture. This not only helps students can easily understand the concept of mathematical model, the abstract graphics visual image understanding, also will cause the student to the law and the concept of thinking, but also on the students absorbing new knowledge and new knowledge to help memory.

For example, in the study of the "exponential function and its properties" in maths 1, the teacher needs to guide the students to the properties of the exponential function, and the general properties of the exponential function are to observe a number of given exponential function images. However, if the method of drawing points is used to draw the image of exponential function, it will waste a lot of time and the effect is not obvious. When using the Geometer's Sketchpad drawing, teacher can arbitrarily change the base value of the index function, can save class time, can also mobilize the enthusiasm of students, improve the efficiency of classroom teaching, enrich teaching methods, expand the channels of communication between teachers and students, increase students' knowledge and accept classroom knowledge capacity.

### **IV. FOCUS ON THE CHOICE OF CONTENT OF TEACHING AND INFORMATION TECHNOLOGY INTEGRATION**

The integration of teaching and information technology emphasizes that information technology should be applied to inquiry teaching, not because of the application of information technology in the teaching process, but ignoring the characteristics of disciplines[3]. In the middle school mathematics teaching process, not all teaching content is suitable for information technology and mathematics curriculum integration model to teach. Middle school mathematics teachers teaching tasks heavy, time is tight, can use traditional teaching methods to clarify, speak through the mathematical content, do not have to spend a lot of time to carefully design courseware. Moreover, too much use of electronic board books, will cause students to visual fatigue, resulting in tired of learning psychology, but counterproductive, affecting teaching effectiveness. Therefore, in the content selection, we should choose those who have a certain challenge, to stimulate students to explore the desire, and the application of traditional teaching methods difficult to complete the content of the inquiry.

The computer can not completely replace the teacher's teaching, we must correctly grasp the traditional teaching methods and the relationship between information technology. When teaching new classes and exercises, teachers need to write on the blackboard at the right time, so that students can deepen their impression of the content. In the introduction of the new class, teachers should timely writing topic, let students clear learning content. When teachers deduce mathematical theorems and formulas, they need to write on the blackboard to help students understand and master the laws of mathematics. When teachers teach exercises, they need to standardize the steps on blackboard writing, which is helpful for students to sort out the thinking of solving problems. If the content is presented in Multimedia, the content will be like a film, in front of students flashing, students simply have no time to think, digest, so that there will inevitably be some students left behind. However, when the teacher writes the blackboard, students can think independently and organize their own knowledge network. In addition, teachers can demonstrate while emphasizing the key content, both pronged approach, to achieve unexpected results.

## **V. THE TEACHER SHOULD BE THE LEADING ROLE IN THE PROCESS OF INTEGRATION**

In the course of the integration of information technology and middle school mathematics, we should not only fully embody the subjectivity of students, but also play the leading role of teachers. The integration of information technology and mathematics teaching practice requires teachers to teach from a single knowledge of the core role, extended learning to make the activity designer, teaching the teaching organizer, guide student activities, teacher-student interaction and common development of cooperation in teaching their roles [4]. Therefore, teachers should actively integrate into the students' inquiry process in the process of practice, guide students to use information technology to learn correctly, and organize students to cooperate and communicate.

In actual teaching, the teacher's leading role should play in the creation of teaching situation, help students to use learning tools, guide students use information technology and organization students collaborative communication, etc. In particular, the dominance of teachers is more important in the study of the teaching environment based on multimedia and network resources. Inquiry teaching requires teachers to be timely, necessary, prudent and effective guidance to pursue the real gains from the inquiry, including the promotion of students' understanding of the nature of mathematics and the continuous improvement of inquiry ability. In addition, the teacher in the guidance of the study should focus on students of different personality and individual differences, so that each student has the opportunity to participate in activities, especially those who are relatively introverted, speak less in class or group. Teachers should give their special attention and encouragement to those students, so that they have the confidence to have the opportunity to participate in cooperation to explore, to experience the joy of research results.

## **VI. CONCLUSION**

In short, information technology as a new curriculum under the background of a new type of teaching methods in the field of mathematics teaching in secondary schools have an important role, we should combine the actual teaching situation, and constantly explore the application of information technology in secondary school mathematics teaching, so that students can better understand the nature of mathematics, improve the efficiency of mathematics teaching.

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