On the Establishment of Integrating the Idea of Computer Mathematical Modeling into the Main Courses of Mathematics

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Abstract. How to conduct scientific research and research on some detailed problems, people who understand and have studied mathematical thinking in depth may know that the use of mathematical modeling is a way to maximize benefits. Even in today's high-tech experiments on natural sciences, whether it is mathematical modeling theory or its main application methods, they can play a great role [1]. Of course, the foundation of using mathematical modeling is the in-depth and mastery of mathematical courses. Then, according to the thinking of education, if we can apply the learning method of mathematical modeling to the teaching of the original mathematics course, we can apply some mathematical network teaching resources intact and effective to modern media teaching in. This approach can not only help students improve their self-learning mastery, but also improve the quality of mathematics teaching in each school from the side.

Keywords: Mathematical Modeling, Thought Fusion, Mathematics Curriculum

1. Introduction

With the development and progress of the long stream of history, we will find that the current scientific process is continuously developing with the renewal of mathematical thinking. Indeed, we are now advocating the reform of mathematics teaching, but we do not want it to be just a mechanical reform. What we need is a simplified and modern education. Nowadays, the various applications of mathematical thinking in society are very extensive. This is also achieved due to the continuous improvement of mathematical thinking and the surpassing of ancient theories [2]. Now, we can still proudly say that the development of mathematics will lead the progress of our society and education. According to the history of the development of mathematics, we can find that the education of mathematics in ancient times mainly focused on the study of basic theories and the expansion of extracurricular knowledge. However, unfortunately, the current mathematics teaching mode in our country is also the instillation of basic concepts. What is even more sad is that our country advocates that students should not have too many class hours. This situation has led to a decrease in the number of class hours for students' math subjects and repeated increases in learning difficulty. This situation has also attracted the attention of educators. They believe that if we can incorporate mathematical
modeling ideas into traditional mathematics textbooks, we should be able to turn the originally boring and difficult-to-learn mathematics into subjects that students can use their brains and interest.

2. The main concepts and theories of mathematical modeling of computer

2.1. The background of computer mathematical modeling
In the old society, the research of Science in China was not deep enough, and many engineering and science problems could not be solved as soon as possible. In this context, Chinese experts have introduced the idea of computer mathematical modeling from abroad. This idea can put the mathematical thinking mode into the computer. It can help computer to calculate various complicated engineering problems [3]. If you can come up with a formula, it can solve any calculation problem related to the formula. In the background of that time, the emergence of modeling thought caused a sensation (see Figure 1).

![Figure 1. Examples of mathematical modeling.](image)

2.2. The development of the main thinking mode of mathematical modeling
In fact, mathematical modeling refers to extracting the application content of mathematics class from the actual mathematical content. Although its content is completely abstract, this abstract theory can help us solve various computational problems. At present, the development of learning mode of mathematical modeling in China is one-sided. We still need to learn from foreign theories and knowledge for independent research and innovation. However, it is certain that in today's global market economy, the idea of mathematical modeling is the main component in the progress of science and technology.

2.3. Establishment of mathematical model based on computer
The establishment of mathematical model generally needs to guide the students to analyze and understand the real problems in detail. It also requires students to be able to use a variety of mathematical knowledge flexibly. Of course, with the help of computers, although we don't have enough mathematical knowledge as the basis, we can still set different mathematical models according to the actual situation. I think with the update and progress of the times, the establishment of mathematical models will become more and more simple.

3. On the defects of integrating the idea of computer mathematical modeling into mathematics courses
There is no doubt that under the influence of the old mathematics classroom learning atmosphere, the integration of mathematical modeling ideas will become very difficult. Educators and students will certainly feel uncomfortable or even disgusted with this approach. Therefore, in the early stage of the integration of mathematical modeling ideas, there are bound to be many defects. Only by facing up to these defects can we see its advantages better (see Table 1).
Table 1. Investigation on the establishment process of integrating the idea of computer mathematical modeling into the main courses of Mathematics.

| Establishment steps     | Main requirements                                             |
|-------------------------|--------------------------------------------------------------|
| Preparation in advance  | The introduction of teachers' subconsciousness               |
| Medium term culture     | The cultivation of students' mathematical modeling ability   |
| Later sublimation       | The sublimation of students' mathematical modeling ability   |

3.1. The content of theory is more than that of practice
According to the survey, we can find that the teaching methods of the main courses of mathematics are mainly divided into three types. They include theoretical learning, implicit culture learning and practical learning. Theoretical learning and practical learning are very familiar to you. In fact, the learning of recessive culture refers to the establishment of learning environment and the process of familiarity [4]. In theory, the content of theoretical study and implicit culture learning will increase after the computer modeling idea is integrated into the main course of mathematics. According to the stability theory of class hours, the content of practical learning will be reduced. Paying attention to theory and lack of practice, this way is disadvantageous to the cultivation of students' autonomous learning ability.

3.2. It's always a detailed classification
In fact, many people think that the relationship between computer modeling and mathematical knowledge is not big. If the two are combined rigidly, the new curriculum mode will not work. The idea is understandable. Many educators also have this idea. However, those who question ignore one basic point. The theoretical basis of computer modeling is mathematics course. With this view added, the integration of modeling and curriculum can be explained. Unfortunately, there are still people who classify them in detail.

3.3. The confusion of curriculum
After the idea of modeling is integrated, the setting of mathematics curriculum in many schools has changed greatly. They increase the hours of the subject privately. In fact, this is a wrong behavior. The integration of modeling ideas is not only to let students learn more things, it also wants to pass on the main courses of mathematics through new media. Therefore, it is suggested that schools should not make the new mathematics curriculum too confusing.

4. Defects of integrating mathematical modeling into mathematics courses based on computer mathematical modeling
The thinking of two sides of things is truth. According to the above description, we understand the shortcomings of the integration of modeling ideas. In fact, through our calm analysis, it has many advantages.

4.1. It can make the content of the main course of mathematics more specific
The process of explaining the old mathematics content is very boring. Students can only be dazzled by books and a lot of homework every day. This way can not mobilize the enthusiasm of students. The idea of modeling can make mathematics class more vivid. Through the description of computer software, students can see more specific expression of mathematical content. To some extent, this way of learning can improve students' interest in learning.

4.2. It is helpful to train students' mathematical thinking
We know that the application of computer knowledge is based on the main knowledge of mathematics.
Theoretically speaking, the use of computer mathematical modeling should also require students to master a lot of basic mathematical knowledge. So repeated practice, students can skillfully carry out mathematical modeling. At the same time, students can also master the perfect mathematical thinking.

4.3. It can cultivate students' ability of independent thinking
The extracurricular practice of mathematical modeling can help students complete various tasks independently. Educators can find different modeling topics for different students according to their interests and hobbies. Students use their knowledge of modeling and mathematics to solve problems independently. This way can train students' ability of independent thinking.

5. Integrating the idea of computer mathematical modeling into the establishment process of main courses of Mathematics

5.1. Preliminary preparation
The sudden addition of the idea of modeling is bound to cause students' ideological disgust and rejection. Therefore, we need to prepare well in the early stage. Teachers need to subconsciously add some modeling thinking problems and methods in the normal mathematics classroom. When students feel that their knowledge is insufficient, they will also accept the idea of modeling [5].

5.2. The cultivation of students' mathematics ability in the middle stage
After students can accept the idea of mathematical modeling, teachers can introduce the idea of computer related mathematical modeling into the main course of mathematics. Teachers should constantly strengthen the training of students' modeling ideas and the comprehensive application ability of mathematical knowledge.

5.3. The sublimation of mathematical modeling thought in later stage
Each person's personality is different, and each student's learning style is also different. Similarly, each student's understanding of mathematical modeling is different. In the late stage of the establishment of the new curriculum, students may have formed their own unique mathematical modeling ideas. Teachers should be able to help students get rid of their bad modeling habits to improve their mathematical thinking ability. This approach can also be called the shaping and sublimation of modeling ideas.

6. Conclusion
The ancients in our country often said that learning mathematics, physics and chemistry can travel the whole world. We can think of the ancient people's importance of mathematical thinking through this ancient saying. In theory, our combination of mathematical modeling ideas and mathematical teaching behavior is an innovative learning method that no one has dared to try since ancient times. This is commendable [6]. However, its process will also be very difficult. This requires not only our attention to the ideological and cultural aspects of mathematical modeling, but also the deep and passionate love of scientific researchers for mathematics.

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