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Strategies of Grouping Cooperative Learning in High School Mathematics under the New Curriculum Reform

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Abstract: ***The teaching of mathematical modeling belongs to systematic engineering and requires coordination among various departments in universities. For example, a local university has established a mathematics modeling teaching and competition committee, which is mainly responsible for coordinating and managing the content of mathematics modeling teaching or learning in the school. Responsible for training and participating in annual mathematical modeling competitions, as well as promoting the teaching and learning of mathematical modeling throughout the school. At the same time, he is also responsible for managing the mathematical modeling laboratory and establishing a special fund for mathematical modeling. The university conducted training on modeling competitions from October last year to June this year, and also guided students to learn mathematical modeling courses through the establishment of public elective courses. For example, setting up subjects such as "Mathematical Modeling" and "Mathematical Modeling". During the holiday enhancement phase, the school strengthened the students' ability to understand and apply mathematical modeling knowledge by expanding mathematical modeling research methods, such as graph theory, Operations research, hierarchical analysis, fuzzy mathematics and other subjects, and by explaining computer programming, national contest analysis, paper writing, Matlab and other mathematical software use, so as to prepare for the subsequent mathematical modeling contest.***

Keywords: Grouping Cooperative Learning, High School, Mathematics.

1. INTRODUCTION

Mathematical modeling teaching can enhance the comprehensive quality and learning ability of college students, and is an effective method for teachers to innovate teaching forms, stimulate students' interest in learning, and strengthen the construction of academic atmosphere. This article analyzes the practical experience of mathematical modeling teaching through mathematical modeling courses and mathematical modeling competitions conducted by local universities, providing methodological guidance for future mathematical modeling teaching in universities, and helping major universities cultivate applied and composite professional talents. A good teaching model for mathematical modeling can help college students learn more knowledge and improve their academic performance through modeling. Therefore, the correct teaching form of mathematical modeling can cultivate students' good learning ability, lay the foundation for their ability to analyze problems independently and Mathematical analysis in the future, strengthen the practical application ability, innovation ability and group cooperation ability of college students in mathematical modeling, and promote the innovation of college mathematical teaching methods[1]. In China's higher education, ideological and political education is an indispensable part. However, due to the slow pace of textbook updates, it gradually lags behind the current demand for ideological and political education, and the dominant force of ideological and political education at this stage is still traditional educational concepts. In the era of information technology, students often cannot locate themselves in front of a large amount of information, and even go astray, which has had a negative impact on the establishment of their own three values. Therefore, teachers should promote the innovative development of ideological and political classrooms, combine practical teaching, and guide students to learn from the massive amount of information in a targeted manner. Based on this, this paper will analyze the impact of Big data tools on the ideological and political classroom, and talk about how to connect Big data with the ideological and political classroom, which will help teachers in their actual teaching.

2. ENCOURAGE TH LEARNERS TO PARTICIPATE IN MATHEMATICAL MODELING COMPETITIONS

In order to promote mathematical modeling activities, strengthen the construction of academic atmosphere in universities, and enhance students' innovation ability and learning interest, a certain school has organized a student mathematical modeling competition to construct a talent cultivation model with its own characteristics. Through the mobilization and recommendation of the teachers, the school encourages students from different majors to actively register, and then carries out a series of training activities. General training activities are held from April to June each year, mainly including preliminary training for mathematical modeling competitions, holiday training, pre competition reinforcement, and other forms. The training content of this section is to provide comprehensive training through corresponding teachers, explaining the mathematical knowledge of each module. Among them, the explanation module of mathematical knowledge is mainly divided into probability statistics, Operations research, Elementary mathematics, equation module, etc. The initial training stage mainly revolves around mathematical theoretical knowledge, targeting students from various majors to learn university mathematical theoretical knowledge; The summer training mainly includes explaining examples of different modules to enhance the application and

understanding of theoretical knowledge. The pre competition reinforcement mainly involves teachers selecting sample questions, guiding students to practice independently, and conducting simulation competitions before the competition.

After analyzing students who have participated in mathematical modeling competitions, it was found that students who have participated in practical competitions or competition training have significantly stronger practical application abilities of professional knowledge in professional learning compared to other non participating students. At the same time, after participating in the competition, students' learning enthusiasm is fully mobilized. In addition, various real-life and scientific research problems in mathematical modeling competitions have also stimulated students' thinking and innovation abilities. Due to the fact that mathematical modeling for college students is generally a hot topic in technology and daily life, and has technological foresight, it is possible to stimulate students' innovation through training in competitions.

2.1 Insufficient richness in teaching content

At present, the education content of ideological and political education in China is generally based on textbooks, with a relatively small learning range for students. Moreover, the update speed of textbooks is too slow, and the social hot topics in textbooks are too outdated. Although the rigor of textbooks is sufficient, students' attention has decreased. Through Big data, students can easily access the latest global news and contemporary new ideas. However, due to too many ways for students to access information, some views on the Internet that are easy to mislead students will have an impact on students who have not yet established a sound three outlook, which is easy to put students on an incorrect path, and the construction of ideology and morality will also be hindered. If ideological and political teachers do not take countermeasures, Proper guidance on the channels for students to acquire knowledge may lead to serious problems in their character and morality.

2.2 Lack of active participation from students

Due to the lack of attractiveness in traditional ideological and political education classrooms, many students fish in troubled waters in the classroom and do not truly participate in classroom learning. In order to make students focus on the classroom, teachers usually use punishment measures that deduct their usual grades to force students to concentrate. However, this can make students' learning methods more passive and difficult to truly solve problems fundamentally, Make students increasingly resistant to the subject of ideological and political education. However, if students do not study ideological and political education seriously, it will have an impact on their future studies or work, which is not conducive to the construction of students' three values. Because students' participation is not high and teachers are unable to properly control the classroom, they cannot Understanding the current learning status of students makes it impossible to provide personalized and specialized guidance, and teachers cannot promptly identify students' own ideological problems.

2.3 The teaching methods are relatively single

In the current ideological and political classroom, the teaching mode of teachers is not only traditional but also single. The teaching content is limited to the textbook, without corresponding extension, and students' participation cannot be improved naturally. Moreover, due to the relatively serious content of ideological and political education, it does not match the lively and dynamic characteristics of students, so teachers cannot effectively establish a bridge of communication with students. Excessive use of professional terminology can also lead to dull attitudes among students. The number of activities for ideological and political education in China is very small, and even if they are carried out, the theme and form of expression of the activities still cannot attract students.

3. INNOVATING THE TEACHING METHOD OF MATHEMATICAL MODELING

Traditional mathematics modeling teaching focuses on theoretical teaching and logical reasoning ability training. And mathematical modeling courses and mathematical modeling competitions can complement traditional teaching methods, transforming students from "learning" mathematics to "using" mathematics. Teachers can explain When teaching "Mathematical Model", guide students to demonstrate and explain on stage, and discuss in groups in class. Strengthening students' practical application ability of mathematical knowledge through equal modes. The teaching of mathematical modeling can flexibly select the knowledge to be taught, and students of different majors can incorporate mathematical modeling methods and ideas in the teaching. For example, when teachers explain the application of definite integral in Further Mathematics and guide students to use Infinite element method to solve gravity, work, water pressure and other problems, it is more scientific for students majoring in engineering or physics to explain mathematical modeling methods and ideas. When explaining the problem of pumping water from reservoirs, the knowledge of definite integrals will be applied, thus possessing a very typical mathematical modeling method. The reasons are as follows: firstly, it has the professional characteristics of science and engineering, belonging to the problem of thermal energy and work. Secondly, such questions are close to real life and conform to the characteristics of mathematical modeling. Thirdly, in the process of solving mathematical problems, mathematical modeling methods and ideas need to be used. By establishing mathematical models and searching for problem-solving methods, the final results can be obtained, and then the final results can be analyzed. Assist students in understanding the main processes of mathematical modeling through practical problems: preparing models, assuming models, establishing models, solving models, analyzing models, testing models, and applying models [2]. Therefore, in the teaching of modeling in universities, it is

necessary to pay attention to the following contents: in teaching, attention should be paid to gradually penetrating from shallow to deep; Teachers should closely connect with students' majors and find interesting, easy to accept, and practical mathematical modeling content; When listing mathematical modeling cases, teachers should ensure that students have sufficient theoretical knowledge to ultimately achieve the application of mathematical modeling; In mathematical modeling teaching, teachers need to scientifically handle the relationship between theory and practice, and organically combine the two. The theoretical foundation is the cornerstone for achieving flexible applications, and specific applications can provide feedback for theoretical knowledge.

3.1 Use Big data to manage rich teaching content

In view of the problem that the ideological and political education model of colleges and universities is relatively simple and not rich enough, the Big data management model can be used by schools to enrich the teaching model. As the main feature of Big data management, "massive, high-speed, diverse, authentic, and valuable" has a huge role in teaching innovation. First, teachers can learn on the Internet, improve their professional quality, and obtain the latest teaching methods and educational materials, However, it is necessary to carefully screen educational materials that are suitable for students, match them with the current actual teaching progress, and ensure the accuracy and scientificity of the materials. Then present it to students in class, allowing them to discuss and speak up boldly, raising their own questions and opinions. Finally, teachers can integrate and analyze students' perspectives to obtain a final result. During the discussion process, it is important to pay attention to the integration with the textbook, with the goal of developing students and making the classroom more lively and interesting.

3.2 Organizing Students to Participate in the Teaching Process

Students' participation in the classroom can have a huge impact on students' learning results, but in the traditional classroom, students' low participation is often a long-term problem, so when building a new classroom, teachers need to change the teaching subject in the classroom, design teaching methods consistent with students' psychology, increase students' participation in the classroom, and let students use Big data analysis to learn knowledge. Before class, teachers can assign students a proper amount of interesting questions to find answers on the Internet. When exploring the questions, students can have a certain understanding of the knowledge learned in this class, so that they can correctly absorb it in class, play a better role after class, increase students' recognition of Big data learning, and improve their ability to use Big data to learn, Furthermore, it can enhance students' ideological and political awareness and interest in learning.

3.3 Enrich teaching means with Big data analysis

The single educational model of ideological and political teachers is also an important reason for affecting students' learning enthusiasm, so teachers should actively seek countermeasures and adopt various ways to enrich the classroom and teaching methods. First of all, teachers can carry out more extracurricular activities to increase the opportunities for students to practice and lead students in Big data. The arrival of the information age has impacted all aspects of society. We should deeply realize that only by constantly developing and innovating can we not be abandoned by the times. The same is true of ideological and political education in colleges and universities. The main way for students to receive ideological education is through ideological and political classes, but traditional education cannot provide students with a platform to follow the times. At this stage, we should combine education with science and technology, constantly improve and innovate teaching models and means, so that students can understand the profound impact of Big data analysis on people's lives and work, The reform and innovation of China's education is partly based on the analysis of Big data. The education reform can make the ideological and political classroom in colleges and universities more lively, and can improve the teaching efficiency of teachers and students' desire for knowledge. Educators should use Big data analysis to obtain new educational ideas and methods, use Big data analysis to obtain more educational resources, establish a more complete new ideological and political education classroom, and the optimization of the classroom can be continuously promoted.

4. LAYERED TEACHING OF MATHEMATICAL MODELING

Innovative teaching methods for mathematical modeling in universities can use teaching stratification as a breakthrough point, based on students' practical application and specific mastery of mathematical modeling knowledge. Teachers can achieve hierarchical teaching of mathematical modeling around the form of construction, transformation, and imitation. Firstly, constructing a model is an important link in hierarchical teaching. Teachers need to combine the actual needs of students in specific teaching, establish mathematical models to clarify the conditions and relationships in the problem, and establish new mathematical models through restructuring. Secondly, teaching transformation involves transforming specific mathematical models into abstract composite models. Teachers can analyze practical problems in mathematics, achieve the combination and transformation of various mathematical problems, and effectively cultivate students' model transformation ability and optimize mathematical modeling teaching methods in teaching transformation. Thirdly, teaching imitation refers to training students' imitation ability in learning mathematical modeling. When conducting imitation teaching, teachers need to lead students to study construction ideas and practical mathematical construction models. When studying mathematical modeling problems, teachers need to guide students to strengthen the introduction and application of analytical models.

4.1 Software Introduction

Among many short video APPs, Tiktok reached 130 million in 2018, The daily average video playback in August 2017 has exceeded one billion, and the number of users accessing the application has steadily increased; Since the beginning of 2018, Tiktok Short Video APP has been honored as the most popular short video application on the streets, and has become the first application download list in many countries; On March 18th, I returned to the top spot on the download list again. On April 15, a related document and statement on the anti addiction system was officially released by the official platform of Tiktok Short Video. Its main content is to reasonably control users by helping users control the length of application use. On the one hand, it not only fulfills the "social responsibility plan" of Tiktok Short Video, but also standardizes the reasonable use of users, so that users can watch videos more healthily.

4.2 Survey data analysis

For the purpose of thoroughly understanding the real situation of college students' use of Tiktok, most of this project adopts the method of web page questionnaire survey, and obtains more than 600 Web browsing history, Among them, there are 437 valid questionnaires. About 458 people use Tiktok APP, which accounts for 90% of the total number of people. Among them, about 47% of the people use the Tiktok APP 3-4 times a day on average, and each time it takes no less than half an hour to watch the Tiktok APP, Tiktok APP has a very high utilization rate among college students, which determines that Tiktok APP is high The teaching of ideological and political education in schools is an unavoidable topic. The purpose of this survey is to guide college students to understand Tiktok rationally, calmly and objectively, so that Tiktok APP can play its own advantages, and strive to find the balance between Tiktok APP and ideological and political education teaching. College students use Tiktok as a medium to select songs, shoot and produce 15 seconds of cool and dynamic short music videos, release them as their own works, and learn life tips and travel strategies from them to relax. 75% of college students will affect their life tips due to Tiktok APP.

4.3 The educational form of ideological and political classrooms

China is often relatively monotonous, unable to attract students' interest in learning, let alone allow them to learn and exercise through the classroom. In the era of Big data, we should use the convenience brought by the development of the times to inject new vitality and vitality into the classroom and constantly innovate. Schools should introduce new teaching models, and teachers should also actively improve their professional quality and teaching level, use Big data to help students correctly select the information suitable for themselves in front of complex information, improve the problems existing in the traditional classroom, let students correctly view the ideological and political classroom, and improve their ideological level.

5. CONCLUSION

Therefore, the application of mathematical modeling teaching mode is crucial for cultivating applied and compound talents in universities. At present, teachers should innovate the teaching methods of mathematical modeling, grasp the essential characteristics of mathematical modeling in teaching, fully mobilize students' learning enthusiasm, strengthen their understanding of knowledge, and promote mathematical modeling teaching to achieve good results through scientific selection of mathematical modeling teaching mode. Therefore, in the context of the new era, colleges and universities across the country should stimulate teachers' subjective consciousness and creative enthusiasm by shaping the surrounding environment, introducing policies, etc., and encourage teachers and students to work together to participate in creation and appreciation. Everything is for students, so that students can successfully complete their studies, and better release the positive energy of Tiktok to guide and encourage students to pursue truth, goodness and beauty and undertake new missions.

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