

Thoughts on the Orientation of Mathematics Education in Colleges and Universities

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Abstract: Mathematics is a science of structure, order, and relationship. It evolved from the basic practices of counting, measuring, and describing the shape of objects. It involves logical reasoning and quantity calculation. Since the 17th century, mathematics has been an indispensable aid to physical science and technology, and is considered to be the basic language of science. In the mathematics education work of colleges and universities, accurately positioning the education direction and improving the classroom teaching mode can effectively shape the students' mathematical thinking, stimulate students' innovative consciousness, and strengthen students' ability to solve problems. This article will focus on the classroom teaching mode for the university mathematics education orientation, in order to provide theoretical reference for relevant teaching and research personnel.

1. Introduction

From the perspective of the overall structure, improving the quality of mathematics education is an important goal of education. To achieve this goal, it is necessary to accurately locate the direction of mathematics education in colleges and universities, grasp the educational dynamics, and ensure that the mathematical forms are in line with the needs of social development. At the same time, we must adhere to the concept of teaching students in accordance with their aptitude, accurately position the direction of talent training, and innovate teaching models. This paper will firstly study the practical value of mathematics education in colleges and universities, discuss some thoughts on the orientation of mathematics education in colleges and universities, and discuss how to cultivate professionals with mathematical literacy.

2. Practical Value of Mathematics Education in Colleges and Universities

Mathematics is a science that studies the quantitative relationship and spatial form of the real world. It originates from the practical problems of counting and measuring. The discipline has a high degree of abstraction, rigorous logic and wide applicability, including mathematical logic, number theory, algebra, geometry. Learning, topology, function theory, functional analysis, differential equations, probability theory, mathematical statistics, computational mathematics, and operations research and cybernetics [1]. Throughout the history of the development of mathematics education, all outstanding scholars are inseparable from the help and guidance of mathematics education in the process of growth.



At the same time, scholars have made significant contributions to the development and inheritance of mathematics, through the dissemination of mathematics knowledge for people's work and Life provides a lot of convenience, daily shopping, timing and other activities can not be separated from the use of mathematical knowledge. In addition, in order to give full play to the advantages and functions of mathematics education, relevant teachers must be able to comprehensively innovate mathematical concepts, improve mathematical thinking, and comprehensively use diversified teaching methods, and thus continuously improve the quality and practical value of mathematics education in colleges and universities. On the other hand, in cultivating mathematics talents, we must base ourselves on the goal of educational reform, innovate and perfect the teaching model and mathematics education technology, guide the study of mathematics formulas, theorems and concept knowledge, and cultivate agile digital combination ideas. Create a rigorous learning attitude and rigorous logical thinking, teach students to form scholars' style and quality, be brave in innovation and development, and comprehensively develop students' core literacy of mathematics is the most important thing at present.

3. Thoughts on the Orientation of Mathematics Education in Colleges

The positioning of mathematics education belongs to the system of integrating multiple factors. The system presents obvious diversified characteristics. In short, college mathematics education not only involves the positioning of the university, but also the local characteristics and economic and cultural characteristics of the environment in which the university is located. Social resources, internal campus mechanisms, educational resources, talent training effects, and the social values of mathematics itself are closely related to human values. To do a good job in the positioning of mathematics education in colleges and universities, we must comprehensively consider the multi-factors, proceed from the multi-dimensional value of mathematics education, conform to the needs of social development, and construct a professional orientation that conforms to the development trend of the times and local characteristics.

Second, we must follow the principle of positioning in mathematics. From the perspective of the overall perspective, the principles of mathematics professional positioning mainly include the principle of priority of mathematics, the principle of 'talent market or social talent demand', 'mathematics + strong professionalism', 'theory + practice principle', and the principles of humanistic quality training. Among them, the principle of priority of mathematics requires that the value of mathematics education should be emphasized in the process of positioning; the principle of "talent market or social talent demand" should be combined with the market demand for talents, and the education system should be standardized; "mathematics + strong professional" is required to combine mathematics education with other majors to improve the practicality of mathematics education, such as constructing mathematics + finance major or mathematics + biological foundation ※ biomathematics, so as to cultivate diversified talents; "theory + practice principle" is in order to combine the theoretical knowledge of positioning and practical teaching orientation improves the theoretical value and practical value of mathematical positioning; the humanistic quality training principle attaches importance to cultivating students' humanistic quality.

Thirdly, we must do a good job in the goal orientation of professional talents' mathematics literacy training. In this work, we must first pay attention to refining the cultivation of talents, improve the basic theories and basic methods of mastering mathematics science, and guide students to gradually develop the use of mathematics knowledge and use computers. The ability to solve practical problems, through scientific research training to cultivate the quality of students engaged in research work in science and technology, education, and economic sectors. In addition, we must pay attention to meeting the training requirements. At present, the training of mathematics literacy talents in the narrow sense is the basic theory and basic method for students to study mathematics and applied mathematics. They are basically trained in mathematical models, computers and mathematics software, have good scientific literacy, and initially have scientific research. Solve practical problems and basic skills in developing software. On the other hand, we must standardize the training of specifications and do four things: First, we must have a solid foundation in mathematical theory, be trained in more

rigorous scientific thinking, and initially master the ideological methods of mathematical science; second, we must have applied mathematics knowledge to solve Practical problems, especially the initial ability to build a mathematical model, to solve the basic knowledge of an application field; the third is to be proficient in using computers (including common language, tools and some mathematical software), with the ability to write simple applications; It is necessary to understand relevant policies and regulations such as national science and technology [2].

4. How to Cultivate Mathematics Professionals

4.1. Integrating Life Practice Factors and Innovating Classroom Teaching Mode

Grasping the positioning of mathematics education in colleges and universities, improving the quality of mathematics teaching, and adapting to the development needs of the times, teachers must first adopt a way of learning from the shallower to the deeper and simpler and harder, along the education direction of the new era, to train professionals with mathematical literacy as education. The goal is to closely integrate life practice factors and innovate classroom teaching models. For example, when parsing the number of questions, an interesting "card game" is developed for students to help students solve this problem flexibly. Teachers can first inform students that the number of questions is mainly divided into arithmetic symbols and digital image fills. The transport symbols and parentheses can be used to change the order of operations. The arithmetic symbols and parentheses are properly filled in the given number. A multi-image is a graph in which some numbers are filled in a specific position according to certain rules. The number is first to find the law, and then to fill in the number according to the law. Secondly, teachers should follow the development trend of education reform and comprehensively innovate classroom teaching mode according to specific needs, so that students can learn mathematics, learn mathematics and use mathematics knowledge in novel classrooms. Teachers can also guide students to understand the knowledge of mathematics and culture through storytelling, so that the mathematics classroom is richer in life and affinity. Take the famous story of "mathematical magician" as an example: In 1981, when the 37-year-old Saguntana and the computer launched a mental arithmetic game, Shagontana accurately calculated one in only 50 seconds. The 201 roots of 201 large numbers, and the computer requires more than 20,000 instructions to complete the calculation, so Shaguntana is called "mathematical magician." Then, the teacher can further enhance the humor of mathematics classroom teaching, and say to the students: "Every classmate can become a mathematics magician!" Then, the students are guided to use mathematics knowledge to transform magic, thus effectively improving the fun of the mathematics classroom.

4.2. Comply With the Development Trend of The Internet and Build a Platform for Mathematics

In the 21st century, with the advent of the mobile Internet era, the way of learning, living and working has changed. Therefore, teachers should also review the situation, adapt to the development trend of the Internet, and build a perfect platform for mathematics, so as to more effectively grasp the status of mathematics education and further improve the quality of mathematics teaching. From a narrow perspective, MOOC (Massive Open Online Course) is a new online course development model. The term MOOC was coined in 2008 by the Director of Network Communication and Innovation at Prince Edward Island University in Canada and a Senior Research Fellow at the National Institute of Humanities Education Technology Application [3]. Its iconic event took place in 2011, with 160,000 people from around the world enrolling in a free course on Introduction to Artificial Intelligence by Stanford University professors. The emergence of MOOCs has brought many development opportunities to various subjects of education, and mathematics education in colleges and universities is no exception. Moreover, MOOC is free to appear in the Internet mode and is a typical Internet education model. From the perspective of development, the emergence of MOOC in China began in 2012. Due to the short and precise, the curriculum is scientific and good, and many problems have been set up. Therefore, it is very suitable for college education. It should be noted that MOOC is an integral part of the Internet education model. From a macro level, the Internet education model is

divided into curriculum design, online leadership and class management. In the use of this model to carry out mathematics teaching activities in colleges and universities, and to position the direction of mathematics education, teachers should pay attention to the three main points: First, the mathematics curriculum based on MOOC requires a lot of time to prepare, for each stage of learning. Course design and refinement; Second, online leadership is very important. Based on the MOOC mathematics curriculum, you need to have strong artificial intelligence, and artificial intelligence needs to achieve video interaction, online communication, knowledge sharing, etc. Excellent technology to support, therefore, teachers should help the school to continuously optimize various educational technologies; third, do a good job in class management. At present, QQ group and WeChat group play a unique advantage in class management. Future mathematics education and Internet education need to make breakthroughs in these three aspects.

In addition, MOOC-based mathematics courses can effectively control students' mathematics learning process through daily assignments and tests. In short, the main features of the MOOC are concentrated in three aspects: First, on a large scale, teachers do not simply publish courseware when conducting MOOC-based mathematics courses. Second, the curriculum is open. Only the MOOC-based mathematics curriculum is open and follows the sharing agreement to become a perfect MOOC. Third, MOOC-based mathematics courses are online courses, not one-on-one, face-to-face courses. These course resources are distributed on the Internet. As long as there is a network, you can learn to meet your individual needs.

4.3. Give Full Play to Students' Subjective Initiative and Form a Perfect Mathematical Model

At present, the application of mathematical models is extremely common. In the process of mathematics teaching, teachers can refine practical problems in real life, organize students to build mathematical models, guide students to check the solution of models, and scientifically verify the rationality of models, and use them. Mathematical models are solved to solve real-world problems. It should be noted that the mathematical model is to use mathematical language to construct a realistic model, and to simplify the actual model into a mathematical structure. Secondly, the mathematics education standards of colleges and universities require the organic combination of mathematics culture content and the content of each knowledge module, and build a model with good concentration, focusing on cultivating students' modeling consciousness and common sense of mathematics application. At the same time, through modeling, students are combined with mathematical theory knowledge and practical activities to continuously enhance students' ability to explore and solve problems independently. Thirdly, in the process of mathematical modeling, teachers should pay attention to refining the six-step process: First, guide students to prepare for the model, fully understand the knowledge module of this lesson, clarify the learning value, analyze the relevant background of the problem, and integrate all Information, using mathematical language to accurately describe mathematical problems. Second, the scientific implementation of the model hypothesis, that is, to simplify the problem according to the characteristics of the actual object and the purpose of modeling, while using reasonable language to make reasonable assumptions. Third, scientifically build models. In this part, the teacher can guide the students to accurately describe the mathematical relationship between various variables based on the hypothetical model and use the corresponding mathematical relationship to form a complete mathematical structure model. Fourth, do a good job of model solving. This part is mainly for students to obtain data on their own and to calculate all the parameters of the model. Fifth, do a good job in model analysis. At this stage, teachers should guide students to perform mathematical analysis on the calculation results. Sixth, comprehensively do a good job of mathematical model testing, this is the final step and the most important part of mathematical modeling. Teachers should guide students to comprehensively compare and analyze the results of the model and the actual situation, scientifically verify the accuracy of the mathematical model, whether it is scientific and reasonable and applicable. At the same time, it should be noted that if the model is consistent with the actual situation, the meaning of the actual calculation results should be explained and determined. If the model does not conform to the actual situation, it is necessary to

make assumptions and perform secondary modeling [4].

4.4. Stimulate Students' Interest in Mathematics Learning Through Mathematics Activities

For a long time, due to the characteristics of mathematics disciplines, most students in colleges and universities have been based on a large number of theoretical and mathematical calculations. In this context, students' interest in mathematics is not guaranteed. The teaching effect will naturally be affected, and eventually students will not be able to cope with the subsequent learning of other deeper content. In order to improve on such conditions, colleges and universities should be able to attach importance to the organization of various types of mathematics activities on the basis of the original, and stimulate students' interest in mathematics courses through such activities.

Taking the "Math Teaching Design Competition" as an example, the school can ask the students to choose their own teaching content and complete the teaching plan design for this content. In the actual competition process, colleges and universities can invite other students to participate in the selection. These students and teachers jointly evaluate the design of specific mathematics teaching programs and classroom effects. In addition, event organizers can also set certain rewards for better performing students or groups. Under such an activity mode, students will be able to actively participate in such activities, and by self-completed the process of selecting topics, preparing lessons, and designing teaching plans, the students themselves will naturally have a deeper grasp of relevant mathematical knowledge points. On the other hand, such an activity form is more interesting for college students. With the regular organization of such activities, students will gradually feel the charm of the mathematics discipline itself, and thus achieve the purpose of enhancing students' participation and enthusiasm in the mathematics classroom to ensure the effectiveness of teaching.

In order to ensure that more students can participate in mathematics activities, colleges and universities can also carry out activities such as "Mathematic Encyclopedia Knowledge Contest" on a regular basis. The focus of such activities is on fun and participation. Relevant teachers can ask students to specify the class on a class basis. The mathematics allusions involved in the field are investigated, and then the questions raised by the teachers are answered in groups. Finally, the teachers reward the students who perform well.

4.5. Introduce E-Learning Course to Strengthen Mathematics Education in Colleges and Universities

The E-Learning course is a network-wide approach to learning process management (design, implementation, evaluation, etc.) that enables learners to acquire knowledge, improve practical skills, change perceptions, and improve performance. The difference between the MOOC and the E-Learning course is that the latter is completely student-centered, and students who have the ability to learn can also introduce the E-Learning course to strengthen the mathematics education in colleges and improve the quality of teaching. It should be noted that when constructing the E-Learning course platform, it is necessary to pay attention to selecting appropriate courses to guide students to study at any time, anywhere, on the go, and randomly. Secondly, in the E-Learning course design process, teachers should pay attention to the design of a perfect curriculum system and a clear curriculum, and standardize the course content. Thirdly, it is necessary to give full play to the self-development value of the E-Learning course, organize self-developed mathematics on-campus courses, provide students with independent learning platforms and reference materials, and free learning resources to help students freely submit homework. In addition, in the entire E-Learning course production process, we must do four things: First, do a good job of preparation, the entire courseware content should listen to the students' opinions and voices; Second, do a good job in the early planning, improve the courseware. The learning value, optimize the content framework design, quantitative teaching module; third, do a good job in curriculum resource development, integrate all valuable mathematical information and knowledge system for students, and guide students to continuously develop mathematical core literacy in the process of independent learning; Fourth, improve the compatibility of the E-Learning course, standardize the curriculum production template, maintain the clarity of the regulations, and ensure the consistency of the courseware elements and style.

5. Conclusion

Teachers should combine the requirements of educational goals and the development trend of the Internet era, closely integrate the factors of life practice, and innovate classroom teaching mode; build a perfect platform for mathematics in order to improve the quality of mathematics education in colleges and universities, and grasp the orientation and direction of mathematics education. To meet the individual needs of students; give full play to students' subjective initiative, set up a sound mathematical model, continuously stimulate students' learning motivation, build a good mathematical knowledge information platform; appropriately introduce E-Learning courses to strengthen college mathematics education.

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