Role of Computer Data Analysis in Applied Mathematics in the Internet Era

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Abstract. With the continuous progress of industrialization, the mechanical manufacturing industry has become a pillar industry of the national economy. Therefore, a large number of professional courses must be based on solid mathematical knowledge, which makes mathematics courses have an extremely important position in professional teaching. From the perspective of professional teaching, there is a big gap between the professional teaching and the professional teaching, but there is no need for students to give full play to the teaching objectives of mathematics. Through questionnaire survey, literature review and analysis, this paper finds out the loopholes and shortcomings of the current mathematics teaching mode. Students are not enthusiastic about mathematics, they do not identify with mathematics discipline from the bottom of their heart, and teachers can not cultivate students' interest. I hope this paper can provide new ideas for mathematics education.

Keywords: Mathematics Teaching, Applied Mathematics, Data Analysis, Teaching mode

1. Introduction
With the development of information technology, more and more industries begin to learn to use information technology, which is the inevitable trend of the development of the times. This trend is particularly obvious in the field of education. The combination of information technology and teaching classroom can effectively improve the efficiency of classroom teaching and help students better learn knowledge. The traditional mathematics teaching is a process, in which the teachers teach mechanically according to the teaching materials, and the students learn passively. This teaching method emphasizes teaching and ignores understanding and knowledge, which has a negative impact on the cultivation and improvement of students' core thinking ability. Therefore, teachers should make full use of the core literacy elements in textbooks, innovate teaching methods, guide students to deepen the understanding of knowledge connotation, master key methods, and improve thinking ability [1].

Applied mathematics research. After the 1990s, Chinese educational scholars began to pay attention to the study of "mathematical application". How to further improve students' mathematical application ability has become an important content of the new curriculum reform. Among them, the more representative event is that in the early 1990s, scholars Professor Yan and Professor Zhang took
the lead in bringing mathematics application into the college entrance examination questions, and they were in Beijing and Shanghai Hai and other places called for the holding of mathematical applied knowledge competition, which greatly promoted the development of Applied Mathematics Teaching in China [2]. In addition, in the mid-1990s, Professor Jiang put forward "the new idea of the main development of mathematics application in the second half of the 20th century", and pointed out that mathematics was the platform of application, and it was not advisable to blindly pursue the axiomatic system of formalism. However, in the paper "strengthening the application consciousness in mathematics curriculum" jointly written and published, it is pointed out that we should pay attention to the effective implementation of mathematics application consciousness, and embody the mathematics application consciousness from teaching materials, teaching and examination. In "on the cultivation of mathematical application ability", it analyzes some problems existing in the current mathematics application teaching, and puts forward relevant solutions. However, scholars continue to deepen the research on this topic [3]. In the American education system, one of the teaching objectives of the course is to strengthen the connection between mathematics and life and other disciplines, and to discuss the mathematical problems related to the application of real life in mathematics classroom, so as to cultivate students' ability to solve mathematical problems. At the turn of the century, the vocational education in the United States has gradually begun to change to the pragmatism paradigm. For example, American scholars have put forward the view of new vocationalism. They think that the secondary vocational curriculum should have more generality, integrate the traditional curriculum into the vocational curriculum, and adopt new talent training mode. These views make the vocational education in the United States have outstanding curriculum integration. The results were consistent [4].

This paper explores the role of computer data analysis in Applied Mathematics in the era of Internet. Through books and literature, we can obtain the relevant information about this subject and carry out sorting and analysis. In the following, we elaborate the concept of relevant data analysis and applied mathematics, and through questionnaire survey, we conducted a questionnaire survey in a university mathematics major in the city where the author lives. Check, understand the current mathematics students in the learning of the specific situation, on this basis, put forward a feasible method based on data analysis technology in the application of mathematics. Through the data to analyze its feasibility.

2. Related Concepts of Computer Data Analysis in Applied Mathematics in the Internet Era

2.1. Applied Mathematics
Modern mathematics can be roughly divided into three parts: basic mathematics, applied mathematics and computational mathematics, among which applied mathematics studies specific mathematical problems in the real world [5]. "Mathematical application" can be understood as the use of mathematical ideas and methods to understand scientific facts and describe real world phenomena, which is reflected in the operation, analysis, tabulation, estimation, symbol conversion, optimization scheme and other aspects of mathematical formula. And "ability" is the psychological characteristics of human beings to complete a certain activity smoothly. Ability is always associated with a certain activity of human beings, and it is shown in specific activities. Therefore, the size of ability can only be compared by means of activities. Therefore, from this point of view, the ability to solve practical problems is roughly the same, is an important part of mathematical ability. As for the students majoring in mechanical engineering in secondary vocational schools, their mathematical application ability can be roughly divided into four levels: applying mathematical formulas to calculate mechanical engineering problems; using elementary mathematical models to solve mechanical problems; ignoring secondary factors and processing transformation to describe mechanical manufacturing; analyzing and processing the original mechanical professional problems, and analyzing and processing the proposed mathematical model To solve [6].

2.2. Modeling
The teaching content of applied mathematics covers a wide range, including numerical calculation, matrix operation, data regression and fitting, numerical integration and numerical differentiation, the solution of ordinary differential equation and partial differential equation. It is difficult to construct the model from mathematical concept to practical problem. Models are usually divided into two categories: (1) models based on physical theory; (2) models based on strict empirical description (e.g., neural networks). Mathematical models based on physical and chemical laws (such as mass and energy balance, thermodynamics, and chemical reaction kinetics) are often used in engineering design. However, when physical models cannot be developed due to time and resource constraints, empirical models are more appropriate [7-8].

The model is divided into three steps: problem definition, model design and model evaluation. In the definition stage of the problem, we need to select the elements related to the problem and its solution method. In order to evaluate the structure and complexity of the model, it is necessary to define the number of independent variables, the number of equations needed to solve the independent variables and the number of parameters to be determined in the model. For example, in solving the equation of state of gas, because the pressure, volume and temperature of gas are interrelated, two state parameters are determined, and the remaining parameters are uniquely determined. Therefore, the number of independent variables describing gas state is 2, the number of equation of state is 1, and the variable to be solved is 1. In the design stage, it is necessary to define input and output variables, select specific mathematical expressions, and translate the model into computer code. When the model is represented by computer code, the usability of computer software and hardware should be tested, the algorithm and flow of program should be developed, and the relationship between program module and structure should be defined. The model evaluation involves the input-output historical data or the comparison with the literature, and is carried out according to the evaluation criteria and test scheme established in the definition stage. A successful model may have to be debugged many times to achieve the appropriate accuracy, so it is necessary to teach students the method of accelerating the convergence speed [9].

2.3. Data Analysis in the Application of Mathematical Methods

(1) Guide students to experience the process of data collection and realize the significance of data analysis.

(2) Optimize the teaching process and guide students to master the data analysis method from multiple angles.

(3) Multimedia assisted to experience the randomness of data and establish the consciousness of data analysis.

(4) Lead students to carry out practical investigation and implement the concept of data analysis in life [10].

3. The Practice of Computer Data Analysis in Applied Mathematics in the Internet Era

3.1. Respondents

In order to better guarantee the timeliness and accuracy of the investigation and research, the research object is selected from a university mathematics major in the city where the author works A total of 130 students from three classes, aged between 19 and 21, including 102 male students and 28 female students, were selected as the research objects. According to the analysis of the results of the three classes of students, about 40% of the 130 students had their scores concentrated in the 40-60% level, which indicated that The students' mathematics foundation is weak as a whole, and the students with good grades account for a small number, and the students in the third class who participate in the survey are relatively close to each other. The selected interviewees are ten mathematics teachers in secondary vocational schools in our city, including eight male teachers and two female teachers, aged between 28 and 50.
3.2. Questionnaire Content
In this survey, the design of the questionnaire is based on the mechanical secondary vocational school students in mathematics and mathematics application concept problems, and combined with mathematical application research, self-designed questionnaire, composed of 10 questions, involving three aspects of the survey: (1) mathematics application knowledge survey, mainly to understand the attitude of students learning mathematics and the role of mathematics application (2) investigation on the application of mathematics, that is, to find out whether the students can apply the mathematics knowledge, ideas and methods they have learned to solve the practical problems of their major; (3) some views on the teaching materials, teaching contents and methods of mathematics.

3.3. Experimental Steps
The practice is divided into three periods: the first stage is from the beginning of the semester, from April to May; the second stage is from June to September; the third stage is from October to December. Through the way of issuing questionnaires to understand the situation of mathematics majors in the application of mathematics, analyze the common problems among students, and explore the reasons. The main purpose of the survey of teachers is to understand the current college mathematics teaching in the cultivation of students' ability to apply mathematics teaching measures and methods, analysis of the problems, for the cultivation of students' ability to apply mathematics to provide effective teaching methods, through this survey to provide methods for the cultivation of high-quality applied mathematics talents.

4. Practical Analysis of Computer Data Analysis in Applied Mathematics in the Internet Era

4.1. Investigation on the Degree of Liking Mathematics Courses of the Major

![Figure 1. Popularity of Mathematics Courses](image)

As can be seen from Figure 1, only 14% of students really like mathematics courses, and most of them choose the option that they don't feel or even like. Therefore, it can be seen that the mathematics major students' learning of mathematics curriculum is not from the heart of love and love, in the school's rigid requirements, have to study mathematics, lack of initiative, students' performance can not be improved.

4.2. Whether Mathematics Can be Applied in Life
Figure 2. Investigation on the Role of Mathematical Application

It can be seen from Figure 2 that students' cognition of applied mathematics is not ideal. Only 27% of students think that mathematics can be applied in life, and 39% of students think it has no effect; as for whether it can be applied in other subjects, only 17% of students think it can be applied, and 46% of students think it has no effect. It can be seen that the students of this major have biases or prejudices in their cognition of mathematics in real life. They can not correctly understand the role of mathematics, do not identify with mathematics from the bottom of their heart, and can not judge the relationship between mathematics and other professional disciplines. Only let students deeply realize the existence of the above problems, can make students learn mathematics well and fall in love with mathematics.

4.3. Other Problems

Table 1. Other Issues

| Question                                      | Great | So-so | Bad  |
|-----------------------------------------------|-------|-------|------|
| What is the applicability of current mathematical knowledge? | 16%   | 27%   | 57%  |
| Are you really interested in mathematics?     | 22%   | 23%   | 45%  |
| Do you agree with mathematics?                | 31%   | 29%   | 40%  |
| Do you like the way teachers teach?           | 15%   | 16%   | 69%  |

It can be seen from table 1 that this table shows the number of subjects in the rest of the questionnaires. Only 22% of the students are interested in whether they are really interested in mathematics; in the survey of whether they agree with the concept of mathematics, only 31% of the students agree with it; in the survey on whether they are satisfied with the teaching methods, 69% of the students are not satisfied with the current mathematics teaching methods. The above survey results objectively reflect the current situation of College Students' attitude towards mathematics teaching, which is extremely not optimistic, and the reform of teaching mode is also imminent.

4.4. Teacher Questionnaire Survey
Table 2. Questionnaire Survey on Teachers

| Question                                      | Do you think students are interested in mathematics | Current situation of students' Mathematics Learning | The suitability of current mathematics textbooks | Are you satisfied with your teaching methods |
|-----------------------------------------------|----------------------------------------------------|----------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Great                                         | 1                                                  | 2                                                  | 2                                             | 3                                             |
| Not bad                                       | 3                                                  | 1                                                  | 2                                             | 3                                             |
| bad                                           | 6                                                  | 7                                                  | 6                                             | 4                                             |

According to table 2, there are questionnaire survey contents and situations of teachers in the table. The main contents are divided into four parts: do you think students are interested in mathematics; how about students' learning situation; whether they are satisfied with teaching materials; whether they are satisfied with their teaching contents. The situation of teachers is not optimistic, teachers themselves do not agree that their students like mathematics, naturally can not teach students in accordance with their aptitude, to achieve the purpose of teaching.

5. Conclusion

This research has made some achievements in the practice teaching. Now we can draw the following conclusions: the teaching content has achieved initial results. In the past, it is bound by the traditional teaching concept, and the mathematics teaching content has deviation and is out of touch with professional courses. Information technology is an important factor to promote the development of the times, and the combination with all walks of life is the trend of the times. The application of information technology in the field of education is also an inevitable trend of education development. Information technology used in education can effectively improve students' interest in learning, help teachers enrich teaching content, break through teaching difficulties and improve classroom efficiency. Therefore, the majority of education platforms should actively respond to the call to promote the construction of information technology platform. Teachers should also comply with the needs of the times, actively learn information technology, use knowledge, enrich the development of teaching content, improve classroom efficiency.

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