The Study on the Degree of Interest of Chinese Mathematics Freshmen in Classroom Teaching of Mathematics Major Course

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Abstract

Mathematics is an important subject with strong applicability. The application of mathematical knowledge is permeated in all aspects of social production and life. The development of the field of mathematics can greatly promote the progress of social production, and mathematics students are undoubtedly an important force to promote the development of mathematics. In addition, mathematics professional courses are the main courses for mathematics students and the basis for the further study and development of mathematics students, and classroom teaching is the main form of professional teaching. In summary, studying students' interest degree in professional classroom teaching is of great significance for improving teaching quality and teaching efficiency. In this study, 105 freshmen from two classes of mathematics and statistics at Shandong Normal University in 2020 were selected as the research objects. Questionnaire survey and quantitative analysis were used to investigate the interest degree of Chinese mathematics freshmen in classroom teaching of mathematics major course. The results show that: although Chinese mathematics major freshmen have a certain interest in taking notes, talking about mathematics, trying new mathematics learning methods, and applying mathematical knowledge to other subjects, the degree of interest is not high. Generally speaking, the interest degree of Chinese mathematics freshmen in classroom teaching of mathematics major course is lower than the general level.

1. Introduction

The "Implementation Plan of the National Science Literacy Action Plan (2016-2020)" issued by the State Council of China clearly states: "It is necessary to promote science and technology education in higher education, organize and carry out university mathematics, physics, chemistry, biology, computer, and other curriculum reforms, and promote Construction of Basic Science Courses in Universities" [1]. Advanced mathematics is a basic course, which has an irreplaceable promotion effect on science and technology and social economy, and mathematics students are undoubtedly an important force to promote the development of advanced mathematics [2]. In addition, the freshman year is the most important grade for undergraduate students. They enter the adult stage in age, and have completed more than ten years of basic education at the educational stage to enter higher education; They need to make great strides in learning objectives and learning methods [3]. Mathematics learning interest has an important guiding function and motivational function for mathematics learning, and it greatly affects the learning effect of math major [4]. A classroom is an important place for students to learn and accumulate knowledge. The efficiency of classroom teaching will directly affect the quality

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and efficiency of students' classroom learning [5]. Therefore, it is of great significance to investigate the interest degree of Chinese Mathematics Freshmen in classroom teaching of mathematics major course.

2. Theoretical Basis

2.1. Understanding of Interest

Before the start of the research, the author uses the literature research method to define the related concepts involved in this article. Regarding the term "interest", it has a long history of research as a psychological variable. As early as the end of the 19th century, researchers have realized the importance of "interest" [6]. However, because of different fields and different perspectives, there are differences in the understanding of "interest". Therefore, although the term "interest" is widely used, it lacks a clear definition [7].

Foreign researchers have different views on the interpretation of interest. Comenius believes that the basic principles of interest are: "do things according to your own wishes" and "do it yourself" [8]. Rousseau discussed in his works that the essence of discovery teaching interests. If students can stimulate the inner motivation of learning, they will learn actively and even with a state of enjoyment, and no longer need external forces to supervise or force [9].

Domestic researchers also have different opinions on the meaning of interest. Li believed that interest, as a non-intellectual factor of people, is a psychological tendency to actively explore certain things or engage in certain activities with strong emotional colors [10]. Huang believed that interest is the tendency of people to actively explore certain things [11]. Jiang believed that interest means that people want to know, care about, or actively participate in certain activities in order to satisfy a certain need of the subject [12]. Liu believed that interest is the tendency to try to know something or to love a certain activity [13].

Based on the viewpoints put forward by existing studies, we define that: being interested in something is willing to take the initiative to learn something or do something, and willing to pay a certain amount of time and energy. In the process, it is expressed as a positive emotion like to do, willing to do, etc. Specifically, the interest in the classroom teaching of mathematics major course is that students are willing to take the initiative to learn mathematics professional courses, and they are willing to spend time and energy on it. In the process, they show positive emotions like doing and willing to do.

2.2. Understanding of Interest Investigation

According to the above definition, the author thinks that if

Chinese Mathematics Freshman are interested in the classroom teaching of mathematics courses, they will behave in the following aspects: (1) Like and can actively conduct adequate preview before class; (2) Like and can actively develop a suitable study plan; (3) Like and can actively set appropriate learning goals; (4) Like and can actively ask questions in class; (5) Like and can answer questions seriously in class; (6) Like and be able to stay focused in class; (7) Like and can actively participate in discussions in class; (8) Like and can take notes quickly and accurately in class; (9) Like and can reflect on their classroom learning in time; (10) Like and often study the ins and outs of mathematical theorems and formulas; (11) Like and often try new and more effective learning methods; (12) Willing to participate in mathematics competitions; (13) Like to talk about mathematics professional knowledge, and talk about it eloquently; (14) Like and can connect relevant mathematical expertise with real life; (15) Like and be able to apply relevant mathematical expertise to the study of other subjects; (16) Like and can actively understand the relevant history of mathematics; (17) Like and can actively pay attention to cutting-edge research issues in mathematics; (18) Like and can actively read related magazines or articles; (19) Like and can actively watch related videos; (20) Like and be able to actively research related knowledge beyond the classroom knowledge of mathematics.

The author divides the above performance into three aspects, namely, interest in classroom teaching of mathematics professional course before class (1-3), interest in classroom teaching of mathematics professional course in class (4-8), and interested in classroom teaching of mathematics professional course after class(9-20). The measurement of interest degree is reflected in the options. It is divided into five levels: "very inconsistent", "inconsistent", "general", "consistent" and "very consistent".

3. Method

3.1. Sample

I selected 105 freshmen in two classes 3 and 4 of the School of Mathematics and Statistics of Shandong Normal University as the research object.

3.2. Instrument

This research adopts the method of the questionnaire survey. The questionnaire has two parts and 21 questions. The first part is the student's personal information, namely gender. The second part is the main body of the questionnaire. Through the form of multiple-choice questions, it counts the degree of interest of Chinese mathematics freshman students in the classroom teaching of mathematics courses before, in, and

after class. Among them, questions 2 to 4 examine the degree of interest in the classroom teaching of mathematics professional courses before class, including three indicators of conducting preview before class, making plans, and formulating goals; Questions 5 to 9 examine the importance of mathematics courses the level of interest in the classroom teaching of mathematics professional courses in class, including five indicators: asking questions, answering questions, paying attention, participating in a discussions, and taking notes; Questions 10 to 21 examine the degree of interest in classroom teaching of mathematics courses after class, including after-class reflection, researching the derivation process, trying new learning methods, participating in competitions, talking about mathematics, connecting mathematics to life, applying mathematical knowledge to other subjects, understanding the history of mathematics, understanding cutting-edge issues, reading mathematics magazines, watching mathematics videos, and researching related extracurricular knowledge twelve index.

Paper questionnaires were used in this questionnaire survey. A total of 105 questionnaires were distributed on November 4, 2020, in the 201 classrooms of District B, Wenyuan Building, and the survey was conducted in the form of on-site distribution and on-site collection of questionnaires. Among the 105 paper questionnaires distributed, 103 were finally recovered, and 12 invalid questionnaires that were missed and filled at random were removed. Finally, 91 valid questionnaires were obtained, of which 34 were boys and 57 were girls.

3.3. Data Processing

The 91 valid questionnaires were statistically analyzed, and the frequency of each option in each question was recorded.

The percentage is used to indicate the proportion of the number of times a certain choice appears in each topic to the number of valid questionnaires. The total number of times each option appears in 91 valid questionnaires is divided by 91, and the result is in the form of a percentage. The five degrees of the options are graded in turn: 1 for very inconsistent; 2 for inconsistent; 3 for general; 4 for consistent; 5 for very consistent; and 3 for average. Calculate the average score of each question in turn: multiply the total number of times each option appears with the corresponding score value, and divide it by the total number of 91 copies to get the average value. The higher the mean value, the higher the interest of Mathematics Major Freshmen in the classroom teaching of mathematics.

4. Results

4.1. The Degree of Interest in Mathematics Classroom Teaching Before Class

According to the statistical data, about 90% of the students choose "very inconsistent", "inconsistent" and "general" for the three indicators of conducting preview before class, making plans, and formulating goals, and the average score of each question is less than the average score of 3. This shows that Chinese mathematics freshmen are less interested in conducting previews before class, making learning plans and learning objectives than the general level. In addition, the overall average score of the three indicators is 2.76, which is also lower than the average score of 3. This shows that the degree of interest of Chinese mathematics freshman students in the classroom teaching of mathematics majors before class is lower than the average level. The details are shown in Table 1.

Table 1. Data Summary and Overall Average Score of Interest in Classroom Teaching of Mathematics Professional Courses Before Class.

	2 Conducting Previews before Class	3 Making Plans	4 Formulating Goals
Very Inconsistent (%)	9.89	7.69	5.49
Inconsistent (%)	29.67	16.48	12.09
General (%)	57.14	67.03	63.74
Consistent (%)	3.30	7.69	17.58
Very Consistent (%)	0.00	1.10	1.10
Overall Average Score (points)	2.76		

4.2. The Degree of Interest in Mathematics Classroom Teaching In Class

According to the statistical data, about 95% of the students choose "very inconsistent", "inconsistent" and "general" for the index of asking questions, which indicates that most students are less interested in asking questions in class; About 80% of the students chose "very inconsistent", "inconsistent" and "general" for the three indicators of answering questions, paying attention and participating in a discussion, which indicated that most students were less

interested; About 50% of the students chose the two options of "consistent" and "very consistent", while only 10% of the students chose the "very inconsistent" and "inconsistent" options, indicating that most students are interested in it. Secondly, the overall average score of the five indicators is 2.93, which is lower than the average score of 3. Generally speaking, the interest degree of Chinese mathematics freshmen in the classroom teaching of mathematics major in class is lower than the average level, although the students have a certain interest in taking notes in class. The details are shown in Table 2.

Table 2. Data Summary and Overall Average Score of Interest in Classroom Teaching of Mathematics Professional Courses In Class.

	5 Asking Question	6 Answering Question	7 Paying Attention	8 Participating in Discussions	9 Taking Notes
Very Inconsistent (%)	0.00	0.00	4.65	34.88	20.93
Inconsistent (%)	20.93	16.28	41.86	44.19	39.53
General (%)	48.84	62.79	46.51	18.60	37.21
Consistent (%)	27.91	16.28	2.33	0.00	0.00
Very Consistent (%)	2.33	4.65	4.65	2.33	2.33
Overall Average Score (points)	2.41				

4.3. The Degree of Interest in Mathematics Classroom Teaching After Class

According to the data, about 80% of the students choose "general", "consistent" and "very consistent" for the three indicators of after-class reflection, trying new learning methods, and applying mathematical knowledge to other subjects, which shows that logarithmic students are interested in this, but the degree of interest is not high. About 80% of the students choose "very inconsistent", "inconsistent" and "general" for the nine indicators of researching the derivation process, participating in competitions, talking about mathematics, connecting mathematics with life, understanding the history of mathematics, reading mathematics magazines, watching mathematics videos, and researching related extracurricular knowledge, which showed that students were not interested in it. In addition, the overall average score of the 12 indicators is 2.84, which is lower than the average score of 3. Generally speaking, the freshmen of mathematics major are less interested in the classroom teaching of mathematics major after class than the general level, although students have a certain interest in after-class reflection, trying new learning methods, and applying mathematical knowledge to other subjects. The details are shown in Table 3.

Table 3. Data Summary and Overall Average Score of Interest in Classroom Teaching of Mathematics Professional Courses After Class.

	Very Inconsistent (%)	Inconsistent (%)	General (%)	Consistent (%)	Very Consistent (%)
10 After-class Reflection	2.20	7.69	57.14	27.47	5.49
11 Researching the Derivation Process	6.5	21.98	46.15	21.98	3.30
12 Trying New Learning Methods	4.40	15.38	40.66	38.46	1.10
13 Participating in Competitions	8.79	30.77	36.26	19.78	4.40
14 Talking about Mathematics	10.99	37.36	42.86	7.69	1.10
15 Connecting Mathematics with Life	5.49	23.08	57.14	13.19	1.10
16 Applying Mathematical Knowledge to Other Subjects	4.40	13.19	47.25	35.16	0.00
17 Understanding the History of Mathematics	7.69	35.16	47.25	9.89	0.00
18 Understanding Cutting-edge Issues	8.79	35.16	46.15	8.79	1.10
19 Reading Mathematics Magazines	9.89	36.26	41.76	10.99	1.10
20 Watching Mathematics Videos	6.59	23.08	57.14	10.99	2.20
21 Researching Related Extracurricular Knowledge	6.59	20.88	47.25	19.78	5.49
Overall Average Score (points)	2.84				

5. Discussion

5.1. The Degree of Interest in Mathematics Classroom Teaching Before Class

According to the data of the questionnaire, most of the students are less interested in conducting previews before class, making plans, and formulating goals, and the overall average score of the three indicators is less than the average score of 3. Then we can draw a conclusion: the interest degree of Chinese mathematics major freshmen in mathematics teaching before class is lower than the general level.

5.2. The Degree of Interest in Mathematics Classroom Teaching In Class

According to the questionnaire data, most students are interested in taking notes, but they are less interested in asking questions, answering questions, concentrating attention, and participating in a discussion in class. In addition, the overall average score is less than 3, which shows that the Chinese mathematics major freshmen are less interested in the classroom teaching of mathematics major in class than the general level.

5.3. The Degree of Interest in Mathematics Classroom Teaching After Class

According to the statistical questionnaire data, most students have a certain interest in after-class reflection, trying new learning methods, and applying mathematical knowledge to other subjects, but the degree of interest is not high; They are less interested in researching the derivation process after class, participating in mathematical competitions, talking about mathematics, connecting mathematics knowledge with life, understanding mathematical history, understanding mathematical cutting-edge problems, reading relevant magazines, watching mathematics videos, and researching

related extracurricular knowledge. In addition, the overall average score is 2.84, less than the average score of 3, which shows that the Chinese mathematics major freshmen are less interested in the classroom teaching of mathematics major after class than the general level.

Through the investigation, it is found that the interest degree of Chinese mathematics major freshmen in the classroom teaching of mathematics major is lower than the general level in three aspects: before class, in class, and after class. In addition, the overall average score of all indicators was 2.85. Therefore, generally speaking, the interest degree of Chinese mathematics major freshmen in the classroom teaching of mathematics major is lower than the general level. However, scholars such as Yang Fa [14], Yang Jing [15], Zou leqiang [16], Shi Renxiang [17], Bai Xiuqin [18], Li Jing [19], Ju Xuewei [20] and Wang Suhua [21] all put forward the view that college students have low interest in mathematics learning, which is basically consistent with the results of this study.

6. Conclusion

Through this survey and data research, it is found that although Chinese mathematics major freshmen have a certain interest in taking notes, talking about mathematics, trying new mathematics learning methods, and applying mathematical knowledge to other subjects, the degree of interest is not high. Generally speaking, the interest degree of Chinese mathematics freshmen in classroom teaching of mathematics major course is lower than the general level.

Although the survey has obtained a more clear conclusion, the deficiencies exposed in the process still need to be paid attention to:

The first is the validity of the questionnaire. The questionnaire used in this study was made by the author through consulting the relevant literature. Before the production, there was no interview with the research object and other relevant personnel to roughly determine the content of the questionnaire. Therefore, there may be some problems in the questionnaire, such as the lack of representativeness of the topics and the incompleteness of the contents.

The second is about whether the sample is representative. In this study, 105 students were selected as the research objects, and the sample size was small. Each school has its own style of study and school spirit. Only the students in classes 3 and 4 of the School of Mathematics and Statistics of Shandong Normal University are selected as the research objects, which is relatively single.

The third deficiency is the single research method. This study adopts the method of the questionnaire survey. All the questions are in the form of single choice questions.

Although it is easy to carry out, the information obtained may not be objective.

In view of the above shortcomings, the questionnaire will be further improved to make the data more representative. In addition, the research object will be expanded. I plan to select freshmen majoring in mathematics from other universities as the research objects to examine whether the conclusions are consistent and strive for greater breakthroughs. Finally, it will be combined with other research methods such as the interview method to make the final conclusion more persuasive.

Acknowledgements

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