

Research on the influencing factors of primary school students' interest in mathematics learning

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Abstract: Learning interest is a powerful motivator and the most active component of students' learning enthusiasm in mathematics learning activities. It will affect the effectiveness of mathematics learning among primary school students. Therefore, students' interest in mathematics learning is crucial to the development of teaching work and students' learning effect. Through statistical data, it is found that the influencing factors of students' interest in mathematics learning are mainly based on students' own attitudes towards mathematical knowledge itself, and the personal character of teachers, teachers' teaching, and the evaluation of parents and teachers are secondary influences.

1. Introduction

The famous scientist and physicist Albert Einstein once said, "Interest is the best teacher for students." Allowing students to have an interest in learning mathematical knowledge is the foundation for students to learn mathematics well, and it is an important aspect that cannot be ignored. Primary school is in the foundation stage of nine-year compulsory education, and students need to lay a solid mathematical foundation in learning, develop good study habits, and cultivate their interest in mathematics learning^[1]. Therefore, understanding and helping students cultivate interest in mathematics learning is also one of the essential educational and teaching tasks of teachers, what are the students' interest in mathematics learning in learning, what are the factors that affect their interest in learning, and how teachers should effectively manage teaching for students' interests. Based on this, a survey was conducted on the influencing factors of mathematics interest of students from grades 1 to 6 of Yutan Street Central Primary School in Ningxiang City.

2. The significance of the investigation

Through the investigation and research of the influencing factors of primary school mathematics learning interest, the influencing factors and problems of learning interest are found, the reasons behind them are analyzed, and strategic suggestions for interest cultivation are proposed. With the help of the analysis results of these data, it is found that the influencing factors of primary school students' interest in mathematics learning in the real learning process are found, which is convenient for teachers and schools to improve their interest in mathematics learning in primary school students, so this study has certain theoretical significance and practical value [1].

2.1 Theoretical significance

At present, the focus of research on learning interest mainly focuses on the improvement of teaching methods and the discussion of teaching models, and there are few studies on the factors affecting mathematical learning interest using mathematical analysis methods, and the theoretical significance of this paper lies in improving and supplementing the research in this academic field [2].

2.2 Practical significance

This survey can help teachers and parents identify the factors influencing students' interest in mathematics learning, and propose practical solutions for the background of the new curriculum reform. As long as teachers, parents, students, etc. know that some of their behaviors are conducive to improving students' interest in mathematics learning and stimulating learning motivation, they will strive to change in this direction. When students become interested in learning, and the teacher fully cooperates in class, their grades will inevitably improve [3]. At the same time, students actively participate in and outside the classroom, logical thinking and hands-on ability are exercised, and mathematical thinking ability will be improved, which is of great benefit to students' thinking development. Therefore, it is hoped that after this survey report, it will provide some reference for the subsequent implementation of education.

3. Survey methods and targets

3.1 Survey methods

The survey method of this survey mainly adopts the literature method and questionnaire survey method, and provides a theoretical basis for practical investigation by finding various theoretical materials related to the research. Through the questionnaire survey method, the relevant factors affecting students' interest in learning were understood, and the sample survey method was adopted for students from the first to sixth grades of Yutan Street Central Primary School in Ningxiang City, and the questionnaires were distributed and collected by selecting students from one class in each grade. Among them, 293 student questionnaires were actually recovered, with a recovery efficiency of 100%, and 293 valid questionnaires were obtained, with a questionnaire efficiency of 100%.

3.2 Targets of investigation

The survey was conducted among students from grades 1 to 6 at Yutan Street Central Primary School in Ningxiang City, Changsha City, Hunan Province, and then randomly selected students from more than ten classes in each grade to distribute questionnaires and collect them.

4. Survey results and analysis

4.1 The basic situation of students' interest in mathematics learning

From the information in Table 1, it can be seen that the number of students in each grade is nearly 50, and only 45 in the first grade, and there are more boys than girls in the class.

Table 1: Basic information of the students

project	option	number of people	percentage
grade	first grade	45	15.36%
	second grade	50	17.06%
	junior class	49	16.72%
	senior class	49	16.72%
	fifth grade	50	17.06%
	Sixth Form	50	17.06%
gender	man	163	55.63%
	woman	130	44.37%

Table 2: Students' interest in mathematics learning

	First and second grades	Third and fourth grades	Fifth and sixth grade	tote	percentage
Very interested in	59	42	50	151	51.54%
Compare interest	25	38	31	94	32.08%
Generally interested in	8	15	14	37	12.63%
Not interested	2	1	4	7	2.39%
Very uninterested	1	2	1	4	1.37%

It can be seen from Table 2 that 51.54% of students are very interested in mathematics, indicating that there are some factors that interest them in mathematics, and at the same time, 96.24% of students who are interested in mathematics (including "very interested", "somewhat interested", "generally interested"), it can be seen that most of the students can maintain a relatively positive learning attitude towards mathematics, which is a good phenomenon for the learning of mathematics. The teacher factor is inseparable. 3.76% of students who are not interested in mathematics (including "relatively uninterested" and "very uninterested"), this part of the students need to understand their ideas about mathematics, analyze the reasons why they are not interested in mathematics, and make suggestions. In general, students in the first and second grades are most interested in learning mathematics because they are new to mathematics, followed by students in the fifth and sixth grades, and finally students in the third and fourth grades.

4.2 Analysis of the current situation and influencing factors of primary school students' interest in learning

4.2.1 Analysis of the sources of students' interest in mathematics learning

From Table 3, it can be seen that students' interest in mathematics learning mainly comes from the fact that mathematical knowledge is very interesting, and 44.03% of students chose this, indicating that in the mathematics learning full of numbers and shapes, students are interested in discovering the hidden laws in the arrangement and operation of numbers, understanding the characteristics of graphics through observation and hands-on, solving practical problems in life, etc., such logical and interesting mathematical activities that are close to students' lives can stimulate more students' interest in learning, which has the deepest impact on the upper grades. In addition, 18.09% of students' learning interest comes from their parents' expectations of themselves, and the number of students who attribute their interest in mathematics to their parents' expectations decreases with age, because with the increase of age, students' dependence on parents will decrease, and gradually the main source of learning interest will be attributed to other aspects. There was also 18.09% of the sense of accomplishment gained in studying or quizzing. Mainly for students with

good grades or improved grades, the sense of achievement can make them feel the joy of success in exchange for their efforts to a certain extent, and generate motivation to learn. Teachers' teaching only accounts for 11.95% of the factors influencing students' interest in mathematics learning, but teachers' teaching is to assist students' learning by designing teaching links, the purpose of which is to enable students to discover the interest of mathematics, so it is inseparable from students' ideas that mathematical knowledge is interesting^[2].

Table 3: Main sources of students' interest in mathematics learning

option	junior grade	Middle grade	senior class	tote	percentage
What my parents expect of me	25	17	11	53	18.09%
Mathematical knowledge is very interesting	41	38	50	129	44.03%
Like the teacher's teaching	12	11	12	35	11.95%
Get a sense of accomplishment in your study or test	13	22	18	53	18.09%
other	4	10	9	23	7.85%

4.2.2 The impact of mathematics learning and examination results on students' interest in mathematics learning

Table 4: Effect of students' learning status on their interest in learning mathematics

Mathematics learning state					
	Very easy	More relaxed	commonly	More difficult	Very difficult
Very interested in	85	44	16	2	4
Compare interest	14	43	26	11	0
Generally interested in	2	9	19	2	3
Not interested	2	0	2	2	1
Very uninterested	3	0	0	0	1
percentage	36.18%	32.76%	21.50%	6.48%	3.07%

From the data in Table 4, it can be seen that most students can feel that learning mathematics is not so difficult, and the number of students in "very easy" and "relatively relaxed" states is large. Among them, the number of students who chose both "very relaxed" and "very interested" was the largest among the other results, indicating that a relaxed learning state can improve students' interest in learning mathematics to a certain extent, and this implies the acquisition of students' sense of achievement and frustration in learning. Among the students who were "struggling" in their learning status, most of them were still interested in mathematics, and only 2 were not interested in mathematics. Among the students who chose to be "not interested" in mathematics, there were 5 students who were "very relaxed" in their learning state, and such students may have strong mathematical ability, but have not experienced the feeling of epiphany when solving difficult problems many times, so their interest in mathematics learning is low.

Table 5: Impact of students' examination results on their interest in mathematics learning

Students' consent to the test results will affect their interest in math learning				
	Very much agree	agree	Partial consent	disagree
Very interested in	34	19	15	83
Compare interest	8	11	31	44
Generally interested in	3	7	14	13
Not interested	1	1	1	4
Very uninterested	2	0	0	2
percentage	16.38%	12.97%	20.82%	49.83%

From Table 5, it can be seen that on the whole, 49.83% of students believe that the results of the test will not affect their interest in mathematics, and 83 of them choose "very interested". It shows that the sense of achievement and frustration obtained by such students in the test results is not strong, so the test results have little impact on the interest in mathematics learning, and it also reflects that the fluctuations in the grades of such students are not very large, or a very small number of students will not care about their test results. Looking at the results of the "agree" (including "strongly agree", "agree", "partially agree") options, it is found that the largest number of people chose both the "strongly agreed" and "very interested" options, with 34 people, indicating that such students can get a strong sense of achievement in the test results, and convert them into motivation to study and become interested in mathematics. Among students who were not interested in mathematics, the number of students who chose "strongly agree" and "disagree" was high, and the results were polarized, indicating that such students should either be frustrated by the frustration in the test results or disagree with the test results. Both of these situations are caused by an incorrect attitude towards the exam.

4.2.3 The influence of mathematics extracurricular interest classes on students' interest in mathematics learning

In Table 6, it is found that 41.3% of students often participate in extracurricular mathematics interest classes, the vast majority of whom are very interested in mathematics and have a certain mathematical foundation. Most of the students who are not interested in mathematics also participate in interest classes, which may be due to the catalyst of parents, which motivates students to participate in order to exercise mathematical thinking and improve mathematical performance. Allowing students to be exposed to extracurricular mathematical knowledge can make them discover the richness of mathematical knowledge and more likely to be interested in mathematics extracurricular knowledge, so that students do not exclude participating in mathematics extracurricular interest classes under the leadership of their parents.

Table 6: The influence of students' participation in extracurricular math interest classes on their interest in math learning

Participation in extracurricular math interest classes			
	Often will	Occasionally	unable
Very interested in	87	35	29
Compare interest	24	53	17
Generally interested in	4	13	20
Not interested	3	3	1
Very uninterested	3	1	0
amount to	121	105	67
percentage	41.30%	30.84%	22.87%

4.2.4 The impact of school mathematics classroom on students' interest in mathematics learning

Table 7: Love of math teachers in each grade

option	first grade	second grade	grade three	Fourth grade	fifth grade	Grade Six	tote
like very much	37	39	32	14	2	48	172
like	7	10	15	24	10	2	68
not too like	1	0	2	4	24	0	31
dislike	0	1	0	7	14	0	22

From the survey results in Table 7, it is found that not all students will like their math teacher, and by combining the answer to the question "What factors will make you lose interest in learning mathematics" in the questionnaire, you will find that students do not like teachers who behave fiercely in getting along, and students still like approachable and smiling teachers. In this survey, most of the students in the first, second, third and sixth grades liked their math teachers, because the younger students were more teacher-oriented, so they liked the teacher more, while the middle and upper grade students began to have their own thinking and judgment of the people and things around them, so they would think about whether they liked the teacher according to many aspects. At the same time, students who "don't like their math teacher" will also be reluctant to ask questions about themselves.

Table 8: Types of classroom activities that students like

option	number of people	percentage
Use of teaching AIDS and multimedia learning	173	59.04%
Learning of setting situations	159	54.27%
Learning in competition forms	189	64.51%
Group cooperative inquiry learning	209	71.33%
other	81	27.65%

In indoor mathematics teaching, the characteristics of primary school students' growth stage determine that their attention span is short and not lasting, and they are easily disturbed by the outside world, and interest is the key factor of their learning effect. In particular, younger students are curious, active, and have little self-control, and it is difficult to concentrate on the lecture. Teachers can effectively help students participate in mathematics learning by designing classroom activities that students like, so as to discover the mystery of mathematics. From Table 8, it can be seen that "group cooperative inquiry learning" is the type of classroom activity that students prefer, accounting for 71.33%, followed by "learning in the form of competition", "learning using teaching aids and multimedia", and "learning by setting scenarios"^[3].

5. The impact of homework on students' interest in mathematics learning

As can be seen from Table 9, students with different learning levels differ in their choice of the question "The degree of agreement that the amount of homework affects their interest in mathematics learning". Students who are very relaxed in their learning status have a polarizing trend in the two options of "strongly agree" and "disagree", but the "disagree" item has 48 people, which is more likely. Students with a relaxed and average learning status stepped toward the "disagree" item among the four level options. Students who struggle to study are more likely to choose "very agree".

Table 9: Influence of learning status on the amount of homework

	The degree of agreement affecting the interest in math learning			
	Very much agree	agree	Partial consent	disagree
Very easy	29	14	15	48
More relaxed	15	15	23	43
same as	9	10	18	26
More difficult	6	4	5	4
Very difficult	5	1	1	2
tote	64	44	62	123
percentage	21.84%	15.02%	21.61%	41.98%

Table 10: The influence of the homework quantity on the interest in mathematics learning and the degree of agreement affecting the interest in math learning

	Very much agree	agree	Partial consent	disagree
Very interested in	43	15	21	72
Compare interest	11	20	32	31
Generally interested in	6	5	7	19
Not interested	2	2	2	1
Very uninterested	2	2	0	0
tote	64	44	62	123
percentage	21.84%	15.02%	21.61%	41.98%

From the survey results in Table 10, the number of people who chose "partial agreement" and above was higher than the number of people who chose "disagree", accounting for 58.02%, indicating that most students still think that the large amount of homework affects their interest in mathematics learning to a certain extent. At the same time, it can be found that the amount of homework has a deeper impact on students with low interest in mathematics. For students who are "interested" in mathematics, the impact of large homework on their interest in learning is not much on the whole, and most students do not agree that the amount of homework affects their interest in mathematics learning. However, among the students who were "very interested" in mathematics, 43 still chose to "strongly agree", and among such students, it may be that the difficulty of the homework does not meet the effect of what they have learned, and the homework is too easy, so the simple and large number of homework will produce a certain boredom.

6. Conclusion

Quality education is a major leap forward in China's educational reform, and a significant progress in educational ideology and talent cultivation models. How to promote quality education has become the main goal of education in China. As primary schools, we are also striving to discuss and study how to promote the implementation methods of quality education. Learning interest, as one of the important driving forces in education, also plays an important role in quality education. The author believes that students' interest in mathematics courses directly affects the quality of mathematics teaching and the achievement of educational goals. Therefore, this study focuses on how to enhance students' learning interest in the teaching process of mathematics courses. May every math class enable students to learn knowledge and exercise in joy, generate interest in mathematics, and improve teaching quality.

References

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