Review Article

Research on the Learning of University Students Majoring in Mathematics in China

Abstract: In recent years, the country has increasingly attached importance to the development of basic science. As the reserve talents to promote the development of mathematics, the university students majoring in mathematics have received the attention of researchers for their situation and mathematics learning. At present, there are many studies on the mathematics learning of university students majoring in mathematics, however, there is no complete review and sorting in this aspect. Through the method of literature analysis,this paper summarizes and sorts out the relevant research on mathematics learning of mathematics majors, and the conclusions are as follows: (1) In the current research on the situation of mathematics learning of students majoring in mathematics, there are few studies on learning strategies, more research on the problems of students majoring in mathematics, and lack analysis and research on the causes of such problems of students majoring in mathematics.(2)To research on the factors affecting mathematics learning of mathematics majors, scholars have explored ample influencing factors, and have a certain research basis and depth, but the complete influencing factors and how these factors affect the mathematics learning of students majoring in mathematics are still a blank spot, which needs further exploration and research.(3)The research on strategies for helping students majoring in mathematics to learn mathematics is mainly aimed at colleges and universities and teachers, and has put forward some commonly recognized strategies,however, these strategies are broad and general, and do not reflect the pertinence of mathematics and mathematics college students.

Keywords:Mathematics;University Student;Mathematics Learning

Comment [U1]: The research method has not been clearly described, how the techniques in systematic review, year limits, and description of the contents are not clear
specifications of research articles are also not clearly grouped

1. INTRODUCTION

In 2018, the State Council issued Several Opinions on Strengthening Basic Scientific Research in an All-round Way (GF [2018] No.4), which proposed that "we should concentrate on strengthening basic scientific research and give more preference to key basic disciplines such as mathematics and physics"."The size of the universe, the size of particles, the speed of rockets, the ingenuity of chemical engineering, the change of the earth, the mystery of biology, and the complexity of daily use are all without mathematics."The extensive application of mathematics makes mathematics knowledge a basic subject that college students should study well in any case, and it is a subject of lifelong benefit[1]. And mathematics is a subject of constant change and development, and its greater progress requires more professionals with strong mathematical application abilities[2]. Therefore, under the background of the country's increasing emphasis on basic science, it is very important to study mathematics learning of students majoring in mathematics. At present, more and more scholars are committed to exploring the current mathematics learning situation of students majoring in mathematics from all aspects, but there is no comprehensive and systematic arrangement of the research results. To have a deeper understanding of the current relevant research, research deficiencies, and gaps in this field, this paper intends to summarize and summarize the previous research. This research will not only help mathematics teachers better carry out teaching, and guide students' learning but also help researchers grasp the current research status, to promote further research. The question studied in this paper is: What is the current situation of the research on "mathematics learning for university students majoring in mathematics"? Specifically, it includes the following two questions:

(1)What are the main aspects of the research on "mathematics majors"? What are the shortcomings?

(2)What are the main aspects of the research on "mathematics learning"? What are the shortcomings?

2. METHOD

2.1 Data Source

Comment [U2]: present the essence of the problem, the urgency, and the contribution to education
the novelty of this study has not been presented
presentation of previous research has not been strong
there are no important points of the problem and solutions offered

This paper adopts the method of literary analysis, and the data mainly comes from the database of CNKI(China National Knowledge Infrastructure).CNKI is the most authoritative document retrieval tool for academic journals in China. It includes all the contents of Chinese journals. This database can ensure the persuasiveness and reliability of the research.

2.2 Data Collection

Search simultaneously with "mathematics majors" and "mathematics learning" as the search term, 37 documents were obtained. This study adopts the following criteria for screening:(1)Only domestic research documents are selected;(2)Clarify the literature that takes students majoring in mathematics as the research object; Through reading one by one, select 9 of them for further analysis.

Comment [U3]: describe in detail the research method whether it is a systematic literature review or just a documentation study

2.3 Data Collation

By consulting the literature and taking notes, the research methods and conclusions of each article are sorted and recorded.

3. RESULTS

Through reading and sorting out the literature, the author preliminarily believes that the current research on the students majoring in mathematics is mainly divided into three aspects: the research on the current situation of mathematics learning of students majoring in mathematics, the influencing factors of mathematics learning of students majoring in mathematics, and how to help students majoring in mathematics learn mathematics.

3.1 Research on the current situation of mathematics learning of students majoring in mathematics

Comment [U4]: Present in tabular form with a clear composition, for example the title of the article, year, method, results and discussion

Some scholars have researched the learning strategies of current students majoring in mathematics. Pan has researched the learning strategies of normal students majoring in mathematics and found that the use of learning strategies of normal students majoring in mathematics is not high and is at the middle level; There is no significant gender difference in the overall use of mathematics learning strategies; The overall use level of mathematics learning strategies increases from lower grades to higher grades[3]. Some scholars have investigated the problems existing in mathematics

learning of current mathematics majors. Liu, Tang, and other scholars found through questionnaires that 49.9% of the students majoring in mathematics and applied mathematics in local normal colleges and universities have learning burnout and are at a medium to a high level; There are significant differences in the level of learning burnout among students of this major with different gender, grade and training level, and there is no significant difference in learning burnout among students from different places of origin[4]. Yang and others investigated the current situation of mathematics learning of undergraduate students majoring in mathematics and found that the prominent feature of mathematics learning of undergraduate students majoring in mathematics at present is "passive coping", which is embodied in: the proportion of students who can truly learn independently before class is small; Most students' learning mainly depends on teachers' classroom explanations and reference materials, lacking independent thinking; Most students' learning has obvious utilitarian color[5].

3.2 Research on the Factors Affecting Mathematics Learning of Mathematics Majors

Comment [U5]: Present in tabular form with a clear composition, for example the title of the article, year, method, results and discussion

Liu, Yin, and Lei analyzed the influence of students' college entrance examination scores, willingness to apply for the examination, gender, grade, and other aspects on the correlation between their math learning beliefs and the increase in college grades[6]. Yang and others pointed out that the academic performance of professional college students was affected by three factors: learning adaptability, professional commitment, and learning self-efficacy. At the same time, learning adaptability, professional commitment, and learning self-efficacy all predicted academic performance[7].

3.3 Research on Strategies to Help Math Majors Students to Learn Maths

Comment [U6]: Present in tabular form with a clear composition, for example the title of the article, year, method, results and discussion

At present, the research on strategies to help students majoring in mathematics to learn mathematics is mainly put forward from two aspects: universities and teachers.

At the university level, Wang and others pointed out that colleges and universities should strengthen the awareness guidance of students' autonomous learning through regular training, lectures, psychological counseling, and other ways, and reasonably

allocate resources, allocate special self-study classrooms, cooperative learning space, open computer rooms, laboratories, and various practice centers to provide students with sufficient learning space, and further enhance the richness of various learning resources, Build a rich online learning resource information base, gradually establish a good campus culture, and create a strong learning atmosphere[8].

At the teacher level, Wang and others proposed that teachers should change their roles to change the previous indoctrination teaching, use heuristic teaching, take students as the main body of the classroom, and strengthen the interaction and communication with students. At the same time, in classroom teaching, we should innovate the traditional teaching methods, make full use of the multimedia teaching image and specific advantages, and adopt multiple teaching modes such as Mooc, flipped classroom, interactive discussion, etc[8]. Jiao, Chen, and others pointed out that teachers can stimulate the learning motivation of undergraduate students majoring in mathematics by focusing on cultivating students' internal motivation, adopting appropriate situation creation to attract students' interest, timely evaluation, and correctly using strategies such as rewards and punishment, to promote students' mathematics learning[9]. Chen and Yang pointed out that teachers should skin and cultivate students' interest in learning, and constantly explore teaching methods to improve teaching quality[10].

4. DISCUSSION

Comment [U7]: review based on the theory and source of the article as a reference

The research on the current situation of mathematics learning of students majoring in mathematics mainly focuses on the current situation of learning strategies of students majoring in mathematics and their existing problems, of which there is less research on learning strategies and more research on their existing problems. At the same time, from this part of the research, we can see that the current mathematics learning status of mathematics majors is not ideal, and there are certain burnout and attitude problems. However, it is still a blank spot to analyze and study the causes of such problems among mathematics students.

As for the research on the factors that affect the mathematics learning of students majoring in mathematics, the influential factors mentioned in the article are relatively

rich, which indicates that there is a certain research foundation and depth, and all of them have discussed the degree of influence of some of the factors studied on the mathematics learning of students majoring in mathematics, but the number of current research is small, and most of them are based on the analysis of the existing literature or directly obtained the influential factors through the speculative method, Then explore the relationship between it and mathematics learning of students majoring in mathematics. These influencing factors are not complete. At present, there are no scholars involved in more influencing factors and the path of these factors affecting mathematics learning, which still needs further exploration and research.

As for the research on strategies to help students majoring in mathematics to learn mathematics, the current research is carried out from the two levels of universities and teachers. Among them, the number of strategies proposed for teachers is more and more comprehensive. Changing teaching methods, stimulating students' learning interests and internal motivation, and improving students' learning enthusiasm are widely mentioned and recognized strategies. However, these strategies are relatively general and broad and do not reflect the pertinence of students in mathematics and mathematics majors, whether at the university level or the teacher level.

5. CONCLUSION

Comment [U8]:

This paper reviewed and analyzed the nine documents retrieved, and reached the following conclusions:

(1) In the current research on the situation of mathematics learning of students majoring in mathematics, there are few studies on learning strategies, more research on the problems of students majoring in mathematics, and a lack of analysis and research on the causes of such problems of students majoring in mathematics.

(2) To research the factors affecting mathematics learning of mathematics majors, scholars have explored ample influencing factors, and have a certain research basis and depth, but the complete influencing factors and how these factors affect the mathematics learning of students majoring in mathematics are still a blank spot, which needs further exploration and research.

(3)The research on strategies for helping students majoring in mathematics to learn

mathematics is mainly aimed at colleges and universities and teachers and has put forward some commonly recognized strategies, however, these strategies are broad and general, and do not reflect the pertinence of mathematics and mathematics college students.

Therefore, future research must analyze the causes of various problems existing in the students majoring in mathematics, at the same time, to study the factors that affect their mathematical learning more completely, study the influence path of various factors in depth, and put forward more targeted suggestions for the students majoring in mathematics to carry out mathematical learning, to make such research more comprehensive and in-depth.

REFERENCES

1. Gao DD, Jiang SQ, Lu XH, Analysis and suggestions on the problems existing in contemporary college students' mathematics learning, Technology Wind,2021,(33):31-33.
2. Zhang JR, Problems and improvement measures in Mathematics and Applied Mathematics teaching, Academy,2020,13(32):49-50.
3. Pan MS. A Study On Mathematics Learning Strategies Of Pre-service Math Teachers--Taking Guangxi Normal University as an Example, Education Modernization,2019,6（49）：187-190.
4. Liu P,Tang ZF,Liu J,Z LL.The survey of students' learning burnout in the local university applied maths major, Journal of Heihe University,2014,5(02):62-66.
5. Yang MS, He XM, Ning LH, Survey on mathematics study of university students, Journal Of Mathematics Education,2010,19(06):56-59.
6. Liu J, Yin YF, Lei JL, Analysis of the relationship between mathematics learning beliefs of

undergraduates majoring in mathematics and achievements in college mathematics, Journal of Dezhou University,2018,34(06):15-19.
7. Yang YS, Luo RS, Luo XQ, Survey on non-intelligence factors Of influence on academic achievement of mathematics- majors students from the local university,

Journal of Jinggangshan University,2007(06):128-132.

8. Wang WL, An Y, Tian JB, Research on the cultivation of independent learning ability of mathematics undergraduates under the guidance of "Strengthening Basic Disciplines Plan", University Mathematics,2022,38(05):52-56.

9. Jiao HW, Huang YQ, Research on strategies to stimulate the learning motivation of mathematics undergraduates, Scientific and Technological Vision,2014(25):127.DOI:10.19694

10. Chen HP, Yang FP, Study on the difficulties and teaching countermeasures of mathematical analysis for college students, Journal of Hubei Correspondence University,2014,27(12):119-120.