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Investigating the Rate of Learning Mathematics among High School Students in Herat City

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Abstract: ***Assessing the learning of students in mathematics in the secondary schools of Herat city is a subject that has been selected for the study. Students do not seem to be interested in math. For this purpose, after the theoretical study of books and authoritative scientific sources, the main objective of the study is to find out the factors affecting students' learning and how to make them interested in mathematic courses. It is noteworthy that a series of key and sub-questions have been selected with the above objectives in mind. After collecting statistics and information, the analysis data by Excel program is performed. Qualitative statistics were categorized, the results of which show that the reason for students' lack of interest and lack of learning in mathematical content depends on various factors, using effective and appropriate solutions and suggestions. According to the research, teachers and curriculum staff will be able to provide students with sufficient interest in making a better teaching and learning environment. The results of this study show that to increase the students' interest in t mathematics, especially in high school, a direct relationship to the professionalism of the teacher, knowledge of new methods of teaching mathematics, understanding the differences. Individual students place great emphasis on the applied area of mathematical concepts. In this research, the information obtained by quantitative and qualitative methods contains challenges, which can be solved with perseverance and understanding of responsibility.***

Keywords: learning, math, high school, curriculum, theme

1. Introduction

Afghanistan's education system has suffered extensive damage due to successive wars. These damages and losses have affected the education system of the country in various ways, the negative consequences of which can be the weakness and lack of effective and positive efficiency of educational institutions and education of the country, and it is considered as the biggest social problem. The country knew. Because the evidence shows that the country's education system, as required, in some cases is not able to meet the needs of our students and society. Because high school is a period of preparation for high school and ultimately higher education, and students develop more mentally and intellectually, and they think about their future job and profession in this very important period. They say that it is important to know how much students are learning about math in this course. Students' less interest in mathematics is one of the most worrying issues in the country's education system, which should be given serious attention and its solutions should be sought scientifically because the basis of teaching and learning in any field is people's inner interest in It forms a string or theme. Therefore, the present study was conducted to obtain the learning of students in the field of mathematics in the secondary education of Herat city. Causes and motivations of students 'lack of interest in the subject of mathematics and the existing challenges in this regard were received and scientific and logical solutions have been proposed to the relevant authorities, which we believe will increase students' learning in the subject of mathematics.

It should be said that many studies have been done on this subject in different countries, but in our society, research that can show solutions to solve students' problems and increase their learning power in this regard, unfortunately, has not been done. This research was launched according to the main objectives that focus on receiving students' learning rate in the field of mathematics and the existing problems of educational institutions in this sector. Major problems were received and appropriate and effective solutions have been proposed. Therefore, it can be stated that since the basis of this study is based on the method of scientific research and its focus is to make students interested in the subject of mathematics and the necessary criteria for evaluating the factors have been considered, the results are very valid and it is effective in solving problems in this field. Using the results of this research, if it is accompanied by teachers' innovations, efforts to lead schools and education, and to facilitate physical and mental conditions, we will have more success for students and schools.

2. Problem Statement

Since interest is a basic precondition for teaching and learning any subject, it is of special importance to receive the level of students' interest in the subject of mathematics and the way teachers behave in this regard. Evidence suggests that high school students are less interested in math content, and that poor interest reduces learning power and hinders their academic progress in other subjects, especially science and higher education. Turns, in which mathematics is used. Given the above, this issue has undoubtedly posed a serious challenge to the country's education system, because the lack of interest in a particular subject according to the law of learning (classical conditioning) can be generalized to all similar cases in the long run. Become a big educational dilemma. Consequences such as lack of interest in doing household chores, lack of interest and poor ability to teach scientific subjects, lack of discipline, violence and

aggression in the classroom, apostasy, etc. are some of its consequences.

The importance of research

Generating motivation and creating inner interest and interest is a basic precondition in learning the subject of mathematics because creating inner interest in students causes them to be more active in learning, which creates interest and strength of learning in students in the first step to the teacher. . Because creating students' inner interest and strength in learning and relating the lesson to their daily lives and performance not only makes them interested in the mathematical content but also leads to improving the teacher's efficiency and professional knowledge. Teachers who are responsible for most of the education responsibilities towards students, with a correct understanding of the pedagogical foundations and psychological findings and establishing a positive emotional connection with students, can create a learning force and interest in students. Are.

According to the above, this research can fill the student knowledge gaps in learning mathematics to some extent, and be effective in improving the level of knowledge and better quality of the country's education system. Also, students should understand that mathematics is widely used in all disciplines of science, and without sufficient knowledge of the rules of mathematical knowledge, success in other disciplines will be challenging.

Research goals

This study was launched to receive the level of learning of students related to mathematics in secondary education, so an attempt was made to find the causes of poor learning and lack of interest of students, solutions to create interest in students, and also the challenge. Existing issues and problems facing the implementation of the mathematics curriculum in the secondary education period were examined, the general objectives of which include the following:

1) To find out the students' learning rate in the field of mathematics;
2) To study the reasons for students' lack of interest in mathematical content;
3) To examine the existing challenges in the implementation of the mathematics subject curriculum in the secondary education course, which causes students' learning weakness and lack of interest in the mathematics subject;

Research questions

Key Question (1): What is the reason for students' lack of interest in mathematics?

Sub-questions:

1) Do having negative mentalities about the subject of mathematics cause poor learning and students' lack of interest?
2) To what extent the high school students are able to learn and understand subjects including math curriculum?
3) How effective is having students' inner motivation to learn math content?

Key Question (2): What problems and challenges in adapting the mathematics curriculum of secondary education have caused students' learning weakness and lack of interest in the subject of mathematics?

Sub-questions:

1) Do teachers have the necessary skills to teach math?
2) Are there sufficient educational materials and supplies in teaching mathematics?
3) Are the teachers who teach the subject of mathematics interested in teaching it?

Key Question (3): How can students become more interested in the subject of mathematics?

Sub-questions:

1) Can the use of appropriate encouragement encourage students to be interested in mathematics and strengthen their learning power?
2) Is linking math lessons to students' daily lives effective in enhancing the learning power of math content?
3) Can a positive emotional relationship between teachers make students interested in math?

Research Method

If the purpose of the questions of this research is to study the level of learning of students in the context of mathematics, then in this research, a quantitative and qualitative method is used in a mixed way, so that in this research both the characteristics of teachers in terms of quality and statistics and Figures are used to describe and express the facts (Naderi and SeifNaraghi, 2004).

Method of collecting statistics

According to the conditions and possibilities of researching each research, a special method is used to receive the amount of learning and interest of students in mathematics in secondary schools in Herat based on scientific criteria, observation, questionnaires, and interviews have been used (same work, 2004). . Which is briefly discussed:

A) Questionnaire: In this study, two types of questionnaires were used. Questionnaire for teachers and questionnaires for students. In these questionnaires, open and closed questions were prepared in an understandable way, which contains (16) questions and four options. There are (16) questions in the teachers 'questionnaire and (14) in the students' questionnaire.

B) Interview: Those questions that were thought not to be answered through the questionnaire, information was collected through the interview. The number of interview questions is (10) questions and is included in Appendix (2). During the interview, the participants were given answers and later analyzed.

C) Observation: The observation form was previously prepared by the researcher which was applied in a total of (14) classes (7) classes of males and (7) classes of females. What was observed in this stream is listed in Appendix (3).

Sampling

In this study, considering the statistical community, it was considered necessary to select a part of the research community as an example that has all the features of the statistical community, especially the features that are important in terms of the research topic. In this study, according to the statistical population, simple random sampling was used, which simple random sampling was done using lottery methods or tables of random numbers (Ibid., 2004).

According to the above explanations, there were (50) secondary schools in Herat city, which were selected based on the lottery method of four secondary schools, two male schools, and two female schools. The total number of students in the mentioned high schools is (5312) and the number of their teachers is (42). The researcher uses Cochran's formula through a computer software called sample size calculator (sample size calculator) to determine the sample size, the sample used in this study (367) students and (42) teachers were selected.

Research Limitations

Every scientific research is not free from limitations, which according to the current situation in the society and the prevailing atmosphere in the educational systems of the country, the study of students' learning in secondary schools in Herat was no exception to a series of limitations. In general, these limitations include the following:

1) Lack of cooperation of some teachers and principals to conduct research, especially during housekeeping, questionnaires, and interviews;
2) Dissatisfaction of some teachers with the observation of teaching and their union activities in the classroom;
3) Teachers 'intervention in completing the students' questionnaire for various reasons;
4) Lack of knowledge of SPSS computer programs to analyze the desired statistics and information;

Including research

Since the main objectives and questions of this research were launched to receive the level of learning and interest of high school students in the subject of mathematics in Herat schools, its members are teachers and high school students in Herat considering their gender and educational background. . In this study, the target population was (5312) students and (42) high school teachers.

Research location

The study population in this study was selected from secondary schools in Herat city. There were girls and boys schools. The schools studied in this study are Amir Ali ShirNavai school with (418) students in the eighth district, Goharshad school with (2299) students in the third district, Tajrabawi school with (677) students in the eighth district, and Sultan high School with (1918) students are located in the fifth district of Herat city.

3. Result

Regarding the role of students 'intrinsic motivation in their interest in mathematical content, 71% of 15 teachers believe that students' intrinsic motivations play a significant role in their interest in mathematical content. Also, regarding the role of negative attitudes of people towards the mathematical subject and its effects on students' lack of academic achievement in this subject, 50% of the participants in this study believed that it plays a great role and 28% said that it is somewhat effective. . In another question, the participating professors were asked to what extent illiteracy and limited knowledge of parents in mathematical issues are effective in reducing students' interest in mathematical content, 57% said that up to it is somewhat effective and 21% stated that it is very effective. About the extent to which the teacher's inability to make a connection between math lessons and students 'daily problems reduces students' interest in the math theme, 42% stated that they play a very important role and 35% of the participants They have stated that it is somewhat effective in their lack of interest. Regarding the students 'economic problems and their effect on students' lack of interest, 56% of the professors stated that it is very effective. The active participation of students in teaching and educational activities and its role in creating students' interest in the subject of mathematics was another question that was asked of the teachers participating in this study, who said that 42% answered that it plays a very important role. And 28% acknowledged that it plays a large role. Also, regarding the role of using active teaching methods and their role in creating interest in students in mathematics, 48% of respondents said that they play a very important role. Regarding the use of teaching aids in teaching mathematics and its role in creating interest and strengthening the learning force to students, 64% of respondents stated that they have a great role. Teachers included in the study were asked how interested their students were in doing homework, 42.9% said they were very interested and 42.9% said they were very interested. Are. Regarding the role of providing environmental examples related to the subject of the lesson and its role in motivating the mathematical content, 42% of the participants stated that they have a great role. Creating a positive emotional connection between the teacher and the students and its role in creating interest in the students was another question that was examined in this study, which resulted in 57% of the members of this study believed that they have a great role. Regarding the role of observing individual differences in motivating, 42% stated that they play a large role and another 42% of the respondents stated that they play a role to some extent. In a question, participants in the study were asked how much the low enrollment capacity of higher education institutions and the lack of guidance for a large number of students in education affect their lack of interest in the course, 21% of respondents Donors said it was somewhat effective, and another 21% said it was very effective. Regarding the extent to which the leadership of the ministry and the schools cooperate in solving your problems, 50% of the participants stated that there is some cooperation. Regarding the lack of cooperation of parents with the school, it affects the students' lack of interest, 50% stated that it plays a great role. Finally, to the extent that the math content educational content meets the needs of students and the community, 42% of respondents said it is highly responsive and 35% of respondents said that the content of Mathematical education is partially responsive to the needs of students and the community. Findings obtained from student questionnaires

are analyzed as follows. 69.5% of the students in this study said a lot in response to the question of how much they are interested in the subject of mathematics. The results of this study show that mathematics teachers start new lessons with prior preparation, as 64% of students have confirmed. Regarding the extent to which the parents of the students cooperate in solving the problems of the students' math lesson, 36.9% of the total respondents stated that their parents are very cooperative and 25 % of the participants stated that there is no cooperation from the parents in solving the problems of the math lesson. In terms of comprehensibility of the content of the math lesson, 45% of the students have chosen the option to some extent, which means that the content of the math content is somewhat comprehensible to the students. Students were asked a question to what extent your instructor would use objective examples relevant to your daily life before starting a new lesson to stimulate your interest in the lesson. % of students answered that they use some objective examples, while 25.8% of students said that the teacher does not use any concrete examples. Regarding the extent to which teachers cooperate and guide students in solving math problems, 67.5% of students stated that teachers cooperate a lot in solving their academic problems. In the field of teachers 'patience in answering students' questions, 74% have chosen a very large number of options. In response to a question about the extent to which teachers use tables and charts to better teach mathematics, 32% of students said that teachers use charts to some extent. In terms of the extent to which students' teachers are active

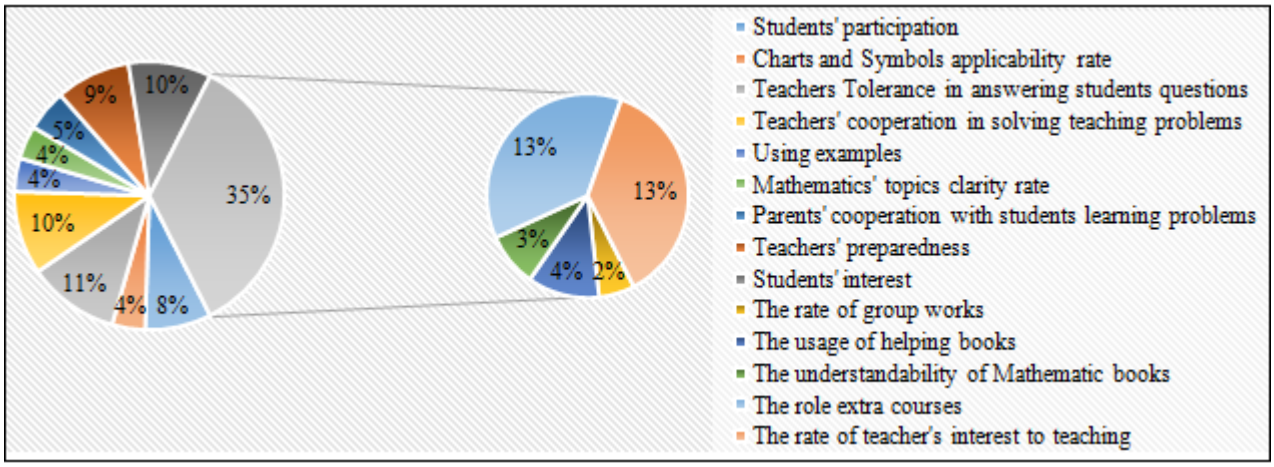

Figure 1: Shows the results obtained from the students' questionnaire

As it can be seen in Figure 2, the results of the present study indicate that students' activities are not recorded anywhere by teachers. 9% of teachers patiently answered students' questions and are equally prepared, and 9% use the question and answer method

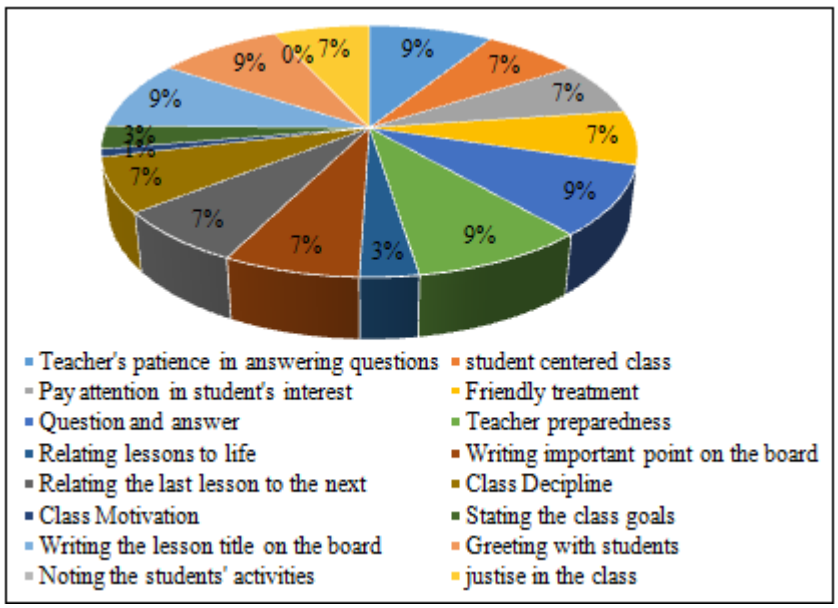

Figure 2: is the results obtained from the observation

The results obtained regarding the problems of adapting the new curriculum and especially the content of mathematics textbooks obtained from the interviewees in this study show that such things as lack of time, incompatibility of textbook content with the level of ability Students' scientific and intellectual's lack of familiarity with teachers, who are the main facilitators of educational programs, has caused students to be less interested in mathematical subjects, in

addition to the volume of mathematics textbooks taking into account the time in Considering one academic year and one class per week, the lack of a textbook for teachers to teach mathematics and the scientific and professional inability of some teachers to teach better are the main problems for adopting and implementing the content of new textbooks. Compiled by the Ministry of Education. Strategies to motivate students to better teach and learn the subject of mathematics was another discussion that was discussed with teachers in this study, the result showed the interviewees, to create interest in strategies such as linking topics and concepts with live ¬ Real students' arrogance, awakening students' inner motivations, using various educational tools and technologies, implementing lesson activities with various teaching methods, strengthening and investing in teachers' professional knowledge, appropriate and kind treatment of students, Seems necessary.

The results of the teachers' questionnaire showed that in creating interest in the mathematical subject, teachers' interest in the subject has a fundamental role that teachers' lack of interest in teaching is another challenge in this regard. The results of the interview made it clear that issues such as the provision of appropriate learning environments in which teachers can launch a variety of educational activities, the cooperation and assistance of teachers by the administration, as well as giving more freedom in the field of education and teaching, Teaching according to the field of study can increase interest. If some of the interviewees complained about teaching mathematics as one of the subjects contrary to the field of study and specialization, serious attention should be paid to the living and economic situation of teachers, so that teachers can have sufficient job satisfaction and they can be motivated enough and without worries. In addition to the results, the interview showed that encouragement and appreciation of qualified teachers by educational leaders and parents of students, holding scientific and educational seminars for teachers to improve the scientific and professional skills of teachers, creating an information reference to solve problems. And the scientific professors, educational guidance, and counseling for teachers, and as a result, creating healthy scientific competition and material and spiritual appreciation of qualified teachers will help a lot in improving the mathematics teaching process. The results of the research with the interviewees in terms of which teaching methods can arouse more students' interest in lessons and educational activities for learning, clarified that active approaches to teaching and teaching practical methods, project, question and answer, Group work has suggested individual performances and methods, in addition to educational materials, educational tools and technology, and better educational opportunities in this regard. The result of the research made it clear that the leadership of the school of strategies such as hiring teachers with higher education, allocating the first hours of mathematics, providing desirable educational opportunities, holding scientific meetings between professors of mathematics, strict supervision of mathematics teachers The elementary course offers communication with parents of students and finally continuous evaluation and monitoring of teachers 'educational functions in the field of mathematics to reduce students' academic problems and help teachers.

Research has shown that there are no teaching materials and tools for better teaching and learning of mathematics that can create sufficient learning power, interest, and motivation in students. Another finding of the interviewees obtained from the interviewees of this study is that math lessons and exercises should start from the lowest and simplest questions and exercises, topics and lesson materials of concepts Begin so that students are familiar with the concepts, continue to define the educational objectives of the lesson clearly and concisely, and finally review the previous lesson and start a new lesson based on it. In the part of students 'learning problems and ways of dealing with it, the interviewees of this research have stated that the roots and causes of students' learning problems should be identified first, and in the second step, according to the causes and roots. The main problems presented were the ways out of the problem. Some of the interviewees also stated that they have a learning problem with the students. And more difficult lessons are repeated.

Research has shown that having a notebook plays an essential role in students' academic achievement. Because, firstly, it engages the students, secondly, it informs the teacher about the students' academic progress, and finally, as a good guide for the teacher's next activities, it determines the strategy. Needless to say, several interviewees believed that notes of student activities did not play a role in their academic progress. Regarding the improvement of the teaching process, the results of the research show that the discipline of students in secondary schools has many benefits and they stated that students who are not talented and not interested in mathematics should not be forced to teach mathematics, but should Those students who are interested in mathematics discussions should be given to mathematics students, as well as received in the scientific and professional strengthening of mathematics teachers by creating a scientific resource and And the organization of scientific and professional seminars, the scientific and professional strength of teachers helps in the successful teaching of mathematics, as well as the interviewees mentioned the solution of teachers' academic and economic problems as one of the ways to improve teaching and learning.

4. Discussion and Conclusion

The main purpose of the present study (to examine the learning rate of high school students in Herat) was to find out the level of learning of students in the subject of mathematics and the reasons for their interest and lack of interest in this topic. It is important to remember that learning is unique, meaning that no one can teach it until their people have learned it. Teachers can forcibly and reluctantly keep students in the classroom, but in no way can they force them into the learning process.

It should be acknowledged that in the field of interest and lack of interest of students in lessons and learning activities in general and the field of mathematics in particular so far in Afghan educational institutions, especially high schools by individuals or research institutions Which research has not been done, this research is one of the most original research in terms of students' interest in learning math.

One of the findings of the present study explained the fact that to strengthen the learning force and create interest in students, the importance and necessity of subjects, especially mathematics, should be explained to students so that they consider the importance and role of science and practice. Which has the theme, to be willing to learn it. If this principle is also stated (Slavin, 2006): To motivate, arouse interest and strengthen the learning force, it is very important to convince students to know that what is to be presented is important and attractive and in If possible, show them the knowledge they are gaining. According to the results of this study, to create interest, strengthen learning and motivation in students to teach more easily and consistently the complex mathematical content and concepts, establishing a positive emotional relationship with students is also very important. As Karimi puts it (one of the challenges in teaching math is the lack of a positive emotional connection between math teachers and students, and as a result, ideas and perspectives emerge). Negative habits in the minds of students and their parents towards mathematics lessons (Karimi, 1389).

The results show that one of the most effective ways to create interest in students to learn mathematics is purposeful, the more clearly stated, defined, and defined educational goals, the more interest. Students become more involved in teaching and learning. Locke and Latham state that an important element related to a person's level of interest and motivation is the goal, and the goal is the result that a person strives to achieve. A person who strives in this direction has a goal-oriented behavior, purposeful behavior, mobility, perseverance, and strategy (Lotfabadi, 2009). Unfortunately, the results of this study indicate that a large number of teachers do not clearly define and articulate educational goals for students.

Creating interest in students to better teach and learn mathematical concepts, which should be strengthened through practical work, direct observations and external projects of the class, their internal motivation, learning power and interest, because mathematics And its concepts are based more on practical activities than on merely a cathartic and theoretical discussion. Shariatmadari also stated: Students are interested inactivity, this interest is not satisfied by observing and listening, but students are interested in using their minds, exploring different things, the opportunity to move And have a movement and their effort leads to the achievement of the goal, learning is still a practical process and its implementation does not take place without activity if the learner does not show any action and activity, certainly nothing Learns (Shariatmadari, 2006).

To attract students' interest in the subjects, it is not necessary to artificially visualize the subjects in the students' eyes but to relate the subjects and subjects to the current issues of students' lives (Shariatmadari, 2006).

Students' inner motivations are especially important for teaching and learning mathematics faster and more solidly. The above fact is shown in the results of this research, this fact is also stated by Slavin as follows: Teachers should increase their motivation and inner interest to learn effectively. The flow of education in the classroom should increase students' intrinsic motivation as much as possible (Slavin, 2006). Seif has also clarified this issue as follows: In addition to external motivations, teachers can also benefit from the internal motivations of learners (Seif, 2005).

One of the most important and basic principles in creating interest and motivation in learners is the meaning of learning. As Isobel in his theory has paid serious attention to this and acknowledged that meaningful learning is the kind of learning in which the learner can relate what he learns to what has been learned, that is if the learner can relate the new to something he has already learned, his learning is meaningful (Seif, 2005). As all the participants of this study have emphasized the meaning and conceptuality of mathematical concepts and have recommended strategies such as studying extracurricular resources to students, the high level of scientific knowledge of mathematics teachers to Making sense of mathematical concepts is considered a principle, as well as the majority of participants, acknowledged that to improve students' interest and motivation in mathematics, serious attention should be paid to primary and secondary school education rather than concepts that In the following periods, it is studied and discussed to be understandable and meaningful.

The members of this study consider the attention to individual differences in the interest and motivation of students to better and faster learn complex mathematical concepts as a principle and emphasize that some have an inner interest and God-given talent in understanding And do not have an analysis of mathematical concepts, given that the psychological research, and especially the scientific research that Howard Gardner has done on the type of intelligence and talents, shows that people have a unique type of talent and intelligence, according to the results of this research and other scientific research In all activities, methods and educational goals, serious attention should be paid to this practical principle. To take into account individual differences, the participants of this study have suggested that students be classified after the end of high school, according to the type of talent and intelligence they have, into social sciences, natural sciences, and mathematics. Be classified and students who have mathematical intelligence and have an inner interest and desire for teaching and learning mathematical concepts to be given to this field, so that students can enter the class and topics of mathematics with interest. As Shariatmadari has explained this principle in his book Educational Educational Psychology, which has been used in the background of this research, he has the following: The desires and interests of different people, each person in school or out of school They need certain things and their interest is in a certain object. Therefore, teachers should always pay attention to students' differences in the field of interests and relate the curriculum to their interests and needs, leading to better and more useful learning (Shariatmadari, 2006).

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