The Impact of Students' Learning Interest on Students' Process Skill in Mathematics

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A R T I C L E   I N F O

A B S T R A K

Keberhasilan pendidikan di suatu negara otomatis juga menunjukkan kemajuan suatu negara. Pada hakikatnya pendidikan itu sendiri adalah usaha sadar untuk mengembangkan kepribadian dan dalam diri seseorang. Sekolah merupakan tempat diselenggarakannya pendidikan untuk tujuan pendidikan nasional. Namun, tidak semua sekolah dapat mencapai tujuan yang diharapkan. Seperti sekolah yang mengutamakan mata pelajaran tertentu. Salah satunya adalah Madrasah Tsanawiyah yang mendominasi mata pelajaran dengan agama. Maka pentingnya penelitian ini bertujuan untuk mengetahui perbedaan dan hubungan antara minat dan keterampilan siswa dalam mempelajari matematika dengan materi ruang sisi datar. Penelitian ini menggunakan metode kuantitatif dengan tipe asosiatif dan komparatif. Teknik pengambilan sampel yang digunakan dalam penelitian ini menggunakan simple random sampling. Dari hasil uji T dan korelasi yang diperoleh diketahui bahwa terdapat perbedaan keterampilan proses dan minat siswa pada materi bangun ruang sisi datar. Hal ini dibuktikan dengan nilai sig (2-tailed) 0,000 < 0,05. Sehingga dapat disimpulkan bahwa minat siswa berpengaruh terhadap keterampilan proses siswa di MTsN (Madrasah Tsanawiyah) dan terdapat hubungan yang signifikan antara minat siswa dengan keterampilan proses pada matematika dengan geometri sisi datar. Terdapat keterbatasan dalam penelitian ini dimana penelitian ini hanya mengukur keterampilan siswa, minat belum diuji dengan variabel lain seperti sikap, motivasi dan lain-lain.

A B S T R A C T

The success of education in a country automatically also shows the progress of a country. In essence, education itself is a conscious effort to develop personality and within oneself. School is a place where education is held for the purpose of national education. However, not all schools can achieve the expected goals. Like a school that has priority on certain subjects. One of them is Madrasah Tsanawiyah which dominates subjects with religion. So the importance of this study aims to determine the differences and the relationship between the interests and skills of students in learning mathematics with flat side space material. This study uses quantitative methods with associative and comparative types. The sampling technique used in this study used simple random sampling. From the results of the T test and the correlation obtained, it was found that there were differences in the process skills and interests of students with regard to the material build flat side space. This is evidenced by the value of sig (2-tailed) 0.000 < 0.05. So can be concluded that student interest affects the process skills of students at MTsN (Madrasah Tsanawiyah) and there is a significant relationship between students' interest and process skills in mathematics with flat-sided geometry. There are limitations in this study where this study only measures students' skills, interests have not been tested with other variables such as attitudes, motivation and others.

1. INTRODUCTION

The success of education in a country automatically also shows the progress of a country. In essence, education itself is a conscious effort to develop personality and within oneself (Astrini et al., 2020; Rochanawati & Efi, 2020; Jalaludin et al., 2019). Through a level process to grow the potential of resources, with the substance of national education goals in social attitudes, knowledge, and skills so that they can form good student characters (Cahya & Artini, 2020; Dwi Rahmani & Alyani, 2020; Mahayani et al., 2021). Education can be interpreted as offering one approach to improving the quality of evidence in education has focused on methods and also concerned about teaching and learning (Cai et al., 2020; Campbell et al., 2017). In education there is an activity called learning. Learning is basically not only learning about concepts, theories and facts, but is more concerned with applications in everyday life (Widowati & Kurniawan, 2021). Learning activities show a progress in students. Students in learning have their own styles that increase student motivation, increase creativity, so that the learning process can explore developments (Novajri et al., 2021; Rienties et al., 2017). In the education variable, performance and strategy are very important learning activities to evaluate (Kurniawan & Kartina, 2021; Alhassan & Chen, 2019; Bruyckere et al., 2017).

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Learning in all fields has the same important factors, even though in the era of mathematics and natural knowledge it is an effort or process to develop a scientific attitude so that it can solve problems in everyday life (Sulistio & Qohar, 2020; Grobler, 2018; Pamungkas et al. , 2017). Learning mathematics with skills can foster a more critical mind and soul. Process skills are a person's skills in using thoughts, reasoning and actions effectively and efficiently (Sumyadi et al., 2020; Elvanisi et al., 2018; Sukmasari & Rosana, 2017). Mathematical sciences and natural sciences have proven successful in developing casual theories that explain important aspects of how the world works (Widiawati & Agustini, 2020; Puspita, 2019; Joffe, 2017). In learning mathematics, one of them is mathematical material that is familiar to students. One of the many materials from mathematics education is the material for building flat sides (Raffaghelli et al., 2018; Nielsen et al., 2018). Learning mathematics is faced with calculations and structures related to mathematics. Mathematics is knowledge that studies quantities, structures, spaces and others (Shi et al., 2020; Wahyudi & Lestari, 2019). In the competence of learning mathematics in order to achieve the objectives of learning if students have an increase in learning achievement (Kurniawan et al., 2021; Hamdani et al., 2017; Manini et al., 2017, 2012).

Interest in learning is a form of feeling, interest or liking for something in the field of learning the consequences of their experiences of influence and value during learning, are captured in the concept of interest. On the other hand, interactions of different levels of context, activity or task-related are still related to interest with course components that influence their feelings of excitement and self-efficacy (Høgheim & Reber, 2019; Habig et al., 2018). Fundamentally students tend to be interested in learning about arithmetic but not as presented in class. Some topics can be measured by a number of validated methods to assess student interest (Kwarikunda et al., 2020; Swirski et al., 2018; Jack & Lin, 2017). Students who have an interest in learning mathematics will try to concentrate on learning. Then the student will continue to study until he can understand the material (Dou et al., 2018; Giglio et al., 2020; Luo et al., 2020).

With process skills in the 21st century, students can more easily know the world from the palm of their hands. The 21st century is referred to as the knowledge century, the challenges in an increasingly dynamic and increasingly advanced knowledge era require human resources (Van Mieghem et al., 2020; Ramadhani, 2017). Technological sophistication that can study material, especially mathematics. Multimedia technology is developing with increasingly rapid science and technology (Sökmen, 2021; Shin & Bolkan, 2021; Nurzaelani et al., 2018). 21st century skills have several features to require students to think critically (Dishon, 2021; Pratiwi & Mustadi, 2021; Rusmono & Alghazali, 2019).

This research is more related to the process skills and interest of the students of MTs 5 Batang Hari, MTs 7 Batang Hari, and MTs 4 Batang Hari towards learning with the material of building flat sides. So this research is very important to do because of the differences in interest and process skills of students in public schools with MTsN (Madrasah Tsanawiyah). With the aim of seeing the importance of the process skills and interests of students, the researchers conducted a trial to determine the differences in student process skills and student interests from the third MTs (Madrasah Tsanawiyah) with flat buildings. The third MTs (Madrasah Tsanawiyah) with material on spatial data structures and can find out statistical descriptions of interest variables and process skills of each MTs (Madrasah Tsanawiyah) in mathematics.

2. METHODS

The method used in this study uses a quantitative type with the type used in the form of associative and comparative. The instrument used in this study was an observation sheet which was distributed to three MTs (Madrasah Tsanawiyah) in Batang Hari. Questionnaires that are used to measure knowledge systematically which have not been validated are often referred to as instructive questionnaires (Lee et al., 2020; Vansteensel, 2017). The grid used in the instrument to observe students' interest in mathematics subjects is presented in Table 1.

Table 1. Grid of Student Interest Observation Instruments in Mathematics Subjects

Variabel	Indicator	Number Statement Items
Students' interest in mathematics	Attention in learning	1,2,3,4
	Student engagement	5,6,7,8,9
	Feeling happy	10,11,12,13,14
	Curiosity	15,16,17,18,19
	Learning materials and teacher attitudes	20,21,22,23,24,25
	Benefits of subjects	26,27,28,28,29,30
Number of Statements		**30**

The grid used in the instrument of observing students' process skills in mathematics subjects is presented in Table 2.

Table 2. Grid of Student Process Skills Observation Instruments in Mathematics Subjects

Variabel	Indicator	Number Statement Items
	Observation	1,2,3
	Communication	4,5,6,7
	Classification	8,9,10,11,12
	Measure	13,14,15
	Conclusion	16,17,18,19
Process skills of students in mathematics	Prediction	20,21,22,23,24
	Arrange tables	25,26,27
	Obtain and process data	28,29,30,31
	Trial analysis	32,33,34,35
	Creating a hypothesis	36,37,38,39
	Designing experiments	40,41,42,43
	Doing Experiments	44,45,46,47
Number of Statements		**47**

In the interest questionnaire that is used to see students' responses to mathematics, a linker scale is used which consists of 5 categories and in the observation of students' process skills which consists of 4 categories. From the variables used there are intervals in each category. The intervals for each category can be seen in Table 3 and Table 4.

Table 3. Categories of Student Interest

categori	Interval Indicator		
	Feeling happy	**Curiosity**	**Learning materials and teacher attitudes**
Very Not Good	5.0 – 9.0	5.0 – 9.0	5.0 – 9.0
Not good	10.0-13.0	10.0-13.0	10.0-13.0
Enough	14.0 – 17.0	14.0 – 17.0	14.0 – 17.0
Good	18.0 -21.0	18.0 -21.0	18.0 -21.0
Very good	22.0 – 25.0	22.0 – 25.0	22.0 – 25.0

The Likert scale used on these variables are; 1 (very bad), 2 (poor), 3 (good enough), 4 (good), 5 (very good) with questions posed to students about interest as many as 30 questions and categories used on student process skills, namely: 1 (very bad), 2 (not good), 3 (good), 4 (very good) with 47 questions posed to students.

Table 4. Categories of Student Process Skills

categori	Interval Indicator		
	Basic		**Integration**
	Communication	**Conclusion**	**Doing Experiments**
Very Not Good	4.0-7.0	4.0-7.0	4.0-7.0
Not good	8.0 -10.0	8.0 -10.0	8.0 -10.0
Good	11.0 -13.0	11.0 -13.0	11.0 -13.0
Very good	14.0 – 16.0	14.0 – 16.0	14.0 – 16.0

The total number of respondents was 216 students. The population is the person who is the subject of research or the characteristics to be studied (Setiawan, 2012). (Tegeh et al., 2020; Banks et al., 2018). The samples used in this study are listed in Table 5.

Table 5. Research Sample

Gender	MTsN 5 Batang hari		MTsN 7 Batang hari		MTsN 4 Batang hari	
	VIII A	**VIII B**	**VIII A**	**VIII B**	**VIII A**	**VIII B**
F	20	20	20	20	20	20
M	16	16	16	16	16	16

Simple random sampling is the technique used in this study. The results of students' answers to the observation of students' interest and process skills were analyzed using descriptive statistics. in the form of mean, median, maximum, minimum. After that determine the normality and homogeneity of a data by using the normality test and homogeneity test. The first step in this test will be analyzed using descriptive statistics of the variables used. After obtaining descriptive statistical results, it is continued with assumption tests starting from normality, homogeneity and linearity tests. Where in the assumption test there is a normality test, a homogeneity test and a linear test. If the data being tested is normally distributed, homogeneous and linear, then it ends with a hypothesis test using T test and correlation test to see comparisons and significant relationships between schools.

3. RESULT AND DISCUSSION

Results

This study used data obtained from class VIII A and V IIIB at MTs 5 Batang Hari, MTs 7 Batang Hari, and MTs 4 Batang Hari. This data was processed using the SPSS application based on the school to determine descriptive statistics, T-test and correlation test to determine differences and relationships between variables.

Descriptive Statistics

The following describes the results of descriptive statistics on the interest and process skills of students in mathematics subjects. With a question indicator on interest: Attention in learning, student involvement, learning materials and teacher attitudes. Question indicators on process skills: Communication, Classification, Conclusions, Making Hypotheses, Conducting Experiments. The descriptions of students' process skills and interest in mathematics at MTsN 5 Batang Hari, MTsN 7 Batang Hari, MTsN 4 Batang Hari is presented in Table 6.

Table 6. Description of process skills and student interests with each indicator used

Category		Indicators	School	Mean Class A	Mean Class B
		Feeling happy	MTsN 5 Batang hari	3.35	3.77
Very Not Good	Interest		MTsN 7 Batang hari	3.50	3.83
			MTsN 4 Batang hari	3.52	3.83
Not good		Curiosity	MTsN 5 Batang hari	3.69	3.66
Enough			MTsN 7 Batang hari	2.86	3.60
Good			MTsN 4 Batang hari	2.86	2.86
Very good		Learning materials and teacher attitudes	MTsN 5 Batang hari	3.69	3.66
			MTsN 7 Batang hari	3.69	3.60
			MTsN 4 Batang hari	2.86	3.60
			MTsN 5 Batang hari	2.90	2.63
Very Not Good	Process skills	Communication	MTsN 7 Batang hari	2.90	2.63
			MTsN 4 Batang hari	2.90	2.63
Not good		Conclusion	MTsN 5 Batang hari	2.58	2.58
Good			MTsN 7 Batang hari	2.50	2.63
Very good			MTsN 4 Batang hari	2.90	2.33
		Doing Experiments	MTsN 5 Batang hari	2.52	2.72
			MTsN 7 Batang hari	2.52	2.72
			MTsN 4 Batang hari	2.52	2.72

From the results obtained, it can be seen that the interest variable with indicators of feeling happy students from class B have a higher interest and among them MTsN 7 Batang Hari and MTsN 4 Batang Hari are superior. In the curiosity indicator, students from MTsN 5 Batang Hari class A have higher interests than other schools. In the indicators of learning materials and teacher attitudes, the students' interest is superior in MTsN 7 Batang Hari and MTsN 4 Batanghari class A. While on the variable process skills students from class A from MTsN 5 Batang Hari, MTsN 7 Batang Hari, MTsN 4 Batang Hari have an advantage in communication. In the conclusion indicator, students who are superior to class A at MTsN 4 Batang Hari and in the indicator conducting experiments, students from class A at MTsN 5 Batang Hari have higher skills than other classes.

Normality test

The data is normally distributed as seen from the significance value, if the significance value is > 0.05. Based on the results of analysis data, can be concluded that the data on student processing skills in MTsN 5 Batang Hari, MTsN 7 Batang Hari, MTsN 4 Batang Hari., with each class VIII A and VIII B. Normal distribution, with the results of the Kolmogorov normality test obtained -smoniv test significance value 0.200 > 0.05. While on the variable of interest, the data in MTsN 5 Batang Hari, MTsN 7 Batang Hari, MTsN 4 Batang Hari with each class VIII A and VIII B. Normal distribution, with the results of the Kolmogorov-Smoniv test normality test, significance value 0.176 > 0.05 and 0.200 >0.05.

Linearitas Test

This test is carried out in order to see a linear relationship between two or more variables. The requirements for this test, if the significance value is > 0.05. The results obtained are shown in table 14 and table 8. Based on table data analysis, it can be concluded that there is a linear relationship between process skills and student interest in MTsN 5 Batang Hari, MTsN 7 Batang Hari, and MTsN 4 Batang Hari. This is evidenced by the obtained, the results of the linearity test obtained is a significance value of deviation from linearity of 0.811 which has met the requirements > 0.05.

Homogeneity Test

This test is carried out to determine whether the x and y data are homogeneous or not. The requirement in this test is that if the significance value is > 0.05, it can be said that the x and y data are homogeneous (same). If the significance value < 0.05 then the data is not homogeneous (not the same). Based on data analysis, can be concluded that the variance of the two variables between process skills and student interest in MTsN 5 Batang Hari, MTsN 7 Batang Hari, MTsN 4 Batang Hari grades VIII A and VIII B is the same or homogeneous with the results obtained from the homogeneity obtained are the significance value based on the mean of 0.199 has met the requirements > 0.05.

T Test

In this test, it is carried out in order to be able to find out the differences in variables on mathematics subjects. The condition in this test is if the significance value is > 0.05, it can be said that the variable has no difference. If the significance value is <0.05, then the variable has a significant difference. From table 10, it was found that there were differences in the process skills and interests of students between MTsN 5 Batanghari, MTsN 7 Batanghari, and MTsN 4 Batanghari with regard to the material build flat side space. This is evidenced by the value of sig (2-tailed) 0.000 < 0.05. In this way, interests and skills have a significant influence on mathematics subjects with flat-sided geometry.

Correlation Test

In this test, it is carried out in order to determine the relationship of variables to mathematics subjects. The conditions in this test if the significance value is > 0.05, it can be said that the variable has no relationship. If the significance value is <0.05, then the variable has a significant relationship. Based on data analysis, it is found that there is a relationship between students' process skills between MTsN 5 Batang Hari, MTsN 7 Batang Hari, and MTsN 4 Batang Hari to the material build flat side space this is proven by the value of sig (2-failed) in accordance with the requirements that have been set.

Discussion

In descriptive statistical testing, the variables used are process skills variables by paying attention to 3 question indicators. From the results of the table that has been mathematically explained, it is found that for communication indicators at MTsN 5 Batang Hari, MTsN 7 Batang Hari, and MTsN 4 Batang Hari have the same process skills. Furthermore, for the indicators for the classification of students at MTsN 5 Batang Hari, MTsN 7 Batang Hari, and MTsN 4 Batang Hari, those who have an interest in mathematics with the material build flat side space are MTsN 4 and MTsN 5 Batanghari. In conducting the experiment, it was found that there were similarities in the superiority of process skills to mathematics lessons with flat-sided geometry. So when viewed from the whole that students who have high learning skills towards learning mathematics with side space construction material are students from MTsN 4 and MTsN 5 Batang Hari.

In descriptive statistical testing with the interest variable, there are 3 question indicators used. From the results obtained that the indicators of student attention in learning, MTsN 4 Batang Hari students have a strong interest in learning mathematics with the material of flat-sided shapes. In the indicator of student involvement, MTsN which has students with high interest is MTsN 7. Where in 7 Batanghari MTsN students are very actively involved in learning mathematics with the material of building flat sides. As for the indicators of learning materials and teacher attitudes, it was found that interest in The students who

are superior in attitude regarding the material of flat side space are the students of MTsN 7 Batang Hari. Thus, from the total number of students at MTsN 7 Batang Hari, they have a high interest in learning mathematics with flat-sided geometrical material. In testing the data before performing the T test, this data is required to perform an assumption test which contains a normality test, linearity test and homogeneity test. In this test, the data used are normally distributed with significant values resulting from the interest and process skills of students. The significance value of student interest was obtained by the Kolmogorov-Smoniv test for normality, the significance value was 0.176 > 0.05 and 0.200 > 0.05. The significance value of the student's process skills was obtained by the Kolmogorov-Smoniv test for normality, the significance value was 0.200 > 0.05. This data is linearly distributed and there is a relationship or homogeneity with the results of the homogeneity obtained which is a significance value based on the mean of 0.199 which has met the requirements > 0.05. From the linearity test, the deviation from linearity significance value of 0.811 has met the requirements > 0.05. Homogeneous with a significance of 0.104 > 0.05 in class A and a significance of 0.550 > 0.05 in class B.

The interest that students have through the indicators used explains that students can show a sense of pleasure when learning mathematics. The emergence of a sense of pleasure that can make students feel happy is a difficult thing to be more fun so that with the feeling of pleasure that is generated will appear the curiosity of students in the lesson. Students will try to understand something that is difficult to understand and make students continue to look for the location of ignorance if students do not understand the lesson. In addition, learning materials and teacher attitudes will affect the pleasure and curiosity of students in learning. If the learning materials and teacher attitudes are shown to pleasant students, they will enjoy learning mathematics more without having to feel pressured. Process skills are an important factor in learning. Process skills possessed by students can make students more active in communicating and interacting with other students. This shows that the skills taught are not just theories of a lesson but students can interact with learning methods to overcome a problem that is created. In addition, the skills make students easier in a lesson being taught so that in learning not only that but also how to apply the form of the material. Therefore, the process skills applied to these students will require students to always conduct experiments and be able to develop the skills possessed by students. After the prerequisite test has been met from the assumption test, the test can be continued with a hypothesis test consisting of a T test only. From the tests carried out, there were significant differences between MTsN 4, MTsN 5, MTsN 7 stems. In this case, it is proven by the value of sig (2-tailed) in accordance with the conditions that have been determined. So, after the correlation test, it was found that at MTsN 4, MTsN 5, MTsN 7 Batang Hari, there was a significant relationship between students' interest and process skills in mathematics lessons with flat-sided geometry. Thus, it is concluded that in MTsN (Madrasah Tsanawiyah) students' interest has an influence on the process skills so that if there are students who are less interested in the material, the skills obtained will also decrease.

This research is in line with previous research on interest. However, previous studies have weaknesses in the variables tested that describe their characteristics and influence on student interest and situational learning techniques in chemistry (Hendrickson, 2021; Høgheim & Reber, 2019; Wirski et al., 2018). That way, the research explains the characteristics of interest and the methods and learning techniques used. Other studies describe interest in making learning interesting and its application, the relationship between motivation and interest, learning physics in high school students in Uganda, and understanding the development of interest and self-efficacy in active learning (Jack & Lin, 2017; Kwarikunda et al., 2020; Dou et al., 2018). So that most of the previous studies explain interest in its characteristics and how the learning techniques used in learning so that there is a lack of variables used in previous studies. This study is similar to previous research on students' process skills. However, previous studies have weaknesses in the variables tested. In previous studies, the evaluation of students' process skills was seen through reflective worksheets in inquiry-based learning, assessment of science inquiry skills, learning models by conducting the learning process in secondary schools (Mutlu, 2020; Stylinski et al., 2020; Labouta et al., 2018). Thus, this study only shows how the process skills of students in secondary schools who use the learning model and process skills have a great influence on students through the learning model.

In this test, researchers have interests and process skills that aim to understand the control, thought processes, motivational attitudes, and psychology faced by students in learning mathematics between Madrasah Tsanawiyah where Madrasah Tsanawiyah schools prioritize religious learning so that students' skills in learning mathematics must be considered. With this test, it can be seen that students' interest in learning has an influence on the psychology they face when starting mathematics subjects. With good interest and process skills, students can develop knowledge and skills about the material of flat shapes. Skills in mathematics can be problems related to everyday life. Thus, a good personality will be formed from each student. Several previous studies have also succeeded in showing confidence in related process skills

in influencing students' interest in learning mathematics. However, the limitations of this study only discuss the influence of students' interest and process skills. This research examines process skills and interests based on indicators, namely: Attention in learning, student interaction, learning materials and teacher attitudes. Indicators of process skills questions: Communication, Classification, Conclusions, Making Hypotheses, conducting Experiments. For this reason, interest has a very big influence on student skills because it can make students have a sense of interest, enthusiasm and encouragement in student learning skills. Thus there is a significant relationship between Madrasah Tsanawiyah 4 days, Madrasah Tsanawiyah 5 days, and Madrasah Tsanawiyah 7 days. So it is permissible to read other research on interests and skills in Madrasah Tsanawiyah.

4. CONCLUSION

From the results of the data obtained that from the T test and the resulting correlation that in MTsN (Madrasah Tsanawiyah) student interest affects the skill process so that if there are students who are less interested in the material then the skills obtained will also decrease in MTsN (Madrasah Tsanawiyah) in Batang Hari so there are There is a significant relationship between students' interest and process skills in mathematics with the material to build a flat side space. Therefore, with the results of descriptive statistics, it can be concluded that the interests of students in MTsN VII and the skills of students in MTsN IV and V have advantages over other MTsN where these skills are owned by the interests of students, making students superior in mathematics subjects, especially with material a flat side room. There are limitations in this study where this study only measures students' skills, interests have not been tested with other variables such as attitudes, motivation and others. And the students tested were students of class VIII MTsN (Madrasah Tsanawiyah) and had not tested other classes regarding the material for building a data room.

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