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Attitude and Interest Junior High School Students: How Difference and Correlation in Science Learning

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Abstract: The purpose of this study was to compare the attitudes and interests of students at SMPN 34 Batanghari and MTsN 5 Batanghari. To find out the relationship between the attitudes and interests of junior high school students towards science subjects on environmental pollution. To find out the relationship between the attitudes and interests of MTs students towards science subjects on environmental pollution. The find out the relationship between the attitudes and interests of MTs students towards science subjects on environmental pollution. The method used in this research is a quantitative method with a comparative type. The results of the description test can be concluded that SMPN 34 Batanghari is superior to MTsN 5 Batanghari. Based on the results of the T test, it can be concluded that there is a comparison between students' attitudes and interests towards environmental pollution material. From the results of the correlation test, there is a relationship between the attitudes and interests of SMPN 34 Batanghari and there is a relationship between the attitudes and interests of SMPN 34 Batanghari and there is a relationship between the attitudes and interests of SMPN 34 Batanghari and there is a relationship between the attitudes and interests of the students of SMPN 34 Batanghari.

Keywords: Education; Science; Attitude; Interest

Introduction

Education is a very important thing in today's modern era. Education is a learning process for students so that they can know, evaluate and apply any knowledge gained. Education is an activity to optimize the development of potential, skills, and personal characteristics of students (Nurhidayatullah & Prodjosantoso, 2018; Oktafiani et al., 2017; Rerung et al., 2017). Education is directed at developing students' potential and skills so that they can be used in living life in society, nation and state (Asrizal et al., 2018; Diani et al., 2018; Elvanisi et al., 2018). Education can be said to be an educator if students particSciencete in learning.

Students have the ability and speed in absorbing learning materials so that more than books are needed to be able to guide students to become active in learning independently (Doğan et al., 2019; Laila, 2019; Moitus et al., 2020). Learning is useful for making students gain insight and learning can be done effectively if teaching materials support learning activities (Nito et al., 2020; Rochman et al., 2017; Sadiqin et al., 2017). One of the learning materials is science material, science learning includes basic concepts, understanding, methods related to natural phenomena (BACHRI, 2015; Prihatini, 2017; Şemin, 2019).

Natural Sciences is one of the subjects that study natural phenomena. Science subjects are one of the subjects whose learning process emphasizes providing direct experience to develop competencies in order to explore and understand the natural surroundings scientifically (Bellová et al., 2018; Hartini et al., 2018; Iswatun et al., 2017). Science as one of the subjects in school, can provide roles and experiences for students. (Camasso & Jagannathan, 2018; Firdaus & Wilujeng, 2018; Pamungkas et al., 2017). Science learning outcomes can also be greatly influenced by the motivation of students. Both internal motivation and external motivation (Adom et al., 2020; Mansouri & Moumine, 2017; Negoro, 2019). In the process of learning science, student interest is very important to encourage students to want to learn.

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Interest in learning is a form of liking or interest in doing a lesson. With the interest in learning students can better understand the learning that he is doing. The consequences of interest in learning can affect the value of learning and students' enthusiasm for learning (Dou et al., 2018; Kwarikunda et al., 2020; Høgheim & Reber, 2019). Broadly speaking, students are more interested in learning sports than mathematics, which only learns in the form of numbers (Habig et al., 2018; Luo et al., 2020; Swirski et al., 2018). However, for students who have an interest in mathematics, they will try to study the material until they can understand the material (Giglio et al., 2020; Jack & Lin, 2017; Hendrickson, 2021). When students have a high interest in learning, the student's attitude towards the lesson will be good.

Attitude is one of the terms in the field of psychology related to perception and behavior (Kurniawan, Astalini, Kurniawan, et al., 2019; Wahyudi & Lestari, 2019; Zarei et al., 2020). Attitude can be defined as the feelings that a person has about an object, his knowledge and beliefs about the object (Jufrida et al., 2019; Kurniawan, Astalini, Darmaji, et al., 2019; Mauliza et al., 2021). The attitude factors include: (1) Social Factors, (2) Direct Instruction, (3) Family, (4) Prejudice, (5) Personal Experience, (6) Media, (7) Educational and Religious Institutions, (8) Physical factors, and (9) Economic and Employment Status (Aithal & Aithal, 2019; Demirtaş & Aksoy, 2016; Kurniawati & Atmojo, 2017).

This study is in line with previous research on student attitudes. However, previous studies only related variables regarding student interest and motivation (Cain, 2020; Luo et al., 2020, Sari & Sarwanto, 2018). So that the previous researchers did not know the differences in the interests of students from various schools as well as the differences and relationships between students' attitudes and interests. In addition, previous research used to test students' attitudes towards science (Hidayati et al., 2017; Jufrida et al., 2019; Kurniawati & Atmojo, 2017). Therefore, the purpose of this study is to compare and relate the attitudes and interests of junior high school students and MTs students towards the science of environmental pollution.

Method

This study uses quantitative associative and comparative research using a questionnaire distribution procedure. The sample in this study were 38 students of SMPN 34 Batanghari and 38 students of MTsN 5 Batanghari. The sampling technique is purvosive sampling. Purposive sampling is a type of sampling in which research more a less handpicks case (Stommel & Wills, 2004). The population is the person who is the subject of research or the characteristics to be studied (Roflin et al., 2021; Tegeh et al., 2020; Banks et al., 2018). The reason for taking this technique is because not all samples have criteria that match the phenomenon being studied. The samples taken were students from grades 8A and 8B in each school, namely SMPN 34 Batanghari and MTsN 5 Batanghari.

Table 1.	Research	Sample	Attitude	and	Interest
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1		
School	Class	Number of Student
SMPN 34 Batanghari	8A	38
C	8B	38
MTsN5 Batanghari	8A	38
0	8B	38

The instrument in this research is process skills. The assessment instrument is one of the most important assessment instruments for attitudes (Purwanti et al., 2020). Research data collection comes from research instruments derived from questionnaires (Cohen et al., 2013). The attitude instrument towards science is in the form of a questionnaire adopted from the research of Astalini and Kurniawan in (2019). There are 56 valid question items and this instrument uses a Likert scale. The scale consists of 5 points with a score of strongly agree that is 5, agree that is 4, quite that is 3, disagree that is 2, and strongly disagree that is 1.

 Table 2. Grid of Student Attitude Questionnaire Instruments on Environmental Pollution Materials (Astalini & Kurniawan, 2019)

Variable	Indication	No. Statement Items				
		(+)	(-)			
Students' attitudes	Social Implications of SCIENCE	1, 14, 27, 39	7, 20, 32,			
towards science	Scientist Normality	8, 21, 33, 46, 54	15, 40, 53			
subjects	Attitude Towards Science	2, 41, 45	9, 22, 34, 47, 55			
	Investigation					
	Adopt Scientific Attitude	3, 26, 28	10, 23, 35, 48			
	Fun in Learning Science	4, 17, 29	11, 24, 36, 42, 49, 56			
	Interest in increasing the time to study science	5, 18, 30	12, 25, 37, 43, 50			
	Interest in a Career in Science	13, 19, 26, 38, 51	6, 31, 44, 52			
Number of Statements		25	31			

Each statement is representative of each attitude indicator. The focus of this research is on 7 dimensions of attitude, namely social implications of science, normality of scientists, attitudes towards science investigations, adoption of scientific attitudes, pleasure in science, interest in increasing science learning time, and interest in a career in science. Furthermore, for the interest instrument in the form of a questionnaire with 30 valid question items and this instrument uses a Likert scale. The Likert scale consists of 5 points with a very good score of 5, good 4, quite 3, not good 2, and very not good 1. For the research questionnaire grid and the categories of variables can be seen in the Table 2.

Table	3.	Categories	of	Students'	Attitudes	towards
Enviro	nm	ental Polluti	on	Materials		

	Indicator Intervals						
Category	Social Implications of Science	Scientist Normality					
Very Not Good	7.0-12.6	8.0-14.4					
Not good	12.7-18.2	14.5-20.8					
Enough	18.3-23.8	20.9-27.2					
Good	23.9-29.4	27.3-33.6					
Very good	29.5-35.0	33.7-40.0					

The Likert scale used in this study are: 1 (very bad), 2 (not good), 3 (enough), 4 (good), 5 (very good) with 56 questions regarding the attitudes of SMP/MTS students towards science on the material. environmental pollution.

Table 4. Grid of Student Interest Questionnaire Instruments on Environmental Pollution Materials

Variable	Indication	No. Statement Items
Students' interest in environmental pollution	Attention in learning	1,2,3,4
material	Student engagement	5,6,7,8,9
	Feeling happy	10,11,12,13,14
	Curiosity	15,16,17,18,19
	Learning Materials and Teacher	20,21,22,23,24,25
	Attitude	
	Benefits of subjects	26,27,28,29,30
Number of Statements		30

Tabel 5. Category of Student Interest in EnvironmentalPollution Materials

		Indicator Intervals			
Category	Attention in learning	Student engagement			
Very Not Good	4.0-7.2	5.0-9.0			
Not good	7.3-10.4	9.1-13.0			
Enough	10.5-13.6	13.1-17.0			
Good	13.7-16.8	17.1-21.0			
Very good	16.8-20.0	21.1-25.0			

The Likert scale used in this study are: 1 (very bad), 2 (not good), 3 (enough), 4 (good), 5 (very good) with 30 questions about the attitude of SMP/MTS students towards science on the material. environmental pollution.

The sampling technique used in this study used simple random sampling. The sampling technique was adopted because it provides unbiased parameter estimates and is better if the population is homogeneous (Bankole & Nasir, 2020; Ning & Tao, 2020; Alhassan & Chen, 2019). Using random sampling can reduce the potential for bias in the selection of cases to be included in the sample. With the condition that random sampling is done because of the homogeneous population, the sampling frame is clear and general in nature.

The results of students' questionnaire answers regarding processing skills were analyzed using descriptive statistics. Descriptive statistics are often

referred to as frequency distributions that provide accurate measurements from the smallest to the largest data (Hartanto & Yuliani, 2019; Khosharay et al., 2018; Al Mutairi, 2018). By using this type of associative research to determine the relationship or type of the variables used. Therefore, differential statistics are used with assumption tests consisting of normality, linearity and homogeneity tests as well as hypothesis testing, namely T test and correlation test. The nomarality test aims to determine whether a data can be said to be normal or not, while the homogeneous test aims to determine whether the data of the two samples is homogeneous or not. Normality test if the result data in the population is normally distributed, the condition is that the sig value is greater than 0.05 (Dehadri & dehdari.2020; Awaludin et al., 2020; Kim et al., 2018). The first step in this research is to determine the normality and homogeneity of a data using normality test and homogeneity test. Normality test and homogeny test if the result data in the population is normally distributed and homogeneous, then the condition is that the sig value is greater than 0.05.

In collecting data in the form of attitude activities carried out using descriptive statistics based on the categories given by the researcher. The data needed in this research were collected and obtained from SMPN 34 Batanghari and MTsN 5 Batanghari. There is also a procedure for collecting data in this research in accordance with the chart in Figure 1.



Figure 1. Step of research

Result and Discussion

Result

The results obtained from school data for SMPN 34 Batanghari and MTsN 5 Batanghari for grades 8A and 8B are as follows.

Descriptive Statistical Test

As for the descriptive attitude of junior high school students and MTs students towards science material environmental pollution on indicators of social implications of science.

Table 6. Descriptive attitudes of jur	nior high school students and MTs students towards science on environmental
pollution on indicators of social imp	plications of science

Student Response	Class	Interval	F	%	Category	Mean	Median	Min	Max
		7.0-12.6	0	0	Very Not Good				
		12.7-18.2	2	5.4	Not good				
	VIII A	18.3-23.8	10	27.0	Enough	3.7838	4.0000	2.00	5.00
		23.9-29.4	19	51.4	Good				
SMPN 34 Batanghari		29.5-35.0	6	16.2	Very good				
Sivil in 54 Datalignali		7.0-12.6	0	0	Very Not Good				
		12.7-18.2	2	5.4	Not good				
	VIII B	18.3-23.8	14	37.8	Enough	3.6216	4.0000	2.00	5.00
		23.9-29.4	17	45.9	Good				
		29.5-35.0	4	10.8	Very good				
		7.0-12.6	0	0.0	Very Not Good		4 0000	2.00	
		12.7-18.2	5	13.5	Not good	3 1865			5.00
	VIII A	18.3-23.8	12	32.4	Enough	5.4005	4.0000	2.00	5.00
		23.9-29.4	17	45.9	Good				
MToNE Potonchari		29.5-35.0	3	8.1	Very good				
WISN 5 Datanghari		7.0-12.6	0	0.0	Very Not Good				
		12.7-18.2	1	2.7	Not good	0 7007	4 0000	2 00	F 00
	VIII B	18.3-23.8	13	35.1	Enough	3.7297	4.0000	2.00	5.00
		23.9-29.4	18	48.6	Good				
		29.5-35.0	5	13.5	Very good				

Table 7. Descriptive attitudes of junior high school students and MTs students towards the science of environmental pollution on the scientist's normality indikator

Student Response	Class	Interval	F	%	Category	Mean	Median	Min	Max
		8.0-14.4	0	0	Very Not Good				
		14.5-20.8	2	5.4	Not good				
	VIII A	20.9-27.2	24	64.9	Enough	3.3243	3.0000	2.00	5.00
		27.3-33.6	8	21.6	Good				
SMDNI 24 Patanahari		33.7-40.0	3	8.1	Very good				
Sivir in 54 Datalighari		8.0-14.4	0	0	Very Not Good				
		14.5-20.8	2	5.4	Not good				
	VIII B	20.9-27.2	18	48.6	Enough	3.4324	3.0000	2.00	5.00
		27.3-33.6	16	43.2	Good				
		33.7-40.0	1	2.7	Very good				
		8.0-14.4	0	0.0	Very Not Good	2 5125	2 0000	2 00	
		14.5-20.8	0	0.0	Not good				5.00
	VIII A	20.9-27.2	19	51.4	Enough	3.5155	5.0000	2.00	5.00
		27.3-33.6	17	45.9	Good				
MTaN 5 Batanghari		33.7-40.0	1	2.7	Very good				
WIISIN 5 Datalignali		8.0-14.4	0	0.0	Very Not Good				
		14.5-20.8	2	5.4	Not good	2 5046	4 0000	2 00	5.00
	VIII B	20.9-27.2	15	40.5	Enough	3.3940	4.0000	2.00	5.00
		27.3-33.6	16	43.2	Good				
		33.7-40.0	4	10.8	Very good				

Table 8. Descriptive interest of junior high so	ool and MTs stud	dents towards science	e material on environmenta
pollution on indicators of attention in learning			

Student Response	Class	Interval	F	%	Category	Mean	Median	Min	Max
		4.0-7.2	0	0	Very Not Good				
		7.3-10.4	3	8.1	Not good				
	VIII A	10.5-13.6	8	21.6	Enough	3.7568	4.0000	2.00	5.00
		13.7-16.8	21	56.8	Good				
CMDNI 24 Patanahari		16.8-20.0	5	13.5	Very good				
SMIPN 54 Datangham		4.0-7.2	0	0	Very Not Good				
		7.3-10.4	3	8.1	Not good		4.0000	2.00	
	VIII B	10.5-13.6	14	37.8	Enough	3.6486			5.00
		13.7-16.8	13	35.1	Good				
		16.8-20.0	7	18.9	Very good				
		4.0-7.2	0	0.0	Very Not Good	2 7020	4.0000	2.00	E 00
		7.3-10.4	3	8.1	Not good				
	VIII A	10.5-13.6	10	27.0	Enough	3.7838			5.00
		13.7-16.8	16	43.2	Good				
MTcN 5 Batanghari		16.8-20.0	8	21.6	Very good				
WISN 5 Dataligham		4.0-7.2	0	0.0	Very Not Good				
		7.3-10.4	1	2.7	Not good	2 7828	4 0000	2.00	5.00
	VIII B	10.5-13.6	15	40.5	Enough	3.7838	4.0000	2.00	5.00
		13.7-16.8	12	32.4	Good				
		16.8-20.0	9	24.3	Very good				

Table 9. Descriptive interest of junior high school students and MTs students towards the science of environmental pollution on indicators of student involvement

Student Response	Class	Interval	F	%	category	Mean	Median	Min	Max
		5.0-9.0	0	0	Very Not Good				
		9.1-13.0	2	5.4	Not good				
	VIII A	13.1-17.0	15	43.2	Enough	3.5946	4.0000	2.00	5.00
		17.1-21.0	16	40.5	Good				
SMPN 34 Batanghari		21.1-25.0	4	10.8	Very good				
Sivil IN 54 Datalighan		5.0-9.0	0	0	Very Not Good				
		9.1-13.0	2	5.4	Not good		3.0000	2.00	
	VIII B	13.1-17.0	19	51.4	Enough	3.4595			5.00
		17.1-21.0	13	35.1	Good				
		21.1-25.0	3	8.1	Very good				
		5.0-9.0	0	0.0	Very Not Good				
		9.1-13.0	1	2.7	Not good	3.6757 4.000	4 0000	2.00	E 00
	VIII A	13.1-17.0	15	40.5	Enough		4.0000		5.00
		17.1-21.0	16	43.2	Good				
MT-NIF Data a shaw		21.1-25.0	5	13.5	Very good				
MISN 5 Batanghari		5.0-9.0	0	0.0	Very Not Good				
		9.1-13.0	0	0.0	Not good	3.6757 4.0000	4 0000	• • • •	F 00
	VIII B	13.1-17.0	16	43.2	Enough		2.00	5.00	
		17.1-21.0	17	45.9	Good				
		21.1-25.0	4	10.8	Very good				

Based on Table 6, the attitudes of junior high school students and MTs students towards science material on environmental pollution on the indicators of social implications of science, it was found that on average, junior high school and MTs students chose the sufficient and good categories. Furthermore, the attitudes of junior high school students and MTs students towards the science of environmental pollution on the scientist's normality indicator.

Based on Table 7, the attitudes of junior high school students and MTs students towards the science of

environmental pollution on the scientists' normality indicator, it was found that on average, junior high school and MTs students chose the category enough and good. However, for SMPN 34 Batanghari students, on average, they choose the sufficient category. Furthermore, the interest of junior high school students and MTs students towards the science of environmental pollution is an indicator of attention in learning.

Based on Table 8, the interest of junior high school students and MTs students towards the science of Environmental Pollution on the indicators of attention in learning, it was found that the average junior high school and MTs students chose the sufficient and good categories. But not a few junior high school students and MTs students chose the very good category. Furthermore, the interest of junior high school students and MTs students towards the science of Environmental Pollution material on the indicators of student involvement.

Based on Table 9, the interest of junior high school students and MTs students towards the science of Environmental Pollution material on the indicators of student involvement, it was found that the average junior high school and MTs students chose the sufficient and good categories. But not a few junior high school students and MTs students chose the very good category.

Next, test the normality of junior high school students and MTs students on the science of environmental pollution.

Normality Test

The data is normally distributed as seen from the significance value, if the significance value is > 0.05. The normality test of the attitudes of junior high school students and MTs students towards the science of environmental pollution is described in Table 10.

Based on the results of table 10, the normality test was obtained with the Kolmogorov-Smoniv test with a significance value > 0.05, it can be concluded that the data is normally distributed.

Table 10. Normality Test of Attitudes and Interests of Junior High School students and MTs students on the science of environmental pollution

belence of environmental pollation							
Variable	School Name	Ν	Statistics	Sig.			
Attitude	SMPN 34 Batanghari	38	0.978	0.675			
	MTsN 5 Batanghari	38	0.942	0.753			
Attitude	SMPN 34 Batanghari	38	0.941	0.668			
	MTsN 5 Batanghari	38	0.983	0.724			

Next, test the homogeneity of the attitudes of SMP and MTs students to the science of environmental pollution.

Homogeneity Test

This test is carried out in order to find out whether the x and y data are homohen 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 is < 0.05 then the data is not homogeneous (not the same). The homogeneity test of the attitudes of junior high school students and MTs students towards the science of environmental pollution is described in Table 11.

Table 11. Test of homogeneity of attitudes of junior high school students and MTs students towards the science of environmental pollution

Variable	School Name	Ν	F	Sig.
Attitude	SMPN 34 Batanghari	38	0.128	0.751
	MTsN 5 Batanghari	38	0.098	0.453
Attitude	SMPN 34 Batanghari	38	0.162	0.792
	MTsN 5 Batanghari	38	0.141	0.763

Based on Table 11 obtained, the results of the homogeneity test obtained are a significance value of 0.751 for junior high school students and 0.453 for MTs students for attitude variables and 0.792 for junior high school students and 0.763 for MTs students on interest variables have met the requirements> 0.05, it can be concluded that the two variables are homogeneous. Furthermore, the linearity test of the attitudes of junior high school students and MTs students towards science material about environmental pollution.

Linearity 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 linearity test of the attitudes of junior high school and MTs students towards the science of environmental pollution is described as shown in the following Table 12

Table 12. Linea	rity test of the att	itudes of junior high
school students a	and MTs students t	towards the science of
environmental p	ollution	

Variable	School Name	Ν	F	Sig.
Attitudo	SMPN 34 Batanghari	38	1.578	0.241
Attitude	MTsN 5 Batanghari	38	1.051	0.379
Attitude	SMPN 34 Batanghari	38	1.486	0.284
	MTsN 5 Batanghari	38	1.184	0.315

Based on table 12, the results of the linearity test obtained are a significance value of 0.241 for junior high school students and 0.379 for MTs students on the attitude variable and 0.284 for junior high school students and 0.315 for MTs students on the interest variable has met the requirements > 0.05, it can be concluded that there are there is a linear relationship between the attitudes of junior high school students and MTs students towards the science of environmental pollution. Furthermore, the T-test of the attitudes of junior high school students and MTs students towards the science of environmental pollution.

T Hypothesis Test

In this test, it is done in order to know the difference between the variables on the multiplication of fractions material. The conditions in this test are if the significance value is < 0.05, it can be said that these variables have differences. If the significance value is > 0.05, then the variable does not have a significant difference. The results obtained are shown in the Table 13.

Table 13. T-test of the attitudes of junior high school students and MTs students towards the science of environmental pollution

Class	Ν	Mean	Sig.	Sig. (2- tailed)
SMPN 34 Batanghari MTsN 5 Batanghari	76	131.5 128.12	0.916	0.012

From the data on Table 13, it can be seen that there is a difference between the attitudes of junior high school students and MTs students towards the science of environmental pollution. This is evidenced by the value of Sig. (2-tailed) < 0.05. Furthermore, the T-test of the interest of junior high school students and MTs students towards the Science of Environmental Pollution material.

From the data (Table 14), it can be seen that there is a difference between the attitudes of junior high school students and MTs students towards the science of environmental pollution. This is evidenced by the value of Sig. (2-tailed) < 0.05.

Table 14. T-test of the interest of junior high school students and MTs students towards the science of environmental pollution

Class	Ν	Mean	Sig.	Sig. (2- tailed)
SMPN 34 Batanghari MTsN 5 Batanghari	76	120.14 121.37	0.742	0.006

The next step is to test the correlation between attitudes and interests of SMPN 34 Batanghari students towards the science of environmental pollution.

Correlation Test

In this test, it is carried out in order to determine the relationship of variables to the material of multiplication of fractions. 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. The results obtained are shown in the table.

Table 15. Correlation test of attitudes and interests of SMPN 34 Batanghari students towards the science of environmental pollution

SMPN 34	N	Pearson	Sig. (2-
Batanghari		Correlation	tailed)
Attitude Interest	76	0.624	0.006

From the data above, it can be seen that there is a relationship between attitudes and interests of SMP 34 Batanghari students. This is evidenced by the value of sig (2-tailed) < 0.05.

Next, test the correlation between attitudes and interests of MTsN 5 Batanghari students.

Table 16. Correlation test of attitudes and interests of MTsN 5 Batanghari students towards the science of environmental pollution

MTsN 5	Ν	Pearson	Sig. (2-
Batanghari		Correlation	tailed)
Attitude Interest	76	0.784	0.003

From the data above, it can be seen that there is a relationship between attitudes and interests of MTsN 5 Batanghari students. This is evidenced by the value of sig (2-tailed) < 0.05.

Discussion

Research on students' attitudes and interests towards the science of environmental pollution was carried out in class 8A and class 8B in two schools, namely SMPN 34 Batanghari and MTsN 5 Batanghari with 38 students in each class. The purpose of this study was to determine the relationship and differences in attitudes and interests of junior high school students and MTs students towards the science of environmental pollution. In this study, the researchers distributed a questionnaire on the attitudes and interests of students towards the science of environmental pollution with several indicators.

Descriptive statistics is one type of statistic that processes statistical analysis more towards data management, presentation, and classification. In this way, the processed data will become more interesting and easier to understand. In this study, researchers took two indicators of attitude and two indicators of student interest in the science of environmental pollution. To see the results of descriptive statistical tests for grades 8A and 8B at SMPN 34 Batanghari and MTsN 5 Batanghari. In the first indicator of attitudes regarding the social implications of science, it was found that the percentage students' attitudes towards science of about environmental pollution in all dominant classes was in the good category with the percentage for SMPN 34 class 8A 51.4%, and class 8B 45.9%, for MTsN 5 class 8A 45.9%, and class 8B 48.6%. In the second indicator of attitudes regarding the normality of scientists, it was found that the percentage of students' attitudes towards science on environmental pollution in all dominant classes except for class 8B MTsN 5 was in good category with percentages for SMPN 34 class 8A 64.9% and class 8B 48.6%, for MTsN 5 class 8A 51.4% and class 8B 43.2% good.

Furthermore, in the first indicator of interest in attention to learning, it was found that the percentage of students' interest in the science of environmental pollution in all dominant classes in the sufficient and good category with the percentage for SMPN 34 class 8A 56.8% good, and class 8B 37.8% quite , for MTsN 5 class 8A 43.2% is good and class 8B 40.5% is sufficient. In the second indicator of interest in student involvement, it was found that the percentage of students' interest in the science of environmental pollution at SMPN 34 was dominant in the sufficient category, while for MTsN 5 the dominant category was good with the percentage of SMPN 34 class 8A 43.2% sufficient and class 8B 51.4% sufficient. , for MTsN 5 class 8A 43.2% good and class 8B 45.9% good.

After conducting a descriptive test, the researcher also tested assumptions in the form of normality test, homogeneity test, and linearity test. In the normality test, seen from the table of students' attitudes and interests in the science of environmental pollution, it can be concluded that the distribution is normal, seen from the value of sig > 0.05. For the homogeneity test and linearity test, it can be seen from the data that students' attitudes and interests in the science of environmental pollution material can be concluded that the data is homogeneous and there is a linear relationship between students' attitudes and interests as seen from the value of sig > 0.05%. In testing the hypothesis, the researcher conducted a T test and a correlation test. Based on the T test, it can be seen that there are differences in the attitudes of SMP students and MTs students, this is evident from the value of sig (2-tailed) > 0.05%. Based on the T-test, it can be seen that there are differences in the interests of junior high school students and MTs students, this is evident from the sig (2-tailed) value > 0.05%. And finally the results of the correlation test can be seen that there is a relationship between the attitudes and interests of junior high school students and MTs students towards the science of environmental pollution. This is evident from the value of sig (2-tailed) < 0.05%

This research is in line with previous research on student attitudes. However, previous studies only related variables regarding student interest and motivation (Cain, 2020; Luo et al., 2020, Sari & Sarwanto, 2018). So that the previous researchers did not know the differences in the interests of students from various schools as well as the differences and relationships between students' attitudes and interests. In addition, previous research used to test students' attitudes towards science (Hidayati et al., 2017; Jufrida et al., 2019; Kurniawati & Atmojo, 2017). So that many variables carried out by other studies have not entered the stage of environmental pollution material studied by junior high school students and MTs students. In this study, the researchers chose the attitudes and interests of students which aimed to understand the control, thought processes, motivational attitudes, and psychology faced by junior high school and MTs students in studying environmental pollution material. By testing this, it can be seen that the attitudes and interests of students have an influence on the development of student learning in science subjects. With good attitudes and interests, students can develop knowledge and skills regarding environmental pollution materials. Attitudes and interests can evaluate problems related to science subjects. In this way, good attitudes and interests are formed from each student.

Conclusion

Based on the results of research testing and data analysis, the conclusions of this study were 152 students from 2 schools, namely SMPN 34 Batanghari, and MTsN 5 Batanghari, with a total of 76 students in each school. With the results obtained, there is a comparison between each school in each indicator, it is obtained that students' attitudes towards environmental pollution material are categorized as moderate to good for each school, for the variable of student interest in environmental pollution material, each indicator is categorized as moderate to good. From the data generated in the test, it was found that the attitude and interest variables of students had a significant difference in the process skills of students between schools with evidence of sig (2-tailent) values > 0.05 and there was a correlation between junior high school students and MTs students with attitude variables. and interest with evidenced by the value of sig (2-tailent) < 0.05.

References

- Adom, D., Mensah, J. A., & Dake, D. A. (2020). Test, measurement, and evaluation: Understanding and use of the concepts in education. *International Journal of Evaluation and Research in Education*, 9(1), 109–119. https://doi.org/10.11591/ijere.v9i1.20457
- Aithal, P. S., & Aithal, S. (2019). A New Attitude-Behaviour (AB) Theory for Organizational Leadership. International Journal of Management, Technology, and Social Sciences, 83–97. https://doi.org/10.47992/ijmts.2581.6012.0063
- Al Mutairi, A. O. (2018). The descriptive statistics for the generalized power function distribution. *Journal of Statistics and Management Systems*, 21(5), 775–785. https://doi.org/10.1080/09720510.2018.1453680
- Asrizal, Amran, A., Ananda, A., Festiyed, F., & Sumarmin, R. (2018). The development of integrated science instructional materials to improve students' digital literacy in scientific

approach. Jurnal Pendidikan IPA Indonesia, 7(4), 442–450. https://doi.org/10.15294/jpii.v7i4.13613

- Awaludin, A., Wibawa, B., & Winarsih, M. (2020). Integral Calculus Learning Using Problem Based Learning Model Assisted by Hypermedia-Based E-Book. JPI (Jurnal Pendidikan Indonesia), 9(2), 224-235. DOI: https://doi.org/10.23887/jpiundiksha.v9i2.23106
- Bachri, S. (2015). Upaya Meningkatkan Hasil Belajar Ilmu Pengetahuan Alam (Ipa) Dengan Metode Pembelajaran Two Stay Two Stray (TSTS). *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 5(2), 246–252. https://doi.org/10.30998/formatif.v5i2.330
- Bankole, Q. A., & Nasir, Z. (2020). Empirical Analysis of Undergraduate Students' Perception in the Use of Electronic Sources in Kwara State University Library. *International Information and Library Review*, 53(2), 131–141.

https://doi.org/10.1080/10572317.2020.1805274

Banks, H. T., Flores, K. B., Langlois, C. R., Serio, T. R., & Sindi, S. S. (2018). Estimating the rate of prion aggregate amplification in yeast with a generation and structured population model. *Inverse Problems in Science and Engineering*, 26(2), 257–279. https://doi.org/10.1080/17415977.2017.1316498.

Bellová, R., Melicherčíková, D., & Tomčík, P. (2018). Possible reasons for low scientific literacy of Slovak students in some natural science subjects. *Research in Science and Technological Education*, 36(2), 226–242. https://doi.org/10.1080/02635143.2017.1367656

- Cain, J. P. (2020). A qualitative study on the effect of podcasting strategies (studycasts) to support 7th grade student motivation and learning outcomes. *Middle School Journal*, 51(3), 19–25. https://doi.org/10.1080/00940771.2020.1735867
- Camasso, M. J., & Jagannathan, R. (2018). Nurture thru Nature: Creating natural science identities in populations of disadvantaged children through community education partnership. *Journal of Environmental Education*, 49(1), 30–42. https://doi.org/10.1080/00958964.2017.1357524
- Cohen, L., Manion, L., & Morrison, K. (2013). Research methods in education. Routledge.
- Creswell, J. W. (2002). Educational research: Planning, conducting, and evaluating quantitative. Prentice Hall Upper Saddle River, NJ.
- Diani, R., Hartati, N. S., & Email, C. A. (2018). Flipbook berbasis literasi Islam: Pengembangan media pembelajaran fisika dengan 3D pageflip professional Flipbook based on Islamic literacy: The development of physics learning media using 3D pageflip professional. 4(2), 234–244.
- Doğan, Y. B., Akar, H., & Üstüner, M. (2019). Examining the measurement invariance of the teachers' sense of self-efficacy scale in terms of gender. *International Journal of Evaluation and Research in Education*, 8(2),

213-220. https://doi.org/10.11591/ijere.v8i2.18694

- Dou, R., Brewe, E., Potvin, G., Zwolak, J. P., & Hazari, Z. (2018). Understanding the development of interest and self-efficacy in active-learning undergraduate physics courses. *International Journal of Science Education*, 40(13), 1587–1605. https://doi.org/10.1080/09500693.2018.1488088
- Elvanisi, A., Hidayat, S., & Fadillah, E. N. (2018). Analisis keterampilan proses sains siswa sekolah menengah atas Skills analysis of science process of high school students. *Jurnal Inovasi Pendidikan IPA*, 4(20), 245–252. https://journal.uny.ac.id/index.php/jipi/article/ view/21426/12225
- Firdaus, M., & Wilujeng, I. (2018). Pengembangan LKPD inkuiri terbimbing untuk meningkatkan keterampilan berpikir kritis dan hasil belajar peserta didik Developing students worksheet on guided inquiry to improve critical thinking skills and learning outcomes of students. *Jurnal Inovasi Pendidikan IPA*, 4(1), 26-40. http://journal.uny.ac.id/index.php/jipi
- Giglio, S., Bertacchini, F., Bilotta, E., & Pantano, P. (2020). Machine learning and points of interest: typical tourist Italian cities. *Current Issues in Tourism*, 23(13), 1646–1658. https://doi.org/10.1080/12(82500.2010.1(27827))

https://doi.org/10.1080/13683500.2019.1637827

- Habig, S., Blankenburg, J., van Vorst, H., Fechner, S., Parchmann, I., & Sumfleth, E. (2018). Context characteristics and their effects on students' situational interest in chemistry. *International Journal of Science Education*, 40(10), 1154–1175. https://doi.org/10.1080/09500693.2018.1470349
- Hartini, S., Firdausi, S., Misbah, & Sulaeman, N. F. (2018). The development of physics teaching materials based on local wisdom to train Saraba Kawa characters. *Jurnal Pendidikan IPA Indonesia*, 7(2), 130–137. https://doi.org/10.15294/jpii.v7i2.14249
- Hendrickson, P. (2021). Effect of Active Learning Techniques on Student Excitement, Interest, and Self-Efficacy. *Journal of Political Science Education*, 17(2), 311–325.

https://doi.org/10.1080/15512169.2019.1629946

- Høgheim, S., & Reber, R. (2019). Interesting, but Less Interested: Gender Differences and Similarities in Mathematics Interest. *Scandinavian Journal of Educational Research*, 63(2), 285–299. https://doi.org/10.1080/00313831.2017.1336482.
- Iswatun, I., Mosik, M., & Subali, B. (2017). Penerapan model pembelajaran inkuiri terbimbing untuk meningkatkan KPS dan hasil belajar siswa SMP kelas VIII. *Jurnal Inovasi Pendidikan IPA*, 3(2), 150. https://doi.org/10.21831/jipi.v3i2.14871
- Jack, B. M., & Lin, H. shyang. (2017). Making learning interesting and its application to the science

classroom. Studies in Science Education, 53(2), 137–164.

https://doi.org/10.1080/03057267.2017.1305543

- Jufrida, J., Kurniawan, W., Astalini, A., Darmaji, D., Kurniawan, D. A., & Maya, W. A. (2019). Students' attitude and motivation in mathematical physics. *International Journal of Evaluation and Research in Education*, 8(3), 401–408. https://doi.org/10.11591/ijere.v8i3.20253
- Kim, B., Park, S., Kim, K., Lim, J., & Nahm, K. (2018). Systematic process to determine DNBR limit of CHF correlation with repetitive cross-validation technique. *Journal of Nuclear Science and Technology*, 55(9), 1034-1042. https://doi.org/10.1080/00223131.2018.1467287
- Kurniawan, D. A., Astalini, A., Darmaji, D., & Melsayanti, R. (2019). Students' attitude towards natural sciences. *International Journal of Evaluation* and Research in Education, 8(3), 455–460. https://doi.org/10.11591/ijere.v8i3.16395
- Kurniawan, D. A., Astalini, A., Kurniawan, N., & Pathoni, H. (2019). Analisis korelasi sikap siswa dan disiplin siswa terhadap IPA pada Siswa SMP Provinsi Jambi. Jurnal Pendidikan Fisika Dan Keilmuan (JPFK), 5(2), 59.https://doi.org/10.25273/jpfk.v5i2.5014
- Kurniawati, W., & Atmojo, S. E. (2017). Pembelajaran Sains Bermuatan Karakter Ilmiah Dengan Alat Peraga Barang Bekas Dan Asesmen Kinerja. JPI (Jurnal Pendidikan Indonesia), 6(1), 49–59. https://doi.org/10.23887/jpi-undiksha.v6i1.8866
- Kwarikunda, D., Schiefele, U., Ssenyonga, J., & Muwonge, C. M. (2020). The Relationship between Motivation for, and Interest in, Learning Physics among Lower Secondary School Students in Uganda. African Journal of Research in Mathematics, Science and Technology Education, 24(3), 435–446. https://doi.org/10.1080/18117295.2020.1841961
- Laila, P. (2019). Pengembangan modul berbasis keterampilan proses sains sebagai bahan ajar dalam pembelajaran biologi Module development based on science process skills as teaching materials in biological learning. *Jurnal Inovasi Pendidikan IPA*, 5(1), 79–87.
- Luo, Z., Jingying, C., Guangshuai, W., & Mengyi, L. (2020). A three-dimensional model of student interest during learning using multimodal fusion with natural sensing technology. *Interactive Learning Environments*, 0(0), 1–14. https://doi.org/10.1080/10494820.2019.1710852
- Mansouri, Z., & Moumine, M. E. A. (2017). Primary and Secondary Education in Morocco: From Access to School into Generalization to Dropout. *International Journal of Evaluation and Research in Education* (*IJERE*), 6(1), 9. https://doi.org/10.11591/ijere.v6i1.6341

Mauliza, N., Hasby, & Program. (2021). Analisis Integrasi Nilai Karakter Peduli Lingkungan dan Tanggung Jawab dalam Buku Ajar Kimia SMA. *Jurnal Pendidikan Sains Indonesia*, 9(2), 181-190. https://doi.org/10.24815/jpsi.v9i2.18332

Moitus, S., Weimer, L., & Välimaa, J. (2020). Flexible learning pathways in higher education.. Retrieved from

https://www.researchgate.net/profile/Leasa-Weimer/publication/348910280_Flexible_learning _pathways_in_higher_education_Finland's_countr y_case_study_for_the_IIEP-

UNESCO_SDG4_project_in_2018-

2021/links/6015c3e1a6fdcc071ba4d8c0/Flexiblelearning-pathways-in-higher-education-Finlandscountry-case-study-for-the-IIEP-UNESCO-SDG4project-in-2018-2021.pdf

- Negoro, R. A. (2019). Upaya Membangun Keterampilan Proses Sains Melalui Pembelajaran Inkuiri Berbantuan Alat Peraga Gaya Sentripetal. *Jurnal Pendidikan Fisika Dan Keilmuan (JPFK), 5*(1), 45. https://doi.org/10.25273/jpfk.v5i1.3323
- Ning, J., & Tao, H. (2020). Randomized quasi-random sampling/importance resampling. *Communications in Statistics: Simulation and Computation,* 49(12), 3367–3379.

https://doi.org/10.1080/03610918.2018.1547398

- Nito, P. J. B., Manto, O. A. D., & Wulandari, D. (2020). Pengaruh Program Mentoring Terhadap Peningkatan Kemampuan Berpikir Kritis Penggunaan Standardized Nursing Language Mahasiswa Keperawatan sebagai Metode Pembelajaran. Dinamika Kesehatan: Jurnal Kebidanan Dan Keperawatan, 11(2), 462-472. Retrieved from https://ojs.dinamikakesehatan.unism.ac.id/index. php/dksm/article/download/628/498
- Nurhidayatullah, N., & Prodjosantoso, A. K. (2018). Miskonsepsi materi larutan penyangga. *Jurnal Inovasi Pendidikan IPA*, 4(1), 41–51. https://doi.org/10.21831/jipi.v4i1.10029
- Oktafiani, P., Subali, B., & Edie, S. S. (2017). Pengembangan alat peraga kit optik serbaguna (AP-KOS) untuk meningkatkan keterampilan proses sains. *Jurnal Inovasi Pendidikan IPA*, 3(2), 189. https://doi.org/10.21831/jipi.v3i2.14496
- Pamungkas, A., Subali, B., & Linuwih, S. (2017). Implementasi model pembelajaran IPA berbasis kearifan lokal untuk meningkatkan kreativitas dan hasil belajar siswa. Jurnal Inovasi Pendidikan IPA, 3(2), 118. https://doi.org/10.21831/jipi.v3i2.14562
- Prihatini, E. (2017). Pengaruh Metode Pembelajaran dan Minat Belajar Terhadap Hasil Belajar IPA. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 7(2), 171–179. https://doi.org/10.30998/formatif.v7i2.1831
- Rerung, N., Sinon, I. L. S., & Widyaningsih, S. W. (2017). Penerapan Model Pembelajaran Problem Based

Learning (Pbl) Untuk Meningkatkan Hasil Belajar Peserta Didik Sma Pada Materi Usaha Dan Energi. *Jurnal Ilmiah Pendidikan Fisika Al-BiRuNi*, 6(1), 47– 55. https://doi.org/10.33578/jpfkip.v7i1.5338

- Purwanti, E., Palupi, R. Z. P., Galuh, A., & Rianingsih, D. (2020). Pengembangan Instrumen Penilaian Keterampilan Abad 21.
- Rochman, C., Nasrudin, D., Muslim, & Hermita, N. (2017). Characteristics of the ability of physics concept in enrichment teaching materials of natural and mineral resources (NMRs) literacy. Jurnal Pendidikan IPA Indonesia, 6(2), 252–256. https://doi.org/10.15294/jpii.v6i2.9482
- Sadiqin, I. K., Santoso, U. T., & Sholahuddin, A. (2017). Pemahaman konsep IPA siswa SMP melalui pembelajaran problem solving pada topik perubahan benda-benda di sekitar kita. Jurnal Inovasi Pendidikan IPA, 3(1), 52. https://doi.org/10.21831/jipi.v3i1.12554
- Sari, N., & Sarwanto. (2018). The Analysis of Student Learning Motivation On Physics Learning in Senior Secondary School. Jurnal Pendidikan Dan Kebudayaan, 3(1), 17–32. https://doi.org/10.24832/jpnk.v3i1.591
- Şemin, F. K. (2019). Competencies of principals in ensuring sustainable education: Teachers' views. International Journal of Evaluation and Research in Education, 8(2), 201–212. https://doi.org/10.11591/ijere.v8i2.18273
- Stommel, M., & Willis, C. (2004). *Clinical Research, Concepts and Principles for Advanced Practice Nurses.* Philadelphia : LIPPINCOTT WILLIAMS
- Swirski, H., Baram-Tsabari, A., & Yarden, A. (2018). Does interest have an expiration date? An analysis of students' questions as resources for contextbased learning. *International Journal of Science Education*, 40(10), 1136–1153. https://doi.org/10.1080/09500693.2018.1470348
- Tegeh, I. M., Parwata, I. G. L. A., & Ostaviani, B. G. (2020). The Observing Learning Activity Assisted by Concrete Media Improves Student's Conceptual Knowledge. JPI (Jurnal Pendidikan Indonesia), 9(2), 182. https://doi.org/10.23887/jpiundiksha.v9i2.25206
- Wahyudi, W., & Lestari, I. (2019). Pengaruh Modul Praktikum Optika Berbasis Inkuiri Terhadap Keterampilan Proses Sains dan Sikap Ilmiah Mahasiswa. Jurnal Pendidikan Fisika Dan Keilmuan (JPFK), 5(1), 33. https://doi.org/10.25273/jpfk.v5i1.3317
- Zarei, M., Ahour, T., & Seifoori, Z. (2020). Impacts of implicit, explicit, and emergent feedback strategies on EFL learners' motivation, attitude and perception. *Cogent Education*, 7(1). https://doi.org/10.1080/2331186X.2020.1727130