

ATTITUDES TOWARDS NATURAL SCIENCE: COMPARISON OF STUDENT ATTITUDES IN JUNIOR HIGH SCHOOLS IN MUARO JAMBI DISTRICT

Retni Sulistioning Budiarti¹, Nirmala Sari^{2*}, Orin Hidayusa Wiza³, Yolanda Eka Putri⁴

¹Biology Education, Faculty of Teaching and Education, Universitas Jambi, Indonesia, ^{2,3,4}Physics Education, Faculty of Teaching and Education, Universitas Jambi, Indonesia.

Email: *Nirmalasari311998@gmail.com

Article History: Received on 20th November 2019, Revised on 28th March 2020, Published on 12th April 2020

Abstract

Purpose of the study: This research was conducted to review the comparison of students' attitudes towards science subjects through 3 indicators, namely the social implications of science, attitudes towards investigation and career interests in the field of science sourced from TOSRA.

Methodology: The research design used is quantitative with the type of survey research. The research subjects were 1075 students. The instrument used in the form of a questionnaire attitude towards science subjects. The analysis technique used is descriptive statistics and inferential statistics in the form of one way ANOVA test.

Main Findings: Students at Junior High School 26 Muaro Jambi were dominant in the indicators of social implications with a percentage of 66.9% (103 out of 154 students) with a good category, while Junior High School 6 Muaro Jambi was dominant in the social implication indicators with a percentage of 51.5% (313 out of 608 students) with a sufficient category, and Junior High School 5 Muaro Jambi dominant in the indicators of social implications with a percentage of 62.3% (195 of 313 students) with a sufficient category. Based on the one way ANOVA test, it was found that there were differences in attitudes towards science subjects at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi and Junior High School 5 Muaro Jambi.

Novelty/Originality of this study: The renewal of this study is the absence of research conducted in Junior High School in Muaro Jambi Regency, Indonesia regarding students' attitudes toward science subjects reviewed through indicators of the social implications of science, indicators of attitudes towards science investigations, and indicators of career interest in the field of science.

Keywords: Attitude, Career, Implication, Investigation, Science, Students.

INTRODUCTION

Natural science is the body of knowledge that results from one's curiosity. As the body of knowledge, science is formed from facts, concepts, principles, hypotheses, theories, and models. Science is implemented in education through a learning process that has become a compulsory subject from elementary to the high school level. The success of the learning process is influenced by the quality and way of teaching of a teacher ([Darmaji, Kurniawan, Suryani, Lestari, 2018](#)). There are two factors that can affect the learning process, namely internal factors and external factors. Internal factors can be in the form of interests, learning motivation, attitudes, study habits, and self-concepts, while external factors can be in the form of the school environment, classroom atmosphere for learning, curriculum, friends and school facilities and infrastructure ([Astalini, Kurniawan, Perdana & Kurniasari, 2018](#)).

Internal factors such as attitude greatly affect the learning process. *Attitude is a central part of human identity* ([Rahman, 2019](#)). [Rosa \(2012\)](#) states that attitude is a person's tendency to react to an object or situation that is encountered in a certain way so that the attitude can be positive or negative. A positive attitude is a tendency for someone's actions that lead to approaching, liking, and expecting certain objects. Attitude not only includes feelings of dislike, but also positive attitudes that include our attachments and loyalty to people, things and ideas ([Jufrida, et al., 2019](#)). While negative attitudes are the tendencies of one's actions that lead to laziness, carelessness, wasteful, undisciplined and so on certain objects. [Darmawangsa \(2018\)](#) states that the attitude in learning is very important, as is the attitude in learning towards natural science subjects. One of the functions and objectives of science subjects is that students can gain experience in applying scientific methods through experiments and experiments so that they are trained to be scientific. Therefore, to measure students' attitudes toward science subjects an indicator is needed. These indicators are:

- 1) Social Implications in Natural Sciences
- 2) Attitudes towards Natural Sciences Investigation
- 3) Career Interest in Science

Indicators of attitudes of social implications in science include attitudes towards the social benefits of science as well as the usefulness of science in advancing and discovering in the scientific and technological fields ([Fraser, 1981](#)). Indicators of the social implications of science related to social attitudes in students such as: learning, teaching students to be independent, cooperate in conducting experiments in the learning process of science subjects ([Astalini,](#)

[Kurniawan, Melsayanti, & Destianti, 2018](#)). Thus, the social implications of science lessons study how students' attitudes independently in learning. Social implications can shape the attitude of independence, and student cooperation in the learning process. Student independence arises when students are able to work on student worksheets by not seeing the answers of their friends. The collaboration arises when the teacher asks students to conduct experiments in groups.

Experimental activities are closely related to indicators of attitudes towards science investigations. Attitudes toward science investigations are manifested during practical activities through the use of experimental equipment, to analyze experimental data ([Astalini, Kurniawan, Melsayanti, & Destianti., 2018](#)). Investigation in science requires student skills. Student skills are the ability to use thoughts, reason, and actions efficiently and effectively to achieve certain results ([Suryaningsih, 2017](#)). Through this investigation, students can become active during the experiment. *Investigations are carried out by discussions such as discussions of activities with direct discussions designed to prove students' curiosity, monitoring skills training, data recording, analyzing data, and obtaining conclusions* ([Barber & Buehl, 2013](#)). By experimenting students are able to improve their ability to think critically in learning and in terms of criticizing the results of the analysis of experimental data that they do with the support of experimental tools used ([Astalini, Kurniawan, Melsayanti, & Destianti., 2018](#)).

Attitudes do not arise instantly but are arranged and shaped through experience. Science invites students to learn to formulate concepts based on empirical facts in the field. Therefore, the approach used in conveying science learning by combining process experience and understanding of science products in the form of direct experience. Science learning needs to be directed at the problem-solving process that can support the preservation of human life in a conducive cultural atmosphere. In this case, students look for direct experience that can bring them in planning for future life and its existence as a human being who masters technology and environmentally friendly. Career interests in the field of science can be defined that every student in the future has an interest in a career or continuing his education in the field of science ([Kurniawan, Astalini, & Angraini., 2018](#)). *Career interest in science Subjects is one of the good capital to improve learning outcomes in science Subjects* ([Astalini, et al. 2019](#)). Based on research ([Astalini, Kurniawan, & Putri, 2018](#)) career interests in the field of Natural Sciences in junior high school students are categorized enough with a percentage of 41.8% meaning almost most students want to continue their careers in the field of Natural Sciences. In line with this ([Sofyan, Yusuf, & Daharnis, 2018](#)), it is argued that male students have career ambitions in the field of natural sciences that are greater than female students. Then ([Bang & Baker, 2013](#)) agree that male students have a positive attitude towards learning science, especially in the section on the investigation into science, the normality of scientists, and participation in activities related to science compared to women. In the career determination process, there were found many obstacles originating from economic factors of 66.67%, family factors of 64.04%, peers of 75.76%, job opportunities of 68.40%, abilities of 73.38%, learning outcomes of 71% and physical environment of 74.84% ([Falentini, Taufik, & Mudjiran., 2013](#)).

The lack of knowledge from the teacher regarding the weak attitudes of students towards science subjects exacerbates the circumstances in which students' negative attitudes towards science will increase. [Veloo's \(2015\)](#) research results state that 80% of a person's learning success is determined through his attitude on these subjects. The effective learning outcomes cover the ability of an emotional understanding of something ([Novilia, Iskandar, & Fajaroh, 2016](#)).

Research Questions

The purpose of this study is to describe the comparison of attitudes towards science subjects in 26 Muaro Jambi Junior High School, 6 Muaro Jambi Junior High School and Muaro Jambi 5 Junior High School through the 3 indicators described above so as to improve students' attitudes towards Natural Science subjects. In this study, the questions addressed are: How is the description of students' attitudes viewed from the indicators of social implications on natural science subjects, attitudes towards science investigations and career interests in the field of science at Junior High School Muaro Jambi, Junior High 6 Muaro Jambi, and SMPN 5 Muaro Jambi? And how do students' attitudes change toward science subjects in Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi through these three indicators?

This study aims to determine the description of students' attitudes toward science subjects in Junior High Schools throughout Muaro Jambi, Indonesia. This research can contribute to increasing students' positive attitudes towards science subjects and helping teachers design learning that can improve students; positive attitudes.

METHODOLOGY

The research design used is quantitative with the type of survey research. A survey is a quantitative research procedure in which the researchers administer the survey of samples or in the entire population of people describing attitudes, opinions, behavior, or specific characteristics of the population ([Creswell, 2015](#)). This study aims to find the similarity of the population by looking at the comparison of the indicators that have been determined.

This research was conducted in junior high schools in Muaro Jambi District with a total of 1075 students with details 154 students in Junior High School 26 Muaro Jambi, 608 students in Junior High School 6 Muaro Jambi and 313 students in Junior High School 5 Muaro Jambi. The research subjects were all students in class VII, VIII and IX.

The research instrument used by researchers was a questionnaire. The questionnaire used was a closed questionnaire, which explained the positive and negative attitudes of students towards natural science subjects. This instrument uses three indicators in the adaptation of research [Astalini & Kurniawan \(2019\)](#) there was 42 valid statements which has a Cronbach Alpha is 0,929. If the Cronbach Alpha value of 0.80-1.00 indicates a very high level of reliability so that the instrument is feasible to use ([Halin, 2018](#)). The scale used in the attitude questionnaire instrument is a five-point Likert scale consisting of STS = strongly disagree with a score of 1, TS = disagree with a score of 2, N = neutral with a score of 3, S = agree with a score of 4, SS = strongly agree with a score of 5. The indicators and ranges used in the attitude questionnaire are shown in table 1: this part is well written.

In this study, the data were analyzed through two statistics namely descriptive statistics and inferential statistics. Descriptive statistics are used to see the description of students' attitudes towards science subjects in each school that will be displayed in the form of mean, mode, minimum, and maximum. While inferential statistics are used to see the comparison of students' attitudes towards science subjects using the one way ANOVA test.

RESULT

The renewal of this study is an indicator used to describe attitudes towards natural science subjects at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi. The indicators used are social implications in natural science subjects, attitudes towards natural science investigations, and career interests in the natural sciences sourced research from [Fraser's \(1981\)](#) which were then implemented in Indonesia through research from [Astalini & Kurniawan \(2019\)](#) with a number of statements of 56 statement and has a *Cronbach alpha* value of 0.842. The following are indicators and ranges used in the attitude questionnaire towards natural science subjects.

Table 1: Categories, Indicators, and Ranges on attitude questionnaires in Natural Sciences

Category	Interval		
	Social Implication	Science Investigation	Career interest
Very Not Good	7.0-12.6	5.0-9.0	6.0-10.8
Not Good	12.7-18.2	9.1-13.0	10.9-15.6
Enough	18.3-23.8	13.1-17.0	15.7-20.4
Good	23.9-29.4	17.1-21.0	20.5-25.2
Very Good	29.5-35.0	21.1-25.0	25.3-30.0

Source: [Sugiyono \(2012\)](#)

A. Results Description of Attitudes towards Science Subjects at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi and Junior High School 5 Muaro Jambi.

The results of data analysis on indicators of social implications in science subjects at Junior High School 26 Muaro Jambi are shown in table 2 below:

Table 2: Social Implications in Natural Sciences in Junior High School 26 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
7.0-12.6	Very Not Good	0	0	25.4	26.0	18.0	34.0
12.7-18.2	Not Good	1.3	2				
18.3-23.8	Enough	24.0	37				
23.9-29.4	Good	66.9	103				
29.5-35.0	Very Good	7.8	12				
TOT		100	154				

Table 2 describes that the response of students in the very bad category was 0% (0 of 154 students), then the category of not good was 1.3% (2 of 154 students), enough category was 24.0% (37 of 154 students), then the good category was 66.9% (103 out of 154 students), and the very good category was 7.8% (12 out of 154 students). The average results of student responses of 25.4 in the range 23.9-29.4 with both categories and responses that often appear (modes) ie 26.0 are in either category. Thus, based on the results of the analysis of the data it was found that students at Junior High School 26 Muaro Jambi on indicators of social implications in science subjects were dominant in the good category.

The results of data analysis on indicators of attitudes towards investigations in science subjects at Junior High School 26 Muaro Jambi are shown in table 3.

Table 3 describes that the response of students in the very bad category was 0.6% (1 of 154 students), then the bad category was 5.2% (8 of 154 students), enough category was 41.6% (64 of 154 students), then the good category by 47.4% (73 out of 154 students), and very good category by 5.2% (8 out of 154 students). The average results of student responses of 17.5 in the range 17.1-21.0 with both categories and responses that often appear (modes) ie 19.0 are in good

categories. Thus, based on the results of the analysis of the data it was found that students at Junior High School 26 Muaro Jambi on indicators of attitudes towards investigation in science subjects were dominant in the good category.

Table 3: Attitude toward Science Investigations at Junior High School 26 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
5.0-9.0	Very Not Good	0.6	1	17.5	19.0	9.0	24.0
9.1-13.0	Not Good	5.2	8				
13.1-17.0	Enough	41.6	64				
17.1-21.0	Good	47.4	73				
21.1-25.0	Very Good	5.2	8				
TOT		100	154				

The results of data analysis on career interest indicators in the science field of Junior High School 26 Muaro Jambi are shown in table 4 below:

Table 4: Interest in the science field in Junior High School 26 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
6.0-10.8	Very Not Good	0	0	22.8	23.0	17.0	29.0
10.9-15.6	Not Good	0	0				
15.7-20.4	Enough	24.7	38				
20.5-25.2	Good	56.5	87				
25.3-30.0	Very Good	18.8	29				
TOT		100	154				

Table 4 describes that the students' responses in the very bad category were 0% (0 of 154 students), then the bad category was 0% (0 of 154 students), the sufficient category was 24.7% (38 of 154 students), then the good category by 56.5% (87 out of 154 students), and very good category by 18.8% (29 out of 154 students). The average results of student responses of 22.8 which are in the range of 20.5-25.2 with both categories and responses that often appear (modes) ie 23.0 are in either category. Thus, based on the results of the analysis of the data it was found that students at Muaro Jambi 26th Junior High School on career interest indicators in the area of science were dominantly categorized as good.

The results of data analysis on indicators of social implications in science subjects at SMPN 6 Muaro Jambi are shown in table 5 below:

Table 5: Social Implication in natural science at Junior High School 6 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
7.0-12.6	Very Not Good	0	0	24.6	25.0	13.0	34.0
12.7-18.2	Not Good	5.6	34				
18.3-23.8	Enough	32.6	198				
23.9-29.4	Good	51.5	313				
29.5-35.0	Very Good	10.4	63				
TOT		100	608				

Table 5 describes that the response of students in the very bad category was 0% (0 out of 608 students), then the category was not good at 5.6% (34 out of 608 students), enough category was 32.6% (198 out of 608 students), then the good category 51.5% (313 out of 608 students), and very good category 10.4% (63 out of 608 students). The average results of student responses of 24.6 in the range 23.9-29.4 with both categories and responses that often appear (modes) ie 25.0 are in a good category. Thus, based on the results of the analysis of the data it was found that students at Junior High School 6 Muaro Jambi on indicators of social implications in science subjects were dominant in good categories.

The results of data analysis on indicators of attitudes towards investigation in science subjects at Junior High School 6 Muaro Jambi are shown in table 6 below:

Table 6: Attitude toward Science Investigations in Junior High School 6 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
5.0-9.0	Very Not Good	0.7	4	16.6	17.0	8.0	25.0
9.1-13.0	Not Good	11.8	72				
13.1-17.0	Enough	49.0	298				
17.1-21.0	Good	34.4	209				
21.1-25.0	Very Good	4.1	25				
TOT		100	608				

Table 6 describes that the response of students in the very bad category was 0.7% (4 out of 608 students), then the category was not good at 11.8% (72 out of 608 students), enough category was 49.0% (298 out of 608 students), then the good category by 34.4% (209 out of 608 students), and very good category by 4.1% (25 out of 608 students). The average results of student responses of 16.6 in the range 13.1-17.0 with enough categories and responses that often appear (modes) ie 17.0 are in the sufficient category. Thus, based on the results of the analysis of the data it was found that students at Junior High School 6 Muaro Jambi 6th on indicators of attitudes towards investigations in science subjects were dominantly classified as sufficient.

The results of data analysis on career interest indicators in the science field of Junior High School 6 Muaro are shown in table 7 below:

Table 7: Interest in the science field in Junior High School 6 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
6.0-10.8	Very Not Good	0.2	1	21.7	20.0	9.0	65.0
10.9-15.6	Not Good	3.0	18				
15.7-20.4	Enough	35.5	216				
20.5-25.2	Good	49.8	303				
25.3-30.0	Very Good	11.3	69				
TOT		100	608				

Table 7 describes that the response of students in the very bad category was 0.2% (1 of 608 students), then the bad category was 3.0% (18 out of 608 students), enough category was 35.5% (216 out of 608 students), then the good category by 49.8% (303 out of 608 students), and very good category by 11.3% (69 out of 608 students). The average results of student responses amounted to 21.7 which are in the range of 20.5-25.2 with good categories and responses that often appear (modes) i.e. 20.0 are in good categories. Thus, based on the results of the analysis of the data it was found that students at Junior High School 6 Muaro Jambi on career interest indicators in the field of natural sciences were dominant in good categories.

The results of data analysis on indicators of social implications in science subjects at Junior High School 5 Muaro Jambi are shown in table 8 below:

Table 8: Social Implication in natural science at Junior High School5 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
7.0-12.6	Very Not Good	0.3	1	20.5	21.0	10.0	29.0
12.7-18.2	Not Good	21.7	68				
18.3-23.8	Enough	62.3	195				
23.9-29.4	Good	15.7	49				
29.5-35.0	Very Good	0	0				
TOT		100	313				

Table 8 describes that the response of students in the very bad category was 0.3% (1 of 313 students), then the bad category was 21.7% (68 of 313 students), enough category was 62.3% (195 of 313 students), then the good category by 15.7% (49 out of 313 students), and very good category by 0% (0 out of 313 students). The average results of student responses of 20.5 in the range 18.3-23.8 with enough categories and responses that often appear (mode) that is 21.0 in the sufficient category. Thus, based on the results of the analysis of the data it was found that students at Junior High School 5 Muaro Jambi on indicators of the social implications in science subjects were dominantly classified as sufficient.

The results of the analysis of the data on attitudes towards natural science Junior High School 5 Muaro Jambi science investigations are shown in table 9 below:

Table 9: Attitude toward Science Investigations in Junior High School 5 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
5.0-9.0	Very Not Good	0.3	1	16.6	17.0	8.0	23.0
9.1-13.0	Not Good	8.6	27				
13.1-17.0	Enough	56.5	177				
17.1-21.0	Good	32.6	102				
21.1-25.0	Very Good	1.9	6				
TOT		100	313				

Table 9 describes that the response of students in the very bad category was 0.3% (1 of 313 students), then the bad category was 8.6% (27 of 313 students), enough category was 56.5% (177 out of 313 students), then the good category of 32.6% (102 out of 313 students), and very good category of 1.9% (6 of 313 students). The average results of student

responses of 16.6 in the range 13.1-17.0 with enough categories and responses that often appear (modes) ie 17.0 are in the sufficient category. Thus, based on the results of the analysis of the data it was found that students at Junior High School 5 Muaro Jambi on the attitude indicators of science inquiry were dominantly classified as sufficient.

The results of data analysis on career interest indicators in the field of Science Junior High School 5 Muaro Jambi are shown in table 10 below:

Table 10: Interest in the science field in Junior High School 5 Muaro Jambi

Interval	Attitude	%	Total	Mean	Mode	Min	Max
6.0-10.8	Very Not Good	0	0	21.3	23.0	11.0	29.0
10.9-15.6	Not Good	2.2	7				
15.7-20.4	Enough	38.0	119				
20.5-25.2	Good	47.9	150				
25.3-30.0	Very Good	11.8	37				
TOT		100	313				

Table 10 describes that the response of students in the very bad category was 0% (0 out of 313 students), then the category was not good by 2.2% (7 out of 313 students), enough category was 38.0% (119 out of 313 students), then the good category by 47.9% (150 out of 313 students), and very good category by 11.8% (37 out of 313 students). The average results of student responses of 21.3 in the range of 20.5-25.2 with both categories and responses that often appear (modes) that are 23.0 are in good categories. Thus, based on the results of the analysis of the data it was found that students in Muaro Jambi State Junior High School 5 on indicators of career interest in the dominant science field were good.

B. Comparative Test Results of Students' Attitudes Toward Natural Sciences in 26 Muaro Jambi, Muaro Jambi 6 Junior High Schools, and Muaro Jambi 5 Junior High Schools

1. Normality and Homogeneity Test

The following is a table describing the normality and homogeneity test of students' attitude data toward natural science subjects at Muaro Jambi 26th Middle School, Muaro Jambi 6th Middle School, and Muaro Jambi 5th Middle School.

Table 11: Normality and Homogeneity with SPSS

Sig	Test of Normality	Test of Homogeneity
SMPN_26	0.53	0.75
SMPN_6	0.83	
SMPN_5	0.69	

To determine the comparison of student attitudes at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi, the data used must be normal and homogeneous. The table above shows the test for normality and homogeneity. This normality test aims to determine whether the research data is normally distributed or not (Novita, 2017). The normality test used is Kolmogorov-Smirnov. The results of normality tests at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi were identified with a sig value of 0.53; 0.83; 0.69 which means the data is normally distributed because of $\text{sig} > 0.05$. This table also shows a homogeneity test that aims to find out whether the data obtained is homogeneous or not. These results indicate the homogeneity test results of Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi 0.75, this indicates that the data is homogeneous. Because it can be said to be homogeneous when $\text{sig} > 0.05$.

2. One Way ANOVA Test

The following is a table of the results of the *one way ANOVA* test on attitudes towards natural science subjects at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, and Junior High School 5 Muaro Jambi.

Table 12: One Way ANOVA Test

	Sum of Squares	df	Mean.Square	F	Sig
Between Groups	3686.295	2	1843.148	29.547	.040
Within Groups	66872.371	1072	62.381		
Total	70558.666	1074			

Based on the table above, it can be seen that the significant value of 0.040 shows that the significance value $\alpha = 0.040 < 0.05$ is that there are differences in attitudes between the three schools.

DISCUSSION

a. Social Implication in Natural Science

Based on the results of data analysis on indicators of the social implications of natural science subjects at Junior High School 26 Muaro Jambi, Junior High School 6 Muaro Jambi, the categories are more dominant, while Junior High School 5 Muaro Jambi is more dominant insufficient categories. Research conducted by [Prokop, Ozel & Usak \(2009\)](#) that feelings of fear of socializing will affect scientific attitudes. Then according to [Astalini, et al \(2019\)](#) that students who get good scores assume that science provides benefits for social life. That way it means students in the three junior high schools are already able to imply science in their social life. Social implications are also characterized by independent attitude and cooperation. Student independence consists of self-confidence, being able to work together, respecting time, having a desire to compete for progress, being responsible and having decision-making abilities ([Suid, 2017](#)). Forms of student independence can be seen from the work assignments or homework given by the teacher and how students do not depend on others and believe in their own abilities. While the form of cooperation can be seen when they conduct experiments in groups, they are responsible for the group, are able to organize and discuss with other friends.

b. Attitudes Towards Natural Sciences Investigations

Based on the results of data analysis on indicators of attitudes towards investigation in Natural Sciences at SMPN 26 Muaro Jambi, it shows that students are more dominant in good categories, whereas at SMPN 6 and SMPN 5 Muaro Jambi the dominant categories are sufficient. This happens because in the learning process students have shown enthusiasm in conducting experiments or experiments, and also adequate facilities for the learning process of science in the classroom. Asking questions related to observation, data recording, analysis to conclusions can be done during the investigation process ([Barber & Buehl, 2013](#)). With research-based practical activities, students can learn morally, using science process skills by customizing themselves to building information independently that they get from science lessons ([Kurniawan, Darmaji, Astalini, & Sefiah, 2018](#)). Investigation in science requires student skills. Student skills are the ability to use thoughts, reason, and actions efficiently and effectively to achieve certain results ([Suryaningsih, 2017](#)). These skills are called science process skills. Science process skills are the ability to process scientific thinking and the ability to process acts to inflate the right understanding of scientific concepts with experimental activities ([Darmaji, Kurniawan, Parasdila, & Irdianti 2018](#)). With good science, skills will have implications in improving students' cognitive abilities ([Darmaji, Kurniawan, & Suryani, 2019](#)). In line with that, the attitude towards science investigation is very important because if this attitude is not possessed it will have a negative impact on the learning process ([Tursinawati, 2016](#)).

c. Career Interests in the Field of Science

Based on the results of data analysis on career interest indicators in the field of Natural Sciences in SMPN 26, SMPN 6, and SMPN 5 Muaro Jambi, the dominant category is good. This can be seen in the answers of dominant students who agree like "when I graduate from school, I want to work with people who make discoveries in the field of science". There are two factors that influence one's career choices, namely internal factors, and external factors. *Internal factors are originating from individuals themselves in the form of intelligence, talents, interests, personalities and other potentials, while external factors are originating from outside the individual in the form of family or community environment* ([Falentini, Taufik, Mudjiran, 2013](#)). Someone who has interests, abilities and self-confidence in a field will tend to have a career desire in it ([Maison, et al., 2018](#)). When referring to research ([Astalini, Kurniawan, & Putri, 2018](#)) interest in a career in science in junior high school students is sufficient with a percentage of 41.8% meaning that almost some students want to continue their careers in the field of science. In line with this ([Sofyan, Yusuf, & Daharnis, 2018](#)), it is argued that male students have career ambitions in the field of natural sciences that are greater than female students. Then ([Bang & Baker, 2013](#)) agree that male students tend to have a positive attitude towards learning science, especially in the section on the investigation into science, the normality of scientists, and participation in activities related to science compared to women.

d. Comparison of Attitudes towards Science Subjects at Muaro Jambi SMPN 26, Muaro Jambi SMPN 6 and Muaro Jambi SMPN 5

Based on the results of the One Way ANOVA above, it can be seen that the value of sig <0.05, which means that there are differences in attitudes between SMPN 26 Muaro Jambi, SMPN 6 Muaro Jambi, and SMPN 5 Muaro Jambi. The differences in attitudes in the three schools can be seen from the differences in the three indicators explained earlier. In accordance with research conducted by [Margiastuti, Parmin, & Pamelasari \(2015\)](#) that there are differences in attitudes between one student and other students in the science learning process. Strengthened by [Nurmaliah & Nursafiah \(2017\)](#) research that each school has different attitudes that can be influenced by their desires, knowledge, experience and also its social implications. The differences in attitudes that occur between Muaro Jambi SMPN 26, Muaro Jambi SMPN 6 and Muaro Jambi SMPN 5 are also due to several factors, especially the supporting teachers in the field of Natural Sciences, how teachers instill concepts so that students do not think that science lessons are difficult lessons. This attitude difference can also be caused by several factors including the way teachers of science subjects in

helping students to better understand concepts, students' curiosity about science subjects, activities in the learning process that cause students to feel happy about themselves. By knowing the comparison of students' attitudes, the teacher can better understand how to form scientific attitudes in natural science subjects in students. Attitudes in learning science are very beneficial for students that can form positive attitudes and values in students including high self-confidence, perseverance, accuracy, hard-working, and do not know despair. These positive attitudes and values are used to overcome problems in daily life ([Rosmah, 2018](#)).

CONCLUSION

Based on the results of research conducted on attitudes towards science subjects in Muaro Jambi Public Middle School 26, Muaro Jambi Public Middle School, and Muaro Jambi Public Middle School by using three indicators, namely: social implications on natural science subjects, attitudes toward natural science investigations and career interests in the natural sciences. The first indicator is the social implications of natural science subjects in SMPN 26 Muaro Jambi, which is dominant in the good category as well as in Muaro Jambi SMPN 6 in the good category, but in SMPN 5 Muaro Jambi, the dominant category is sufficient. Then the attitude indicator towards the science investigation in 26 Muaro Jambi was dominantly in the good category while in Muaro Jambi 6th and SMPN 5 were dominant enough. Then the indicators of career interest in the natural sciences at SMPN 26, SMPN 6, and SMPN 5 Muaro Jambi were dominant in good categories. Furthermore, based on an analysis using one way ANOVA states that there are differences in the attitudes of students in the three schools towards science subjects reviewed through the three indicators.

LIMITATION AND STUDY FORWARD

This research is character-based or affective. The focus of this research is to see how the comparison between students' attitudes towards science subjects. Because focus inside this research is looking effective or behavior based on attitude variables in Junior High School. Therefore for further research, the researchers suggest adding focus measurement research into character-based and psychomotor research, or character and cognitive-based research in natural science. In addition, researchers can then add focus research is not limited to junior high school students, but research in senior high school or higher education.

Based on the results of research that has been done, it is found that there are differences in the attitudes of students in science subjects in Junior High School Muaro Jambi District. By knowing these different attitudes, it is important for the teacher's role in shaping student figures to enhance positive attitudes in science subjects by varying models, methods, media and other things supporting the learning process.

ACKNOWLEDGEMENT

The researcher would like to thank the principals, teachers, and students of grades VII, VIII and IX at Muaro Jambi 26th Middle School, Muaro Jambi 6th Middle School and Muaro Jambi 5th Middle School for giving permission and assisting researchers in the success of this research.

REFERENCES

1. Astalini, A., Kurniawan, D. A., & Putri, A. D. (2018). Identifikasi Sikap Implikasi Sosial dari IPA, Ketertarikan Menambah Waktu Belajar IPA, dan Ketertarikan Berkarir Dibidang IPA Siswa SMP Se-Kabupaten Muaro Jambi. *Jurnal Tarbiyah: Jurnal Ilmiah Kependidikan*, 7(2), 93–108. <https://doi.org/10.18592/tarbiyah.v7i2.2142>
2. Astalini, Kurniawan, D. A., Perdana, R., & Kurniasari, D. (2018). Identification of Student Attitudes toward Physics Learning at Batanghari District High School. *The Educational Review, USA*, 2(9). <https://doi.org/10.26855/er.2018.09.003>
3. Astalini, Kurniawan, Melsayanti, & Destianti. (2018). Sikap Terhadap Mata Pelajaran IPA Di SMP Se-Kabupaten Muaro Jambi. *Lentera Pendidikan: Jurnal Ilmu Tarbiyah Dan Keguruan*, 21(2):214-227. <https://doi.org/10.24252/lp.2018v21n2i7>
4. Astalini,dkk. (2019). Characteristics Of Students' Attitude To Physics In Muaro Jambi High School. *Humanities & Social Sciences Reviews*, 7(2), 91-99. <https://doi.org/10.18510/hssr.2019.7210>
5. Astalini., & Kurniawan, D. A. (2019). Pengembangan Instrumen Sikap Siswa Sekolah Menengah Pertama Terhadap Matapelajaran IPA. *Jurnal Pendidikan Sains*, 7(1), 1-7. <https://doi.org/10.26714/jps.7.1.2019.1-7>
6. Bang, E., & Baker, D. R. (2013). Gender differences in Korean high school students' science achievements and attitudes towards science in three different school settings. *Mevlana International Journal of Education*, 3(2), 27–42. <https://doi.org/10.13054/mije.13.11.3.2>
7. Barber, A. T., & Buehl, M. M. 2013. Relations Among Grade 4 Students' Perceptionsof Autonomy, Engagement in Science, and Reading Motivation. *The Journal OfExperimental Education*, 81(1) : 22–43. <https://doi.org/10.1080/00220973.2011.630045>
8. Creswell, Jhon, W. (2015). Educational Research Planning, Conducting and Evaluating Quantitative dan Qualitative Research. Lincoln: University of Nebraska.
9. Darmaji, Kurniawan, D. A., Parasdila,H., & Irdianti. 2018. "Description of Science Process Skills' Physics

- Education Students at Jambi University in Temperature and Heat Materials". *Educational Review, USA*, Vol. 2, No. 9, pp. 485–498. <https://doi.org/10.26855/er.2018.09.005>
10. Darmaji, D., Kurniawan, D. A., & Suryani, A. 2019. "Effectiveness of Basic Physics II Practicum Guidelines Based On Science Process Skills". (*JIPF*) *Jurnal Ilmu Pendidikan Fisika*, Vol.4, No. 1. <https://doi.org/10.26737/jipf.v4i1.693>
 11. Darmaji, D., Kurniawan, D.A., Suryani, A. & Lestari, A. (2018) An Identification of Physics Pre-Service Teachers' Science Process Skills Through Science Process Skills-Based Practicum Guidebook. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, 7(2), 239-245. <https://doi.org/10.24042/jipfalbiruni.v7i2.2690>
 12. Darmawangsa, R., Astalini., Kurniawan, D. A. (2018). Pengembangan Instrumen sikap siswa sekolah menengah atas terhadap mata pelajaran fisika. *JPF: Jurnal Pendidikan Fisika*, 6(1), 107-114
 13. Kalentini, F.Y., Taufik, Mudjiran. (2013). Usaha yang dilakukan Siswadalam Menentukan Arah Pilihan Karir dan Hambatan-hambatan yang ditemui. *Jurnal Ilmiah Konseling*, 2(1) : 310-316. <https://doi.org/10.24036/02013211266-0-00>
 14. Fraser, B. J. (1981). *Test of science-related attitudes*. 18.
 15. Halin, H. (2018). Pengaruh Kualitas Produk Terhadap Kepuasan Pelanggan Semen Baturaja Di Palembang Pada Pt Semen Baturaja (Persero) Tbk. *Jurnal Ecoment Global*, 3(2), 167-182. <https://doi.org/10.35908/jeg.v3i2.477>
 16. Jufrida, J., dkk. (2019). Students' attitude and motivation in mathematical physics. *International Journal of Evaluation and Research in Education (IJERE)*, 8(3), 401-408.
 17. Kurniawan, D.A., Astalini, Anggraini, L. (2018). Evaluasi Sikap Siswa SMP Terhadap IPA di Kabupaten Muaro Jambi. *Jurnal Ilmiah DIDAKTITA*, 19(1), 124-139.
 18. Kurniawan, D.A., Darmaji., Astalini., & Sefiah, P. (2018). Deskripsi Keterampilan Proses Sains untuk Calon Guru Fisika. *Azerbaijan Journal of Educational Studies*, 684(3), 71-85.
 19. Maison, Astalini, Kurniawan, D.A., Lintang, R.S., (2018). Deskripsi Sikap Siswa SMA Negeri Terhadap Mata pelajaran Fisika. *Edusains*, 10(1) : 160-167. <https://doi.org/10.15408/es.v10i1.7214>
 20. Margiastuti, S.N., Parmin, P., Pamelasari, S.D. (2015). Penerapan Model Guided Inquiry Terhadap Sikap Ilmiah dan Pemahaman Konsep Siswa pada Tema Ekosistem. *Unnes Science Education Journal*, 4(3), 1041-1048.
 21. Novilia, L., Iskandar, S. M., & Fajaroh, F. (2016). the Effectiveness of Colloid Module Based on Guided Inquiry Approach To Increase Students' Cognitive Learning Outcomes. *International Journal of Education*, 9(1), 17. <https://doi.org/10.17509/ije.v9i1.3713>
 22. Novita, Dian (2017). Pengaruh Motivasi Belajar dan Kemampuan Numerik Terhadap Prestasi Belajar Akuntansi. *Jurnal SAP*, 2(1).
 23. Nurmaliah, Cut., & Nursafiah. (2017). Penerapan Metode Inkuiri Terbimbing pada Konsep Fotosintesis di SMP Negeri 8 Banda Aceh. *Jurnal Penelitian Pendidikan Matematika dan Sains*, 1(1)
 24. Prokop, Pavol., Ozel, M., & Usak, M. (2009). Cross-Cultural Comparison of Student Attitudes Toward Snakes. *Society and Animals*, 17, 224-240. <https://doi.org/10.1163/156853009X445398>
 25. Rahman, M. M. (2019). Secondary School Students Attitude Towards Junior School Certificate (Jsc) Examination in Bangladesh. *International Journal of Education*, 11(2), 161. <https://doi.org/10.17509/ije.v11i2.14746>
 26. Rosa, N. M. (2012). Pengaruh Sikap pada Mata Pelajaran Kimia dan Konsep Diri terhadap Prestasi Belajar Kimia. *Jurnal Ilmiah Program Studi Pendidikan Matematika Universitas Indraprasta PGRI*, 2(3), 218-226.
 27. Rosmah, Sitti, Makarina Tindangan, dan Vandalita M Rambitan. Analisis Permasalahan terkait Kebutuhan Pengembangan Perangkat Pembelajaran Model Discovery Learning untuk Meningkatkan Pemahaman Konsep dan Sikap Ilmiah. *Jurnal Pendidikan*, 3(3), 323.
 28. Sofyan, A., Yusuf, A. M., & Daharnis, D. (2018). Tingkat Aspirasi Karir Siswa di Tinjau dari Jenis Kelamin, Jurusan dan Daerah Tempat Tinggal. *Jurnal Konseling Dan Pendidikan*, 1(3), 9. <https://doi.org/10.29210/110800>
 29. Sugiyono. (2012). *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
 30. Suid., Syafrina, A., Tursinawati. (2017). Analisis Kemandirian Siswa dalam Proses Pembelajaran di Kelas III SD Negeri 1 Banda Aceh. *Jurnal Pesona Dasar*, 1(5), 70-81.
 31. Suryaningsih, Yeni. 2017. Pembelajaran Berbasis Praktikum Sebagai Sarana Siswa Untuk Berlatih Menerapkan keterampilan Proses Sains dalam Materi Biologi. *Jurnal Bio Educatio*, 2(2) : 49-57.
 32. Tursinawati. 2016. Penguasaan Konsep Hakikat Sains dalam Pelaksanaan Percobaan Pada Pembelajaran IPA di SDN Kota Banda Aceh. *Jurnal Pesona Dasar*, 2(4) : 72-84.
 33. Veloo, A., Nor, R. and Khalid, R. (2015). *Attitude Towards Physics and Additional Mathematics Achievement Towards Physics Achievement*. *International Education Studies*, 8(3), pp.35-43. <https://doi.org/10.5539/ies.v8n3p35>