

# Learning In Nature Science: Social Implications, Normality Of Scientist, Attitudes Towards Investigation Of Natural Science, And Interest Adds To Science Learning Time

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**Abstract:**—The purpose of this study was to look at the attitudes of students at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi in science subjects. The number of samples used was 921 students in Junior High School 5 Muaro Jambi and Junior High School Junior High School 6 Muaro Jambi who used total sampling techniques. The method used was quantitative and qualitative, or what is often referred to as the Mixed-Method approach, precisely explanatory mixed-method design. The instrument used was a questionnaire followed by an interview. Analysis of the data used is descriptive statistics that will display the mean, median and mode. Based on the results of research that has been done, it was found that students' attitudes on social implications, scientist normality, attitudes toward science inquiry, and interest in increasing science learning time were positive results. Where the attitude of students in junior high school Muaro Jambi 5 and Junior High School 6 Muaro Jambi in the good category.

**Keywords:**—education, learning, students, attitudes, science, social implications, normality of scientists, attitude towards science investigation, interest in increasing science learning time

## 1 INTRODUCTION

Education is an activity of every human being in order to get a better quality of life. Education is basically a conscious effort to grow and develop the potential of human resources, especially students, which is carried out by guiding and facilitating their learning activities [1]. Education is an activity that aims to prepare students to become positive prospective professional educators who have the task of guiding, training, building knowledge, skills, and habits in life [2] [3] [4] [5] More explicitly the goals of education in Indonesia are formulated in the SISDIKNAS Law, which is to develop the potential of students to become people of faith and to fear God Almighty, to have noble, healthy, knowledgeable, capable, creative, independent, and become democratic citizens and citizens who are democratic and to be responsible. These components work together, are interrelated and supportive in achieving educational goals. The sustainability of education in these educational institutions is closely related to the curriculum, because current technological advances have also influenced students in their learning process [6]. At present the curriculum used is the revised 2013 curriculum which emphasizes more on attitude formation. Thus, it has become a top priority for education to produce an intellectual generation, one of which is through education that aims to produce graduates who are skilled in various aspects of competencies such as knowledge and attitude [7]. Attitudes are important factors that might have an effect on teaching and learning [8].

Attitude as an expression of values or views of life that are owned by someone, formed into desired behaviours or actions [9]. According to ref [10] attitudes are defined as individual beliefs and feelings towards an object. Attitude is a behaviour that is shown in learning activities, where 80% of a person's learning success is determined through his attitude in managing emotions effectively, the ability of these students to manage their emotions effectively [11]. The affective learning outcomes cover the ability of emotional understanding of something [12]. In the National Qualifications Framework, the Indonesian Language curriculum has a level of ability offered by a graduate Natural science education is the mastery of theoretical concepts in the field of knowledge and skills in depth [13]. In this case, the attitude needed is a scientific attitude. Scientific attitude is the ability that is consistent, rational and objective in a certain way towards a problematic situation [14]. A scientific attitude is regarded as a complex of values and norms which are held to be binding on the man of science [15]. [16] the main requirement to have scientific knowledge is the acquisition of a scientific attitude and behaviour. A Scientific attitude has three basic components: belief, feeling and action [17]. A scientific attitude can be seen from the actions of students who show a positive attitude or a negative attitude. A scientific attitude is also an important aspect as a focus during the experiment, because without a positive scientific attitude, students tend to only be reminders of scientific concepts. A positive attitude is indicated by students tend to be more diligent in learning so that they get satisfying results, whereas a negative attitude is characterized by students being less diligent in learning so that they get unsatisfactory results [18] [19] [20] [21]. This attitude can support the performance of the curriculum applied to education in Indonesia which can be developed in natural science subjects. Science learning aims to encourage students to understand the phenomena formed in nature, one of which is the relationship between humans and nature [22]. In accordance with research conducted by [23], students who have a positive attitude toward natural science will be involved in class or activity, while students who have a negative attitude

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look less active in classroom involvement. The science learning process in each class can be measured by students' attitudes towards science [24]. Students' attitudes toward science subjects can be measured in the research adopted from TORSA (Freser, 1981), with four indicators representing among them social implications, scientific normality, attitudes towards science investigators and interest in increasing the learning time of Natural Sciences. The purpose of this study was to determine student attitudes in science learning in Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi. The indicators used are social implications, scientific normality, attitudes toward science inquiry, and interest in increasing science learning time. In this study the questions asked are:

1. What is the attitude of the social implications of science?
2. What is the attitude of scientist's normality towards science?
3. What is the attitude towards the investigation in the Natural Sciences?
4. How does the attitude of interest increase science learning time?

## 2 METHODS

### 2.1 Review Stage

This research method uses a combination of quantitative methods and qualitative methods or often called the Mixed-Method approach, precisely explanatory mixed-method design [25]. This study aims to describe students' attitudes towards physics in junior high school. The number of samples used was 921 students in Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi uses total sampling techniques. The instrument used was a questionnaire adapted from Astalini, and Kurniawan (2019) with Cronbach Alpha 0.929. The attitude questionnaire used used 5 Likert scale, namely Strongly Agree (SS) with a score of five, Agree (S) with a score of four, Neutral (N) with a score of three, Disagree (TS) with a score of two, and Strongly Disagree (STS) with a score of one. In this study, using 4 indicators with very good, good, quite good, and not very good categories can be seen in table 1.

**TABLE 1**  
**CATEGORIES OF ATTITUDE TOWARDS SCIENCE LEARNING**

Category	Indicator			
	Social Implications	Normality of Scientists	Attitudes Towards Investigation of Natural Sciences	Interest Adds to Science Learning Time
Very unkind	7.00 – 12.00	5.00 - 9.00	5.00 - 9.00	6.00-10.80
Not good	12.61-18.20	9.01 – 13.00	9.01 – 13.00	10.81-15.60
Pretty good	18.21-23.80	13.01 – 17.00	13.01 – 17.00	15.61-20.40
Good	23.81-29.40	17.01 – 21.00	17.01 – 21.00	20.41-25.20
Very good	29.41-35.00	21.01 – 25.00	21.01 – 25.00	25.21-30.00

Analysis of the data used in this study is descriptive statistics, which are then followed by an explanation and elaboration of the quantitative findings using qualitative data sets that have been obtained in accordance with qualitative techniques. Descriptive statistics are used to describe data sets that include numerical measurements (eg Median) and graphical data displays [26]. Followed by interviews intended to strengthen the results of quantitative data. Counts frequencies such as ideas, themes, pieces of data and words. (2) Pay attention to patterns and themes. (3) Trying to make good data, using intuition to reach conclusions. (4) Does the group organize the items into categories, types, behaviours, and classifications? (5) Making metaphors that use figurative and connotative languages rather than literal and denotative languages, animating data, thereby reducing data, making patterns, aligning data, linking data with theory. (6) Separating variables to describe, differentiate and 'disassemble' ideas, i.e. Move from drives to integration and obscure data. (7) Giving up specifically into the public, bringing a large number of variables under a small number (often) hypothetical variables that are not observed. (8) Identifying and recording relationships between variables. (9) Find intervening variables: look for other variables that seem to 'block' calculations for

what is expected to be a strong relationship between variables. (10) Building a logical proof chain: noting causality and making conclusions. (11) Creating conceptual / theoretical coherence: moving from metaphors to building theory to explain phenomena [27]

## 3 RESULT AND DISCUS

In this study, researchers wanted to see the attitudes of students at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi with four indicators, namely social implications, scientist normality, attitudes towards science inquiry and interest in increasing the science learning time conducted by Astaini & Kurniawan (2019). The results of the four indicators are as follows.

### 3.1 Social Implications In Science

The social implications of science show how science influences students' social lives. The results of the analysis of indicators of social implications can be seen in table 3.1.1 and 3.1.2

**TABLE 3.1.1**  
INDICATOR OF SOCIAL IMPLICATIONS FOR PHYSICS AT JUNIOR HIGH SCHOOL MUARO JAMBI

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
7.00 – 12.00	Very unkind	1	0.3					
12.61-18.20	Not good	19	6.1					
18.21-23.80	Pretty good	103	33.0					
23.81-29.40	Good	179	57.4	3.5705	4.0000	4.00	1,00	5,00
29.41-35.00	Very good	10	3.2					
TOTAL		312	100					

Based on the results in table 3.1.1, indicators of social implications at JUNIOR HIGH SCHOOL 5 Muaro Jambi, have a good category, where out of 312, 179 samples have that

category with a percentage of 57.4% of 100%. On the indicator of normality of scientists, the average value obtained is 3.5705 with the results that often appear are 4.

**TABLE 3.1.2**  
INDICATOR OF SOCIAL IMPLICATIONS FOR PHYSICS AT SMPN 6 MUARO JAMBI

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
7.00 – 12.00	Very unkind	0	0					
12.61-18.20	Not good	34	5.6					
18.21-23.80	Pretty good	198	32.5					
23.81-29.40	Good	314	51.5	3.6667	4.0000	4.00	2,00	5,00
29.41-35.00	Very good	63	10.3					
TOTAL		609	100					

In table 3.1.2, there are the results of the analysis of social implications in the Natural Sciences at Junior High School 6 Muaro Jambi. The attitude of social implications in Junior High School 6 Muaro Jambi has a good category. This category has a total of 314 respondents with 51.5% percent. The average value obtained is 3.6667 and the value that often appears is 5. The results of interviews conducted at Junior High School 5 Muaro Jambi Junior High School 6 Muaro Jambi on the indicators of social implications are as follows.

Question: do you think that science is humanity's worst enemy? Explain the reason!

Answer : Yes, because science is very difficult to understand, there are too many forms of learning, many formulas, and memorization and concepts are difficult to understand

Question: can NATURE SCIENCE make your life better?

Answer: yes, because by studying science, we can know how to apply it in everyday life, such as using electricity. With NATURE SCIENCE we can know what are the dangers that will be caused, how to, how electricity is not too dangerous to us and how to manage electricity properly.

Based on these results, it can be said that the attitude of students' social implications at JUNIOR HIGH SCHOOL 5 Muaro Jambi and Junior High School 6 Muaro Jambi is said to be good. Social implications in science, show how the influence or impact of science in students' social life. As when studying students will collaborate with other friends, then students can also build independence in the group. The collaboration arises when the teacher asks students to

conduct experiments in groups [28]. Students can be active and motivated during the learning process if they are required to be able to share information, work together in groups and respect others [29]. Usually, one of the needs in learning activities is with media that can be used practically [30] The learning process at school is often done by forming groups discussions. Which leads students to interact with each other and can respect each other's opinions discussion partner. In addition to group discussions, learning is often used using practical activities. Through practicum activities, students will dominantly discuss with each other to discuss the results of the practicum so that students get more meaningful experience from practicum learning activities because students are able to be guided to find their own concepts. During practicum-based learning activities, students not only interact with other students, but also interactions between students and teachers. Another example is when making the learning process can be seen from how students work with group assignments that have been given by the teacher and student activity in the learning process, as well as student independence in working on assignments [31]. Students tend to discuss through their social effects that can increase the positive effects on students that allow it to affect student achievement results [32] [33]. So, the social implications of physics can be seen based on the interaction between students and teachers, as well as students and students.

### 3.2 Normality Of Scientists

The normality of scientists describes students who place themselves as students of science. The results of the normality analysis are in table 3.2.1 and 3.2.2

**TABLE 3.2.1** INDICATOR OF SCIENTIST NORMALITY IN MUARO JAMBI 5 JUNIOR HIGH School

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
5.00 - 9.00	Very unkind	3	1.0	3.4423	3.0000	3.00	1,00	5,00
9.01 - 13.00	Not good	23	7.4					
13.01 - 17.00	Pretty good	142	45.5					
17.01 - 21.00	Good	121	38.8					
21.01 - 25.00	Very good	23	7.4					
TOTAL		312	100					

Based on the analysis results in table 3.2.1, the normality attitude of the scientists at JUNIOR HIGH SCHOOL Muaro Jambi is quite good. This can be seen from the number of

respondents in that category, which is 142 respondents. Has 45.5%, with an average value obtained is 3.4423 fibre values that often appear are 5.

**TABLE 3.2.2.** INDICATOR OF THE NORMALITY OF SCIENTISTS IN JUNIOR HIGH 6 MUARO JAMBI

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
5.00 - 9.00	Very unkind	2	0.3	3.4581	3.0000	3.00	1,00	5,00
9.01 - 13.00	Not good	64	10.5					
13.01 - 17.00	Pretty good	246	40.4					
17.01 - 21.00	Good	247	40.6					
21.01 - 25.00	Very good	50	8.2					
TOTAL	Attitude	609	100					

Table 3.2.2 states the results of the normality indicators of scientists at Junior High School 6 Muaro Jambi. The results obtained are good categories where the number of respondents produced was 247, with a percentage of 40.6%. The average value obtained is 3.4581 and the value that often appears is 5. The results of interviews conducted at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi on the indicator of scientist's normality are as follows.

Question : do you think scientists can have a life like family as usual? Explain the reason!

Answer : I don't know, but a scientist is also a human, so he can carry out activities as usual. It's just that a soul of a scientist likes to discover things that are quite new, and their way of thinking is also very critical.

Question : Do scientists not have enough time with their families?

Answer : yes, because usually a scientist is too busy with their research, and is more likely to spend time in the laboratory for the results of his study into something that can be used or studied.

Based on the results obtained on the indicators of a scientist's currently at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi can be said to be good. The normality of a scientist is someone who looks ordinary, but has

thoughts like a scientist who can solve problems in science and can find something new. Students often regard scientists who study science as people who are born geniuses and can be in all fields of science and eccentrics [34]. Not a few students who participate in the activity. In physics learning, for example, students in class diligently take notes and be diligent in learning [35]. A person's response to certain objects of thought and behaviour is called attitude [36]. The normality of scientists describes the views of students towards scientists in order to be able to position themselves as learners of science [37]. In the learning process Science emphasizes students to get direct experience through student-centred learning. So that students' critical attitude is needed in solving problems or concepts in science learning. In improving students' critical thinking skills, the ability to interpret and identify concepts of science clearly is needed [38]. In this case the teacher will provide material, which must also plan, implement, and evaluate innovative learning to help students be more active in learning [39]. So students will be able to solve problems with critical thinking skills.

### 3.3 Attitudes Towards Natural Sciences Investigations

Attitudes towards science inquiry describe the attitude of students in solving problems that exist in science. Table 3.3.1 and 3.3.2 are the result of data analysis about attitudes towards science investigations.

**TABLE 3.3.1.**

INDICATORS OF ATTITUDE TOWARDS NATURAL SCIENCE TESTING AT JUNIOR HIGH SCHOOL MUARO JAMBI

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
5.00 - 9.00	Very unkind	1	0.3	3.2692	3.0000	3.00	1,00	5,00
9.01 - 13.00	Not good	27	8.7					
13.01 - 17.00	Pretty good	277	56.7					
17.01 - 21.00	Good	101	32.4					
21.01 - 25.00	Very good	6	1.9					
TOTAL		312	100					

Table 3.3.1 shows the results of the analysis at Junior High School 5 Muaro Jambi with indicators of attitudes towards the scientific investigation. The category obtained was quite good

with 277 respondents and generated a percentage of 56.7%. With the average value obtained is 3.2692 and the value that often appears is 5.

**TABLE 4.3.2****INDICATORS OF ATTITUDE TOWARDS SCIENCE INVESTIGATIONS AT JUNIOR HIGH SCHOOL 6 MUARO JAMBI**

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
6.00-10.80	Very unkind	0	0	3.7083	4.0000	4.00	2,00	5,00
10.81-15.60	Not good	11	3.5					
15.61-20.40	Pretty good	111	35.6					
20.41-25.20	Good	148	47.4					
25.21-30.00	Very good	42	13.5					
TOTAL		312	100					

Table 3.3.2 shows the results of the analysis of Muaro Jambi 6th Middle School with indicators of attitudes towards natural science investigations. Of the 609 respondents, 298 respondents were in the quite good category. This can be seen also with the percentage results obtained by 48.9%, with an average value obtained is 3.2956, and the value that often arises is 3. So that it can be said that the attitude towards NATURE SCIENCE investigations at Junior High School 6 Muaro Jambi is quite adequate as well. The results of interviews conducted at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi on the indicators of attitudes towards science investigations are as follows.

Question : Are you one of the people who chose to find out why something happened by experimenting instead of being told?

Answer : I am among those who prefer to find out if something happens by doing experiments, because experimenting is fun. We can indirectly feel how a scientist is doing his research.

Based on table 4a and table 4b as well as interviews that have

**TABLE 3.4.1****INDICATORS OF INTEREST INCREASE SCIENCE LEARNING TIME IN JUNIOR HIGH SCHOOL 6 MUARO JAMBI**

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
6.00-10.80	Very unkind	0	0	3.7083	4.0000	4.00	2,00	5,00
10.81-15.60	Not good	11	3.5					
15.61-20.40	Pretty good	111	35.6					
20.41-25.20	Good	148	47.4					
25.21-30.00	Very good	42	13.5					
TOTAL		312	100					

Table 3.4.1 is the result of an analysis from Muaro Jambi Junior High School 6 on the indicator of interest in adding to the science learning time. The results in table 5a have a good category wherein the number of respondents is 148, with a

percentage of 47.4%. The average value obtained is 3.7083 with the value that often appears is 4. Thus the attitude of students' interest in adding to the learning time of science is said to be good.

**TABLE 3.4.2****INDICATORS OF INTEREST INCREASE SCIENCE LEARNING TIME IN JUNIOR HIGH SCHOOL 6 MUARO JAMBI**

Range	Attitude	Amount	%	Mean	MED	Mod	Min	Max
6.00-10.80	Very unkind	2	0.3	3.7044	4.0000	4.00	1,00	5,00
10.81-15.60	Not good	31	5.1					
15.61-20.40	Pretty good	203	33.3					
20.41-25.20	Good	282	46.3					
25.21-30.00	Very good	91	14.9					
TOTAL		609	100					

In table 3.4.2, the results of the analysis of the interest indicator increase the study time at Muaro Jambi 6th Middle School in good category. The number of respondents in this category was 282 out of 609 respondents, with 46.3% percent. The average value obtained is 3.7044 and the value that often arises is 4. Thus, it can be said that the students' attitudes to the indicator of interest in increasing science learning time at Muaro Jambi 6th Middle School are Good. The results of interviews conducted at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi on the indicators of attitudes towards science investigations are as follows.

Question : Other than at school, will you study science?

Answer : Yes, I usually study in groups with friends to do the assignments given by the teacher.

Based on table 3.4.1 and table 3.4.2, and based on the results of interviews that have been conducted, the attitude of students at Junior High School Muaro Jambi and Junior High School 6 Muaro Jambi on the indicator of interest in increasing the learning time of Natural Sciences is good. An interest in increasing science learning time for students enables students to increase mastery of subject matter by repeating learning obtained in class independently at home, training questions both individually and in groups. Because, one of the problems faced is student attitudes and students' views of natural science that bad attitudes towards natural science, this is because students view science subjects as difficult subjects and require good understanding of concepts to be able to achieve learning achievement [41]. For years, educational magazines are devoted to descriptions of new procedures aimed at improving mathematics, physics or general science knowledge of the population [42]. Thus, a science education program has many teaching methods and techniques that students actively use to participate in science so as to enable students to discuss and can also direct students to think and be effective in learning [43].

#### 4 CONCLUSION

From the results of research conducted at Junior High School 5 Muaro Jambi and Junior High School 6 Muaro Jambi, it was found that students' attitudes on indicators of social implications, scientific normality, attitudes towards science inquiry as well as the accuracy of adding science learning time were good enough. This attitude is the balance of students in learning, because usually science is a learning that is quite abstract and difficult to understand and requires a scientific attitude.

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