Humanities & Social Sciences Reviews
eISSN: 2395-6518, Vol 7, No 2, 2019, pp 91-99
https://doi.org/10.18510/hssr.2019.7210

CHARACTERISTICS OF STUDENTS' ATTITUDE TO PHYSICS IN MUARO JAMBI HIGH SCHOOL

Astalini, Dwi Agus Kurniawan*, Darmaji, Lintang Rofiatus Sholihah, Rahmat Perdana
Physics Education, Faculty of Teaching and Education, University Jambi, Indonesia
*dwiagus.k@unja.ac.id

Article History: Received on 02nd January, Revised on 15th February, Published on 05th March 2019

Abstract

Purpose of Study: This research was conducted to ascertain the students' attitude towards Physics subject in Muaro Jambi High School based on attitude indicator from Test of Science-Related Attitudes (TOSRA).

Methodology: A quantitative survey was used for the study. The subjects of the study were students of 458 students in senior high school 1, 4, 5, and 8 in Muaro Jambi. Instruments research is a questionnaires attitude and motivation. Analytical techniques comprised of using descriptive statistics.

Main Findings: The results of the three indicators of attitude and motivation, namely social implications on personnel categorized have a sufficient category of 42.8% for a total of 196 of 458 students. The dimensions of normality of scientists were to have a sufficient category of 47.4% for a total of 217 out of 458 students. The dimensions of career interest in the field of physics are categorized a good at 38.3% for a total of 175 out of 458 students, and motivation has a good at 42.1% for a total of 193 out of 458 students. There is a relationship between motivation and attitudes of students in motivation in senior high school 1 Muaro Jambi with a r-value of 0.518 and positive, of students in senior high school 4 with a r-value of 0.832 and positive, of students in senior high school 5 with a value of r 0.746 and positive, of students in senior high school 8 with a value of r 0.623 and positive.

Implications: Based on the research results , the indicators that meet the criteria are needed to investigate to improve the results of these indicators, namely the indicator of scientists' normality and interest in a physics career.

Keywords: *Physics, Attitude, Attitude Assessment, Motivation*

INTRODUCTION

Physics has become one of the subjects associated with scientific concepts. Physics is studied by students in junior and senior high school. As a science, Physics has an important role in the knowledge of phenomena in the universe, and physics education continues to change and develop in accordance with the world condition (Kaya & Boyuk, 2011). Afrizon, (2012) has mentioned that Physics becomes a part of the nature's science, which evolves from an inductive approach and contributes much to the development of science and technology. The findings are the results of thinking from the application of the concept of physics in everyday life, such as electricity, technology, computers, television, radio, and others.

The results of the implementation of physics findings were obtained by students through teaching and learning activities in schools. There are several factors that can influence the learning process and these factors are between the internal and the external factors. Internal factors can be interest, learning motivation, attitudes, learning habits, and self-concept, while external factors can be school environment, peers, classroom atmosphere, school curriculum, facilities, and infrastructure (Astalini, Kurniawan, Perdana & Kurniasari, 2018).

Internal factors like attitude can be influenced by students in the learning process. Attitude is an important part of human identity (Mohamed & Waheed, 2011). Rafed and Assaraf (2010) explain that in approaching the attitudes and views of students towards science studies, we must understand the studying and decision-making processes of students in relation to future science-related occupations. Attitudes towards investigations in physics contain students' perceptions or views of ways or actions in solving physics problems. The most important competence that physics education students should have is skill competence. Physics students can develop an understanding of scientific concepts by having scientific knowledge skills and abilities of a scientific approach (Darmaji, Kurniawan, Parasdila and Irdianti, 2018). Rosa (2012) states that attitude is a person's tendency to react to an object or situation encountered in a certain way, so that the attitude posed can be positive and negative. Some attitudes caused by students in learning are positive and some are negative.

Positive attitudes and negative attitudes aroused by students during their learning of Physics vary. The positive attitudes of students can be their happiness and enthusiasm in classroom learning activities and a high curiosity about learning the material in the Physics course, while negative attitudes caused by students can be less interest in following the lesson, indifference to the explanations of the teacher, not being spirited, during the Physics classes. Guido (2013) posited that students who have positive attitudes toward physics remain motivated to engage in classes; whereas, students who have negative attitudes, and who dislike learning and physics teachers, are less motivated in classroom learning activities.

Physics subjects conduct an attitude assessment (effective) in addition to performing cognitive assessment and psychomotor assessment. Qomari (2008) reports that due to changes in the behavior of students who can change at any time, this attitude (effective) assessment cannot be done at any time. It takes a relatively long time to form a person's attitude, because an attitude assessment (effective) in learning is very important to know the attitude of students to the subject of physics, so that the results obtained can be used to help teachers in determining appropriate learning strategies for students (Sukanti, 2011). Student attitudes to be measured using a questionnaire instrument refers to indicators of the Test of Science-Related Attitudes (TOSRA) instrument developed by Darmawangsa (2018).

Higgins and Kruglanski (2000) secara umum, motivasi berarti sesuatu yang mendorong untuk berbuat atau beraksi. Motivasi dapat diartikan sebagai kekuatan (energi) seseorang yang dapat menimbulkan tingkat persistensi dan antusiasmenya dalam melaksanakan suatu kegiatan, baik yang bersumber dari dalam diri individu itu sendiri (motivasi instrinsik) (Higgins & Kruglanski, 2000). Misalnya, siswa mempunyai kemauan sendiri untuk belajar fisika, mampu dan berkonsentrasi disaat belajar fisika (Higgins & Kruglanski, 2000). Maupun dari luar individu (motivasi ekstrinsik), seperti mendapatkan hadiah dan mendapatkan nilai yang baik (Higgins & Kruglanski, 2000). The students who have a negative attitude towards physics have a lack of motivation for class engagement, and also the students who have positive attitudes towards physics have motivation for class engagement (Guido, 2013).

When conducting the initial studies at Muaro Jambi High School, students tend to be quiet and not actively involved in learning activities. Although there are some students who are active in learning, as well as answer questions asked by the teacher and ask about the subject matter that has not been understood. The results of interviews conducted on students, there are some of them who like physics and some do not like physics. The reason for students not liking physics is caused by the material by using many formulas and using mathematical calculations in the settlement. Judging from the results of student learning, teachers say that there is still a lot less than the maximum, and the average value obtained from the subject of physics is still less than the criteria of mastery expected. Such information is known from interviews conducted with physics subject teachers. Therefore, this study attempts to know students' attitudes towards Physics at Muaro Jambi High School. The criteria of student attitudes to be viewed refer to indicators of the TOSRA instrument, among them, the social implications of physics, the normality of scientists, and the interest of careers in the field of physics. These attitudes will be analyzed in this study on the attitude of students towards the subject of physics.

1. How to describe attitudes on social implications in physics learning?
2. How to describe the normality of scientists in learning physics?
3. How can attitude describe Interest in a career in physics?
4. How to describe student motivation in physics learning?
5. What is the relationship between students' motivation and attitudes towards physics subjects?

The results of this study can contribute to raising the attitudes and motivation of high school students in Muaro Jambi.

METHOD

The research design used by researchers is quantitative research design of survey. Survey research is a procedure in quantitative research where researchers administer surveys to a sample or to the entire population used to describe population attitudes, opinions, behaviors, or special characteristics (Creswell, 2012: 752). The design of this study was applied because it was in accordance with the objectives of the study, where the aim was to find out the attitudes of high school students to the subject of Physics.

The research center is located at Muaro Jambi High School with a total of 458 students with details of 218 male students and 240 female students from four high schools of Jambi province. The research subjects were students of Class X and Science Class XI. The sample data was derived by using sampling purposive method. Purposive sampling is a technique based on the criteria of the researcher (Kerlinger, 2014). The data collection procedure for Creswell's referring (2015) is described in the figure below:

Humanities & Social Sciences Reviews
eISSN: 2395-6518, Vol 7, No 2, 2019, pp 91-99
https://doi.org/10.18510/hssr.2019.7210

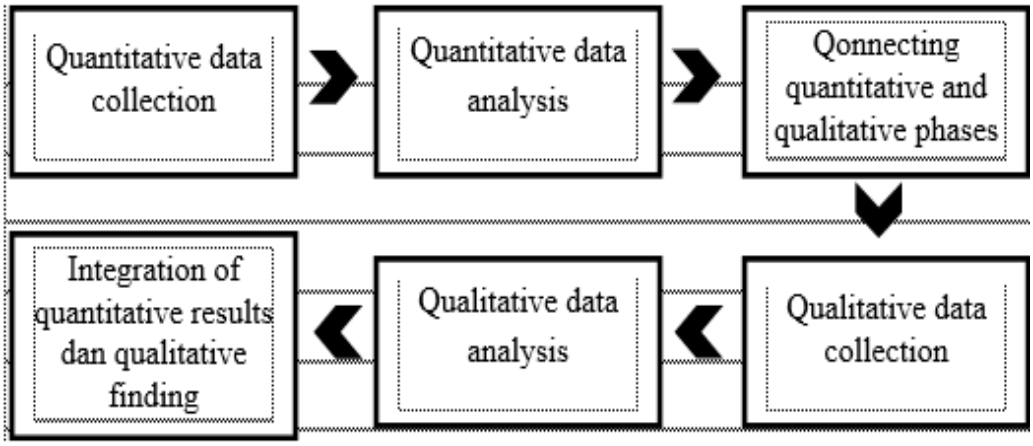

Figure 1. The data collection

Based on the picture above, it can be seen that the first activity to be done in the process of data collection is the distribution of questionnaires to all Science students of Class X and Science XI in Muaro Jambi High School. The purpose of this questionnaire is to find students ready on the dimensions of the social implications of physics, scientific normality, and interest in the field of physics. After the questionnaire results are obtained, a questionnaire analysis is conducted, after which the interview can be done on the basis of the analysis of results of the questionnaire. The instruments used are questionnaires and interview sheets. According to Cohen, Manion, and Morrison (2007), a questionnaire is a list of questions given to people who are willing to respond (respondents) according to the users' demands. In this study, the study used two questionnaire instruments wherein the attitude questionnaire adopted from the Darmawangsa (2018) study had 54 valid statements with 7 indicators which had a Cronbach's alpha reliability value of 0.9 and the motivational questionnaire was adapted from Sudibyo (2016) which had 23 valid statements with 12 indicators and had a Cronbach's alpha reliability value of 0.86. A five-point Likert scale for positive statements (Strongly Disagree having a score of 1, Disagree having a score of 2, Neutral having score 3, Agree has a score of 4, and Strongly Agree 5) was used in this study. For negative statements, Strongly Disagree has a score of 5, Disagree has a score of 4, Neutral has a score of 3, Agree has a score of 2, and Strongly Agree has a score of 1.

Dibawah ini terdapat kategori dari angket, yaitu sangat baik, baik, cukup, tidak baik, dan sangat tidak baik.

Table 1: Characteristics of attitude and motivation

Kategori	Interval			
	Social Implication of Physics	Normality of scientists	Interest in a career in Physics	Motivasi
Very Good	5.0 – 8.0	5.0 – 8.0	10.0 – 17.0	23.0 - 41.4
Good	8.1 – 12.0	8.1 – 12.0	17.1 – 25.0	41.5 - 59.8
Enough	12.1 – 16.0	12.1 – 16.0	25.1 – 33.0	59.9 - 78.2
Not Good	16.1 – 20.0	16.1 – 20.0	33.1 – 41.0	78.3 - 96.6
Very Not Good	20.1 – 25.0	20.1 – 25.0	41.1 – 50.0	96.7 - 115

Interviews were conducted with a semi-structured interview technique, which was a combination of guided and unsupervised interviews that used several questions, in which interviewers were asked questions freely. The questions were not in order and the choice of words was also not standardized and was adjusted according to the situation and conditions during the interview (Satori & Komariah, 2009). In order to know the reason for having the attitude, students who conducted the interview were selected on the basis of scores obtained from each student. The students who achieved the lowest score/criteria were not very good and the students who had the highest score/criteria were very good, with the intention of knowing the more in-depth reason of students having bad or excellent attitude on each indicator. Data analysis of quantitative data uses a descriptive statistic.

The quantitative data (questionnaire) was presented by using the pie chart and the distribution table. The pie chart is used to compare data from various groups, whereas the frequency distribution table is arranged when the amount of data to be presented is quite large, so that it becomes inefficient and less communicative if presented in a regular table (Cohen, Manion & Morrison, 2007). The presentation of data for the results of this interview was by using narrative texts.

RESULTS AND DISCUSSION

Students can be viewed from the characteristics of students, namely from feeling happy, or just ordinary from these students, as they feel happy, unhappy, like or dislike, motivated, or unmotivated. Attitude is a term that reflects pleasure, displeasure, or an ordinary feeling (neutral) of a person towards something (Oba, 2014). The validity of this research is viewed from the indicators of social implication of physics, the normality of scientists, and interest in career in physics derived from Fraser's (1981) research and implemented in Indonesia in terms of validity and reliability with validity values of 54 statements and having Cronbach's alpha values of 0.9 carried out by Darmawangsa, Astalini & Kurniawan (2018). Three indicators, namely social implication of physics, normality of scientists, and interest in a career in Physics will be examined in this study.

a. Social Implications of Physics

The results of the questionnaire data obtained for indicators of social implications of physics will be further elaborated in the table below:

Table 2: Results from social implication indicators of physics in Muaro Jambi

Interval	Category		Attitude	Total	Mean	Median	Min	Max	%
	Female	Male							
5.0 – 8.0	4	12	Very Not Good	16					3.5
8.1 – 12.0	25	19	Not Good	44					9.6
12.1 – 16.0	106	90	Enough	196	15.0	14	7	25	42.8
16.1 – 20.0	75	76	Good	151					32.9
20.1 – 25.0	26	25	Very Good	51					11.2
TOTAL	240	218		458					100

Table 2 shows that out of the 458 respondents from high school, the number of male students categorized in the interval of 8.1 to 12.0 were 90, whereas the number of female students categorized in the interval of 8.1 to 12.0 was 106 with the enough category of attitude. The results were processed by using the SPSS program application and it was obtained for social implication to have a sufficient category of 42.8% for a total of 196 students, good at 32.9% for a total of 151 out of 458 students, very good at 11.2% for a total of 51 out of 458 students, and not good at 9.6% for a total of 44 out of 458 students, and not very good at 3.5% for a total of 16 out of 458 students. Out of the 458 students, the mean was 15.0, the maximum value was 25, the minimum value was 7, and the median was 14.

b. Normality of scientists

The questionnaire results obtained from the normality indicators of scientists are further elaborated in the table below:

Table 3: Results from normality indicators of scientists in Muaro Jambi

Interval	Category		Attitude	Total	Mean	Median	Min	Max	%
	Female	Male							
5.0 – 8.0	6	5	Very Not Good	11					2.4
8.1 – 12.0	18	25	Not Good	43					9.4
12.1 – 16.0	135	82	Enough	217	14.0	16	6	24	47.4
16.1 – 20.0	85	49	Good	134					29.3
20.1 – 25.0	18	32	Very Good	53					11.5
TOTAL	240	218		458					100

Table 3 depicts that out of the 458 respondents from high school, the male students with enough category were 82 and the female students were 135 with enough category. The results were processed by using the SPSS program application. It was obtained for normal 47.4% for a total of 217 students, good at 29.3% for a total of 134 out of 458 students, very good at 11.5% for a total of 53 out of 458 students, not good at 9.4% for a total of 43 out of 458 students, and not very good at 2.4% for a total of 11 out of 458 students. Out of 458 students, the Mean was 14.0, the maximum value was 24, the minimum value was 6, and the median was 16.

c. Interest in a career in physics

The results of the questionnaire obtained for the indicator of career interest in the field of physics are described in the following table.

Table 4: Results from indicators of interest in a career in physics in Muaro Jambi

Interval	Category Female	Male	Attitude	Total	Mean	Median	Min	Max	%
10.0 – 17.0	3	6	Very Not Good	9					1.9
17.1 – 25.0	27	20	Not Good	47					10.3
25.1 – 33.0	98	62	Enough	160	37.0	40	16	48	34.9
33.1 – 41.0	78	97	Good	175					38.3
41.1 – 50.0	34	33	Very Good	67					14.6
TOTAL	240	218		458					100

Table 4 shows that from 458 male students from high school, the good category had a total of 97, whereas the female students were 78 in the good category. The results were processed using the SPSS program application and it was obtained for a career in physics to have a good category at 38.3% for a total of 175 out of 458 students, enough category of 34.9% for a total of 160 students, very good at 14.6% for a total of 67 students, not good at 10.3% for a total of 47 students of 458 students, and not very good at 1.9% for a total 9 out of 458 students. Out of 458 students, the mean was 37.0, the maximum value was 48, the minimum value was 16, and the median was 40.

d. Motivation

The results of the questionnaire obtained for the motivation are described in the following table.

Table 5: Results from motivation in Muaro Jambi

Interval	Category Female	Male	Attitude	Total	Mean	Mode	Min	Max	%
23.0 - 41.4	4	7	Very Not Good	11					2.6
41.5 - 59.8	23	12	Not Good	35					7.6
59.9 - 78.2	71	103	Enough	174	15.0	16	7	25	37.9
78.3 - 96.6	107	86	Good	193					42.1
96.7 – 115	28	17	Very Good	45					9.8
TOTAL	240	218		458					100

Table 5 shows that out of 458 respondents, the male high school students in good category were 86, whereas the female high school students were 107 in good category. The results were processed by using the SPSS program application. It was obtained for motivation to have a good at 42.1% for a total of 193 out of 458 students, enough category of 37.9% for a total of 174 students, very good at 9.8% for a total of 45 out of 458 students, not good at 7.6% for a total of 35 out of 458 students, and not very good at 2.6 % for a total of 11 out of 458 students. Out of 458 students, the mean was 15.0, the maximum value was 25, the minimum value was 7, and the median was 16.

e. The relationship between attitude and motivation

The results of the questionnaire obtained for the indicator of career interest in the field of physics are described in the following table.

Table 6: Test of output relationships at senior high school in Muaro Jambi

Class	Correlation	Motivation_1	Attitude_1	Motivation_4	Attitude_4	Motivation_5	Attitude_5	Motivation_8	Attitude_8
Motivation_class	Pearson Correlation	1	.518**	1	.832**	1	.746**	1	.623**
	Sig. (2-tailed)		.024		.000		.000		.000
	N	80	80	100	100	88	88		
Attitude_class	Pearson Correlation	.518**	1	.832**	1	.746**	1	.623**	1
	Sig. (2-tailed)	.024		.000		.000		.000	
	N	80	80	100	100	88	88		

Table 6 depicts that the significance value is 0.024, which is less than 0.05. Thus, it can be concluded that there is a relationship between motivation and attitudes of students in senior high school 1 Muaro Jambi with an R-value of 0.518 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 lesser than 0.05. Thus, we can conclude that there is a relationship between motivation and attitudes of students in senior high school 4 with an R-value of 0.832 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 less than 0.05, and we can conclude that there is a relationship between motivation and attitudes of students in senior high school 5 with a value of r 0.746 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 less than 0.05 and thus, we can conclude that there is a relationship between

motivation and attitudes of students in senior high school 8 with a value of r 0.623 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003).

DISCUSSION

1. Social Implications of Physics

The students' attitude about social implication on physics based on the results of the research revealed a sufficient category of 42.8% for a total of 196 of 458 students and good at 32.9% for a total of 151 out of 458 students, very good at 11.2% for a total of 51 out of 458 students, and not good at 9.6% for a total of 44 out of 458 students, and not very good at 3.5% for a total 16 out of 458 students. The interviews obtained for the score with the criteria were not good, as the students said that physics might be one of the worst human enemies because most of the people do not like the uninteresting subject of physics. Students with fairly good scores claimed that discoveries through physics have benefited the development of world technology, but not yet fully perceived in the society. While students who scored well agreed that new discoveries in physics are more profitable than harmful. The students also said that physics gives a better influence in the life to come, because the physical discoveries provide many advantages and good effects and is in accordance with Veloo's (2015) opinion that the results of the discovery of concepts and physics have been applied in various fields of technology, such as communication technology, electricity, etc. The results of interviews from indicators of social implications to physics have found that, for students who scored in the well criteria say that physics is one of the worst enemies of human beings, as there are still many students who do not like the subject. Physical discoveries have not been very beneficial for the society. Students with a good enough score state that physics discoveries have benefited the development of world technology, but not yet fully seen in the public view. While students who scored with good criteria say that the results of the findings of physics have benefits and profits from big losses. Rusli (2013) also said that significant development of physics in the 20th century had impacted the growth of technology and the attitude of young (and old), which spur the development of physics, thanks to the progress of the sensitivity of equipment.

2. Normality of Scientists

Students' attitudes about the normality of scientists based on the results of the research indicate a sufficient category of 42.8% for a total of 196 of 458 students, good at 32.9% for a total of 151 out of 458 students, very good at 11.2% for a total of 51 out of 458 students, and not good at 9.6% for a total of 44 out of 458 students, and not very good at 3.5% for a total 16 out of 458 students. Interviews from indicators of the normality of scientists and students who scored poorly on criteria stated that scientists spend most of their time in the laboratory, so most of the scientists do not have much time for their families. Students who scored well say that work as a scholar will be fun, but it will keep the scientist busy spending time in the laboratory. Students, who scored well revealed that in their daily lives, scientists will be the same as people in general and lead a happy life with their families. This is also in accordance with the results of interviews that were conducted for students who answer with good criteria reveal that scientists will look the same as people in general, because they also lead a happy life with their families. Students who score well say that work as a student looks fun, but the work will keep scientists busy spending time in the laboratory. Students who respond to the criteria are not good to say that scientists will often spend time working in the laboratory, so most of them do not have time for their families. They rarely communicate with others, especially with neighbors. This is consistent with the results of research by Song and Kim (1999) saying that although scientists are regarded as intelligent and imaginative, they are unsure about the ethical aspects and whether scientists can be trusted. The findings of Turkmen (2007) also mention that a scientist will look like a man who uses lab coats with the tools to work in a laboratory.

3. Interest in a career in physics

The results of the research indicator of interest in the career of physics for the criteria are good at 38.3% for a total of 175 out of 458 students, enough category of 34.9% for a total of 160 of 458 students, very good at 14.6% for a total of 67 out of 458 students, not good at 10.3% for a total of 47 out of 458 students, and not very good at 1.9% for a total 9 out of 458 students. The results of the interviews obtained that students who get a score with the criteria of not good said that they were not interested in a career in the field of physics. Based on the input of respondents who were interviewed from the perspective of career interest in the field of physics, students who get a score with the criteria is not good said that they were not interested in a career in the field of physics, both as teachers and scientists. Students who scored fairly well stated that they were not interested in a career in physics, although physics was one of their favorite subjects. While for students who score with good criteria and very well desirous for a career in the field of physics, such as a scientist or physics teacher, or be both teacher and physicist. Besides the students not liking the subject of physics from the

beginning, they revealed that a career in the field of physics requires more understanding of science and being a scientist will be boring because they would often spend time in the laboratory. Students who scored well enough stated that they were not willing to pursue a career in physics, although physics was one of their favorite subjects, and that there are other areas that the student wanted to explore in future plans. The students, who scored in the well criteria for a career in physics, had an interest in being a scientist and a teacher. These students really loved physics lessons and said that they want to work as scientists as it is a fun and money-making job. Someone who has an interest, ability, and confidence in a field will tend to have a career desire in it. Komara (2016) reported that interest, talent, learning achievement, and self-confidence are factors that affect career planning. These factors can affect the achievement of goals in a person's career planning, thus someone interested in physics will tend to be interested in a related career.

4. Correlation motivation and attitude

We can see that the significance value is 0.24 less from 0.05 and it can be concluded that there is a relationship between motivation and attitudes of students in motivation in senior high school 1 Muaro Jambi with an R-value of 0.518 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 less than 0.05, hence it can be concluded that there is a relationship between motivation and attitudes of students in senior high school 4 with an R-value of 0.832 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 less than 0.05, it can be concluded that there is a relationship between motivation and attitudes of students in senior high school 5 with a value of r 0.746 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003). It can be seen that the significance value is 0.000 is less than 0.05 it can be concluded that there is a relationship between motivation and attitudes of students in senior high school 8 with a value of r 0.623 and positive. If the value of significance is less than 0.05, then there is a relationship (Gall, 2003).

The purpose of the positive category itself is that there is a unidirectional relationship between the variables X and Y, namely motivation and attitude. If the motivation rises, then the attitude rises, and if the motivation goes down, the attitude also goes down. Then, the intent of the negative category itself is the existence of a contradictory relationship between the variables X and Y, that is, if the motivation raises it is not necessary that attitude rises, instead it goes down, and if the motivation goes down it is not necessary that the attitude goes down, but it rises. This is in accordance with Gall (2003) where r = -1 is a perfect negative correlation, meaning that there is a contradictory relationship between variables X and Y, if X rises / high then Y falls / low, while r = 1 is a perfect correlation, which means there is a relationship in the direction of variable X and variable Y, if X rises then Y rises or if Y drops then X drops.

Such a biased search may yield an attitude that is somewhat more negative than the attitude that one would report in the absence of motivation (Higgins & Kruglanski, 2000). This means that the search for something will produce a positive or negative attitude than the attitude reported without motivation. From Higgins and Kruglanski's statement, we can conclude that motivation is very important towards attitudes, hence motivation and attitudes are interconnected.

CONCLUSION

Based on the results of research conducted, it can be concluded that out of the three indicators of attitude of the students of senior high school 1, 4, 5, and 8 at Muaro Jambi High School, only one indicator of career interest in the field of physics had good criteria. Indicators of the normality of scientists and the social implications of physics are enough criteria. Social implications on personnel categorized had a sufficient category of 42.8% for a total of 196 of 458 students. The dimensions of normality of scientists are meant to have a sufficient category of 47.4% for a total of 217 of 458 students. The dimensions of career interest in the field of physics are categorized as good at 38.3% for a total of 175 out of 458 students, and motivation has good criteria at 42.1% for a total of 193 out of 458 students. Thus, the students who like the subject of physics agree that the findings of physics are beneficial to the world, and scientists will look like humans in general and lead a happy life. Such students wish for a career in physics, assuming that scientific work is fun and can generate money. There is a relationship between motivation and attitudes of students studying in senior high school 1 Muaro Jambi with r value of 0.518 and positive, of students in senior high school 4 with r value of 0.832 and positive, of students in senior high school 5 with r value of 0.746 and positive, of students in senior high school 8 with a value of r 0.623 and positive.

SUGGESTION

Based on the results of the conducted research, the indicators that get the criteria well enough need to do further investigation to improve the results of indicators of the normality of scientists and interest in a career in physics. Efforts

are required to improve indicators that still have sufficient criteria. The indicator of the normality of scientists can be improved by introducing more biodata and life history of scientists on the teaching and learning process and learning materials related to the history of scientists. Then, the indicator of a career in the field of physics can be improved by providing knowledge about jobs in the field of physics.

ACKNOWLEDGEMENT

This research would not have been possible without the help and support of several people. The researcher takes this opportunity to thank the Science students of X, XI, and XII classes of 1, 4, 5, 8 Muaro Jambi High School. The researcher also thanks the advisors and research teams who assisted in conducting this research.

REFERENCES

Afrizon, R., Ratnawulan, R., & Fauzi, A. (2012). Peningkatan Perilaku Berkarakter Dan Keterampilan Berpikir Kritis Siswa Kelas IX MTsn Model Padang pada Mata Pelajaran IPA-Fisika Menggunakan Model Problem Based Instruction. Jurnal Penelitian Pembelajaran Fisika, 1(1).

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).

Cohen, L. M. (2007). Research Methods in Education. New York: Routledge.

Creswell, John. (2015). Riset Pendidikan; Perencanaan, Pelaksanaan dan Evaluasi Riset Kualitatif & Kuantitatif (ed.5). Yogyakarta: Pustaka Belajar

Darmaji., Kurniawan, D. A., Parasdila, H., Irdianti. (2018). Description of Science Process Skills' Physics Education Students at Jambi University in Temperature and Heat Materials. The Educational Review, USA. 2(9): 485-498. DOI:10.26855/er.2018.09.004

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.

Fraser, B. J. (1981). Tosra: Test of science-related attitudes: Handbook. Australian Council for Educational Research.

Gall.D.M et al. (2003). Education Research an introduction seventh edition. USA: Pearson Education.Inc

Guido, R. M. D. (2013). Attitude and Motivation towards Learning Physics. International Journal of Engineering, 2(11).

Higgins, E. T & Kruglanski, A, W. (2000). Motivational Science Social and Personality Perspectives. USA: Taylor & Francis.

Kaya, H., & Boyuk, U. (2011). Attitude towards Physics Lessons and Physical Experiments of the High School Students. European journal of physics education, 2(1), 23-31.

Kerlinger, F. N. (2014). Foundations of behavioral research. Yogyakarta: Gadjah Mada University Press.

Komara, I. B. (2016). Hubungan antara Kepercayaan Diri dengan Prestasi Belajar dan Perencanaan Karir Siswa SMP. PSIKOPEDAGOGIA Jurnal Bimbingan dan Konseling, 5(1), 33-42.

Mohamed, L., & Waheed, H. (2011). Secondary students' attitude towards mathematics in a selected school of Maldives. International Journal of humanities and social science, 1(15), 277-281.

Omotade, A. A., & Jegede, S. (2015). Effects of Out-door Activities on Studentsâ€™ Attitude towards Physics in Secondary Schools. International Journal for Innovation Education and Research, 3(5).

Qomari, R. (2008). Pengembangan instrumen evaluasi domain afektif. Insania, 13(1), 87-109.

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.

Rusli, A. (2014). Pendidikan Fisika untuk Abad ke-21: Kesadaran, Wawasan, Kedalaman, Etika (Halaman 16 sd 19). Jurnal Fisika Indonesia, 17(50).

Satori, D. A., & Komariah, A. (2009). Metodologi Kualitatif. Bandung: Alfabeta

Song, J., & Kim, K. S. (1999). How Korean students see scientists: the images of the scientist. International Journal of Science Education, 21(9), 957-977.

Sudibyo, Elok et al. (2016). Pengembangan Instrument Motivasi Belajar Fisika: Angket. Jurnal Penelitian Pedidikan IPA. 1(1), 13-21. DOI: http://dx.doi.org/10.26740/jppipa.v1n1.p13-21

Sukanti, S. (2011). Penilaian Afektif Dalam Pembelajaran Akuntansi. Jurnal Pendidikan Akuntansi Indonesia, 9(1).

Türkmen, H. (2008). Turkish Primary Students' Perceptions about Scientist and What Factors Affecting the Image of the Scientists. Eurasia Journal of Mathematics, Science & Technology Education, 4(1).

Veloo, A., Nor, R., & Khalid, R. (2015). Attitude Towards Physics and Additional Mathematics Achievement Towards Physics Achievement. International Education Studies, 8(3), 35-43.