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SCIENTIFIC ATTITUDE AND THEIR RELATIONSHIP WITH STUDENTS' SCIENCE LITERACY IN JUNIOR HIGH SCHOOL

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ABSTRAK

Pendidikan saat ini menekankan pengembangan sikap ilmiah seperti rasa ingin tahu, objektivitas, dan berpikir kritis sebagai bekal menghadapi tantangan global. Sikap ilmiah ini berperan penting dalam meningkatkan literasi ilmiah siswa SMP karena mendorong pemahaman sains sebagai proses berpikir dan penyelidikan berbasis bukti. Penelitian ini bertujuan untuk memberikan gambaran tentang profil kemampuan sikap ilmiah dan kemampuan literasi sains siswa SMP. Pendekatan yang digunakan dalam penelitian ini adalah kuantitatif dengan teknik pengambilan sampel adalah total sampling. Berdasarkan data yang telah diperoleh, dilanjutkan dengan pembahasan yang telah diuraikan di atas, pada akhir penelitian dapat disimpulkan bahwa profil kemampuan sikap ilmiah dan kemampuan literasi sains siswa SMP, didominasi oleh siswa (peserta didik) dengan kemampuan sikap ilmiah dengan kategori “baik” sebanyak 38,16%, kategori “sangat baik” sebanyak 30,26%, kategori “sedang” sebanyak 22,37%, dan sebanyak 9,21% untuk kategori “rendah”. Sedangkan untuk kemampuan literasi sains didominasi oleh siswa dengan kemampuan pada kategori “baik” sebanyak 35,53%, kemampuan pada kategori “sangat baik” sebanyak 32,89%, kategori “sedang” sebanyak 21,05%, dan sisanya sebesar 10,53% berkategori “rendah”. Berdasarkan hasil uji korelasi juga dapat disimpulkan bahwa terdapat korelasi yang signifikan antara kemampuan sikap ilmiah dengan kemampuan literasi sains siswa. Dengan demikian, hal tersebut menunjukkan bahwa kemampuan sikap ilmiah berpengaruh signifikan terhadap kemampuan literasi sains siswa.

Kata Kunci: *Sikap Ilmiah, Literasi Sains, SMP*

ABSTRACT

Current education emphasizes the development of scientific attitudes such as curiosity, objectivity, and critical thinking as provisions for facing global challenges. These scientific attitudes play an important role in improving the scientific literacy of junior high school students because they encourage an understanding of science as a process of thinking and evidence-based investigation. This study aims to provide an overview of the profile of the scientific attitude ability and scientific literacy ability of students in Junior High School. The approach used in this research is quantitative with the sampling technique being total sampling. Based on the data that has been obtained, followed by the discussion described above, at the end of the study it can be concluded that the profile of the scientific attitude ability and scientific literacy ability of students in Junior High School, is dominated by students (students) with the ability of scientific attitudes with the category "good" as much as 38.16%, the "very good" category as much as 30.26%, the "medium" category as much as 22.37%, and as much as 9.21% for the "low" category. As for science literacy ability, it is dominated by students with the ability in the "good" category as much as 35.53%, the ability in the "very good" category as much as 32.89%, the "moderate" category as much as 21.05%, and the remaining 10.53 % categorized as “low”. Based on the results of the correlation test, it can also be concluded that there is a significant correlation between the ability of scientific

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attitudes and the ability of students' scientific literacy. Therefore, it shows that the ability of scientific attitudes has a significant effect on students' scientific literacy skills.
Keywords: *Scientific Attitude, Scientific Literacy, Junior High School*

INTRODUCTION

Education is a process to develop and optimize all the potential possessed by students as a provision for life in the future. Various potentials must be developed in the educational process includes various aspects, both aspects of attitude, insight, and knowledge. This is as stated by (Dwiyanti & Rahayuni, 2020), in the era of globalization that is so tight, competition demands very high abilities in all aspects of life. In a rapidly developing world, the ability to increase knowledge and skills is the key to success in life. The end of the 21st century marked the century of globalization as a transformation of education. In the 21st century, the Ministry of Education and Culture has developed an educational strategy that emphasizes the ability of students to discover, ask questions, think analytically, and collaboratively and collaboratively solve problems from various sources.

One of the potential students that must receive serious attention from the teacher is the ability of scientific attitude. Through the ability of a good scientific attitude, a person will be able to improve the development of relevant thought patterns and behaviors. As stated by (Hendracipta, 2016), that attitude is a combination of one's belief in an object, in other words, attitude is a general tendency to respond consistently which is patterned on thoughts, feelings, and tendencies. So in this case attitude relates to one's feelings towards a particular object accompanied by a tendency to act by that object.

In addition, (Hasanuddin, 2020), also explains that attitude is a combination of concepts, information, and emotions generated in the predisposition to respond to certain people, groups, ideas, events, or objects pleasantly or unpleasantly. This is in line with (Ulfa, 2016), that scientific attitudes can develop curiosity, make decisions, seek answers to a problem, think openly, practice problem solving, be objective, honest, thorough, able to cooperate, and enjoy researching.

The development of a scientific attitude can be done through the scientific method. Scientific method activities include: observing, making experiments, collecting data, and concluding findings. It has also been formulated by (Ulfa, 2016), that educational attainment is classified into five types of achievements: intellectual skills, cognitive tactics, informative, attitude, and responsive skills. This formulation is reinforced by (Arief, 2022), that 3 aspects are contained and always related in attitude, namely: cognitive beliefs, one's emotionality, and individual attitudes to the target in behavior. In line with the above statement, (Fatonah & Prasetyo, 2014), states that a person's behavior or attitude develops and is correlated with each other in the scope of life both in the past and in the present era. With the formation of perception and integration, the involvement of attitude is changed into the form of perceptual, and emotional elements, so that they are encouraged to behave. Once the behavior has been formed, it will automatically affect the life that is changing at this time, and these changes will cause the attitude you have to change. Thus, the values embedded in a person are directly formed with the development of these attitudes.

Some research shows that the ability to be scientific has a positive influence on a person's personality. This is as explained by (Saputri, 2017), that scientific attitudes are behaviors that are obtained through the provision of positive examples and must continue to be developed to be relevant for students. The purpose of developing scientific work attitudes is to avoid the emergence of negative attitudes in students. Therefore, scientific work attitude

is an important aspect because it affects the personality and the formation of good character in students.

This explanation is also reinforced by (Hijrah, 2020), saying that the idea of learning science through the development of scientific attitudes is an alternative that is very relevant to the country's situation. In addition, Magdalena et al., (2020), also explained that students who can have scientific attitudes will make it easier to act, achieve and have a strong commitment and are always motivated to achieve the intended success. The scientific attitude of students can be used as an indicator of the success of the learning process. According to (Febriyanti, 2021), a scientific attitude is said to be good if it meets indicators, including curiosity, critical thinking, and sensitivity to data and facts. This shows that the ability of scientific attitude plays a role in improving learning outcomes and the ability to behave and knowledge.

In addition to the ability of scientific attitudes, another potential that must be developed in every student is the ability of scientific literacy, so that the learning process goes well and gets satisfactory results. According to (Nehru & Syarkowi, 2017), it is stated that one of the goals of learning in this century is to develop scientific literacy. This is because scientific literacy will become an important part of one's participation in society, and society requires a comprehensive understanding of big scientific ideas and thinking habits such as systems thinking and communication.

According to (Afni & Rokhimawan, 2018), knowledge, understanding, and competence are needed for every citizen from various levels of education, and scientific literacy is very important. Students cannot achieve high levels of achievement without the guidance of skilled and professional teachers, adequate study time, student science literacy spaces in sports classes, and learning resources around them. In addition, (Ardianto & Rubini, 2016), says that science education or science is a part of education that plays a crucial role in preparing students who have scientific literacy, which can think critically, creatively, and logically, and take the initiative in reaching information to citizens caused by the influence of science development. and technology. This is also reinforced in the study of (Sholahuddin et al., 2021), that student's knowledge of science is important so that students can master how they can understand the ecosystem of life, economy, health, and future problems in social life because the progress of scientific literacy and the growth of digitalization depend on this era.

Seeing the importance of understanding scientific attitudes and scientific literacy, identification or deepening of these potentials needs to be done early on. By deepening the ability of scientific attitudes and scientific literacy from an early age, the step-by-step deepening and development of scientific attitudes and scientific literacy skills can be carried out optimally by educators and parents. Therefore, the focus of this research is to describe the ability of scientific attitudes and their relationship with the scientific literacy of students in junior high school. In other words, the question that will be answered in the research is how the ability of scientific attitudes and their relationship with the scientific literacy of students in junior high school.

RESEARCH METHODS

This study uses a quantitative approach with the data collection method through observation and documentation. According to (Mulyadi, 2011), the process of data collection and data analysis is quantification or in the form of numbers and ends with a generalization process. The sample in this study was students (students) in the early childhood education program in junior high school, amounting to 76 students (students). Thus, the entire population in this study became the research sample.

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The data collection instrument in this study was in the form of a questionnaire. The scientific attitude variable was measured using an instrument adapted from (Attamimi & Umarella, 2019). The instrument used to measure the scientific literacy ability of students (students) is to use an instrument that is adapted from the results of the development carried out by (Permana & Habibie, 2021). In general, both instruments have been validated. Furthermore, the data obtained in this study were quantified and categorized into three groups, namely: high, medium, and low categories.

This process is carried out based on the score obtained by each student (student). After that, data processing was continued by conducting correlation analysis, namely to see the relationship (correlation) between the ability of scientific attitudes and the ability of students' physical literacy. Correlation analysis was carried out using SPSS 25 software to produce more accurate data. Data analysis ends by describing in the form of a systematic discussion.

RESULT AND DISCUSSION

Result

a. Ability Scientific attitude and scientific literacy ability of students In Junior High School

For each research variable, quantification has been carried out using several instruments that have been prepared in advance so that measurements or test results are obtained. As for the category of ability in each variable, it can be seen the results of the categorization of each variable based on the following table:

Table 1. Scientific Attitude and Scientific Literacy Skills for Students in junior high school

Aspect	Range Score	Numbers	Percentage (%)	Category
Scientific Attitude	76-100	23	30,26	Very good
	51-75	29	38,16	Good
	25-50	17	22,37	Moderate
	0-25	7	9,21	Low
	Total	76	100	
Scientific Literacy	76-100	25	32,89	Very good
	51-75	27	35,53	Good
	25-50	16	21,05	Moderate
	0-25	8	10,53	Low
	Total	76	100	

Referring to Table 1 in general, it can be seen that the ability of students' scientific attitude is dominated by the ability in the "good" category of as many as 29 students or about 38.16%. Then students in the "very good" category were 23 people or about 30, 26%. For the "medium" category as many as 17 people or around 22.37%, and more, as many as 7 people or around 9.21%. In addition, scientific literacy skills are dominated by students with the ability in the "good" category as many as 27 people or around 35.53%. Next is the ability in the "very good" category as many as 25 people or around 32.89%. For the "medium" category as many as 16 people or around 21.05%, and the remaining 8 people or around 10.53% in the

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"low" category. A comparison of the level of scientific attitude ability and scientific literacy ability of students can be seen in Figure 1 below:

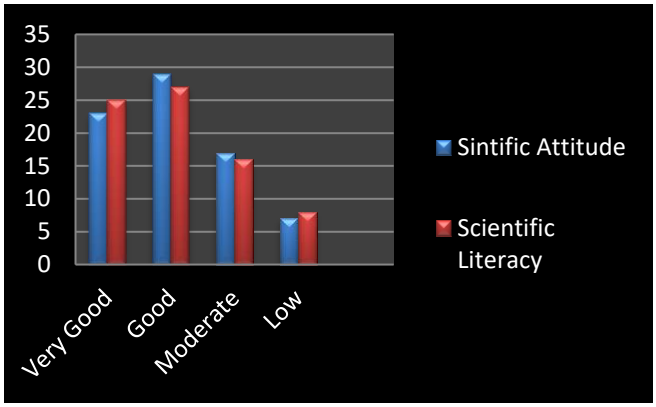

Figure 1. Comparison of levels of scientific attitude and scientific literacy

b. Correlation of scientific attitude ability and scientific literacy ability

Based on the data that has been obtained, further analysis is carried out with the help of SPSS software. The analysis in question is a bivariate product-moment correlation analysis. The results of the analysis can be seen in Table 2 below:

Table 2. Correlations

		Scientific Attitude	Science Literacy
Scientific Attitude	Pearson Correlation	1	.791**
	Sig. (2-tailed)		.000
	N	76	76
Science Literacy	Pearson Correlation	.791**	1
	Sig. (2-tailed)	.000	
	N	76	76

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the value of sig. (2-tailed) between X (scientific attitude) and scientific literacy, it is found that the value is 0.000 which means <0.05. These data indicate that there is a significant correlation between scientific attitudes toward students' scientific literacy. Therefore, it also shows that scientific attitude has a significant effect on students' scientific literacy. The correlation data also shows that the calculated R-value (Pearson correlation), is known that the R count is 0.791 > R table 0.227, which means that there is a significant correlation between kinesthetic intelligence and scientific literacy. In addition, if viewed based on the SPSS analysis with an asterisk (*), it is seen that both variables have two asterisks (**), which means that there is a significant correlation.

Discussion

As mentioned above (Table 1) that in general, the scientific attitude of children is dominated by the "good" category by as many as 38.16%, the "very good" category by as

many as 23 people or around 30, 26%, the "medium" category as many as 22, 37%, and the rest, which is 9.21% in the "low" category. This shows that in general, the scientific attitude of students in junior high school is good. With such a level of scientific attitude, the process of developing students' scientific attitudes at the school is relatively easier. However, this situation should make teachers and parents more challenged to carry out further development. Considering that students still need more systematic assistance to continue to develop their attitudes and potential.

As for scientific literacy ability, it is dominated by children with the "good" category as much as 35.53%, the "very good" category as much as 32.89%, the "moderate" category as much as 21.05%, and the remaining 10.53% in the " low". This shows that the scientific literacy of students in junior high school varied, dominated by the "good" and "very good" categories. Therefore, the process of developing scientific literacy must continue to be carried out so that this ability can continue to develop. The development of scientific literacy skills is very necessary for their success in the future.

Based on the data in Table 2, it is known that there is a significant correlation between scientific attitudes toward students' scientific literacy abilities. Or in other words, it can be stated that the ability of scientific attitudes significantly influences students' scientific literacy skills. Therefore, the two variables strongly influence each other. If the ability of scientific attitudes is good, then students' scientific literacy will also be good, and vice versa. The situation provides information that the two variables are interrelated and determine each other. Therefore, the development process of both can also be carried out together in a learning process carried out by the teacher.

Referring to the data above (Table 1), in general, it can be understood that the ability of students' scientific attitude and scientific literacy in junior high school is relatively good. However, it is still necessary to provide guidance and mentoring so that the potential possessed by these students can be further optimized. This is as stated by (Nurhasanah & Sobandi, 2016), the development of the potential of students is a very important effort in education, even becoming the essence of the educational effort. Thus the development of the potential of students in junior high school is a necessity. This is also supported by (Masni, 2018) that self-potential is a basic ability possessed by someone who is still hidden and can be developed if it is supported by environmental participation, training, and adequate facilities. Therefore, for the educational process to run smoothly and produce the best, students must be assisted in overcoming the problem as well as assisting students in developing their potential optimally, to the (Aslamiyah, 2017) theory, that individual counseling is a process of assisting through counseling interviews by an expert (counselor) to individuals who are experiencing a problem which leads to overcoming the problems faced by the client.

In addition to individual counseling guidance, efforts to foster and develop the potential of students can be done through varied learning. Varied learning can be done by varying learning resources, learning media, learning strategies, and learning models. As explained (Rachmawati & Rusydiyah, 2020) that the use of the STAD learning model can be used as an alternative to developing the potential of students. (Anhar et al., 2021), also mention that integrated learning, namely learning that involves students starting by studying, exploring, and brainstorming from students so that they are encouraged to dare to work in groups and learn from the results of their own experiences can be used as an alternative in developing the potential of students. In addition, (Khasanah et al., 2022), stated that extracurricular activities can develop the potential of students.

Efforts to develop the potential of students can be done through learning that is oriented to the diversity of all potentials (multiple intelligences) of students. This is as stated by

(Maarif & Sulistyanik, 2019), the development of the potential of students in the learning process can be done through learning based on multiple intelligences. This situation is based on a concept of thinking that learning is directed at developing students' potential in three main (compound) domains, namely: affective, cognitive, and psychomotor. These three aspects must be done together holistically. In addition, (Tallam et al., 2022), also explained that to achieve success in the three domains of learning outcomes, it must be carried out in an integrated manner. Students have the right to acquire adequate knowledge, behavior, morals, and skills. Thus, learning that is oriented toward the potential of multiple intelligences can be used as an alternative to developing the potential of students systematically.

According to (Miharja, 2016), to improve the quality of a country's education, it must be directly proportional to the understanding of scientific literacy. This shows that literacy is very influential on students' scientific ability. (Daniah, 2020), said that scientific literacy is not only an understanding of knowledge, but also involves understanding various aspects of the scientific process, as well as the ability to apply knowledge and scientific processes in real situations faced by students, both personally, socially, and globally.

This statement is supported by (Dewantari & Singgih, 2020), that the emphasis on scientific literacy is not only knowledge and understanding of scientific concepts and processes, but is also directed at how one can make decisions and participate in social life, culture, and economic growth. This was also conveyed by (Harlen & Qualter, 2018), that science learning can also be achieved by connecting the concepts of everyday life with the concepts learned by students. This is because in achieving learning success, namely realizing its vision, it can be shown if students understand the material being studied and can implement it to solve problems that exist in everyday life.

Seeing scientific literacy plays an important role in improving student learning outcomes, increasing their abilities, and being able to make decisions so that they can apply in life in society. So scientific literacy skills need to be improved and taught from an early age. This is as explained by (Zahro et al., 2019), the science learning process should develop various aspects of development in early childhood students as well as various abilities or character values of early childhood students.

One of them is the ability to think scientifically in early childhood, activities can be carried out through the discovery and processing of information with a scientific approach, namely observing, measuring, classifying, asking questions, solving problems, communicating, and so on. Meanwhile, according to (Wiedarti et al., 2018), what is meant by basic literacy is to train students to apply literacy skills in everyday life. Learning activities in schools are designed to familiarize students with literacy through play and storytelling activities.

In addition, (Abidin, 2015), in his research said that through literacy activities at school, students are trained to respond to simple to complex challenges. These challenges provide a learning experience for students to gain new knowledge from experience and social interaction. These learning activities can foster character in students, such as being independent, confident, honest, and so on. Literacy skills are not only centered on the aspects of reading and writing but are already at the level of multiliteracy interpreting multiliteracy as individual skills that use various ways to express and understand ideas that arise and information that is in the form of innovative texts, conventional texts, symbols, and multimedia. The above statement concluded by (Hidayati & Julianto, 2018), saying that scientific literacy is important thing because scientific literacy can help students overcome problems related to increasingly complex knowledge and technology.

According to (Kharisma, 2020), scientific attitudes in science learning are often linked to attitudes and science. These two actions are interdependent and influence each other. However, it must be emphasized that attitudes toward science are different from attitudes toward science. Attitude towards science is the tendency of students to feel satisfied or dissatisfied with science because they think science is difficult to learn and less interesting. In contrast to the scientific attitude, where the scientific attitude is the attitude of scientists in seeking and developing new knowledge, such as being objective towards facts, careful, responsible, open-minded, and always eager to seek. This is also supported by (Pertiwi et al., 2018), that scientific literacy and scientific attitudes support the achievement of cognitive and affective learning outcomes. Because the better the scientific literacy skills, the better the scientific attitude applied by students.

Given the main goal of learning is the achievement of learning outcomes, by strengthening scientific literacy skills and scientific attitudes it will be easier to achieve these learning outcomes. So it is important to do learning that is also oriented to scientific literacy and scientific attitude.) As (Umar et al., 2022) said, scientific literacy is important in learning because the better scientific literacy students have, the better and more meaningful learning outcomes will be.

Referring to the focus of research, namely the ability of scientific attitudes and scientific literacy, where the two variables are closely related to human physical potential. Therefore, the development of both potentials must also pay attention to the physical potential of students in general. Thus, the development of potential in the aspects of these two variables should also be associated with physical development, for example through sports activities. This is as stated by (Orlando, 2016), through sports, students will experience an increase in abilities and skills. In addition, through sports, especially in the field of sports education, they will understand every aspect that affects their development (talents) so that later they can be useful in the learning process itself.

In addition to the several strategies above, namely the development of the potential of students which can technically be carried out by the teacher, a proper management process is also needed so that the process of optimizing the development of the potential of students is more optimal. The right management of student potential development can encourage teachers to be more active and creative in carrying out the development of each student's potential. In her research, (Putri, 2020), suggests that one alternative management that can be done to develop the potential of students is through the concept of total quality management. As (Pantiwati et al., 2023)formulate that the student development management process that must be carried out includes: planning, student acceptance mechanisms, selection process, new student orientation activities, classroom division, coaching and development, monitoring, and evaluation. For this reason, the school management needs to pay attention to the implementation of management in schools to support teachers in implementing the potential development of students.

CONCLUSION

Based on the data that has been obtained followed by the discussion described above, at the end of the study it can be concluded that the profile of students' scientific attitude abilities in junior high school is dominated by students (students) with the "good" category of 38.16%, the "very good" category as much as 30, 26%, the "medium" category as much as 22.37%, and as much as 9.21% in the "low" category. As for scientific literacy skills, it is dominated by students with the ability in the "good" category as much as 35.53%, the "very good" category as much as 32.89%, the "moderate" category as much as 21.05%, and the remaining

10.53% in the category "low". Based on the results of the correlation test, it can also be concluded that there is a significant correlation between the ability of scientific attitudes toward students' scientific literacy abilities. Therefore, this also shows that the ability of scientific attitudes has a significant effect on students' scientific literacy skills

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