

The Relationship Between Learning Independence and Attitude Toward Science For Junior High School Students

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Abstract: **The Relationship Between Learning Independence and Attitude Towards Science for Junior High School Students. Objectives:** This study aims to determine the relationship between learning independence and student attitudes on science subjects in junior high school. **Methods:** This research is an associative quantitative research. The instrument used was a questionnaire to obtain science learning independence data. Data collection on science learning independence is done through giving questionnaires to students. Data were analyzed using descriptive statistics. **Findings:** There are learning independence and four indicators of student attitudes towards science subjects include: (1) social implications for science; (2) attitude towards investigations in science; (3) adoption of scientific attitudes; (4) Enjoyment in learning science. The relationship between learning independence and students' attitudes on Pearson coefficient 0.657. **Conclusions:** A significant and positive relationship presented by learning independence and attitudes on science subjects in junior high school.

Keywords: Learning independence; student attitudes; natural science subjects, junior high school.

Abstrak: **Hubungan Antara Kemandirian Belajar dan Sikap Sains bagi Siswa SMP. Tujuan:** Penelitian ini bertujuan untuk mengetahui hubungan antara kemandirian belajar dan sikap siswa pada mata pelajaran IPA di SMP. **Metode:** Penelitian ini adalah penelitian kuantitatif asosiatif. Instrumen yang digunakan adalah kuesioner untuk memperoleh data kemandirian belajar sains. Pengumpulan data tentang kemandirian belajar sains dilakukan melalui pemberian kuesioner kepada siswa. Data dianalisis menggunakan statistik deskriptif. **Temuan:** Kemandirian belajar dan empat indikator sikap siswa terhadap mata pelajaran sains meliputi: (1) implikasi sosial untuk sains; (2) sikap terhadap investigasi dalam sains; (3) adopsi sikap ilmiah; (4) Kenikmatan belajar sains. Hubungan antara kemandirian belajar dan sikap siswa signifikan pada koefisien Pearson 0,657. **Kesimpulan:** Terdapat hubungan positif dan signifikan antara kemandirian belajar dan sikap terhadap sains di SMP.

Keywords: Kemandirian belajar; sikap siswa; mata pelajaran sains, SMP.

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■ INTRODUCTION

Education is a fundamental thing in human life. Education has an important role for the formation of individuals who have the will to continue working to become the next generation of the nation. According to the National Education System Law No. 20 of 2003 article 1 education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state. In realizing the learning atmosphere and the learning process of students actively, learning independence is needed for science subjects. Education is a very important activity. Education plays an active role in improving the quality and quantity of human resources (Darmaji et al, 2018). By allowing human education to change behavior and knowledge for the better (Astalini et al, 2018). Physics subjects in junior high schools (SMP), are expansion and deepening of Natural Sciences (IPA) in elementary schools and as a basis for studying the behavior of objects and energy and the relevance of concepts and their application in real life. In learning attitudes also aspects that deserve to be taken into account. In the learning process, especially in physics lessons, student attitudes are very important (Astalini et al, 2019). The attitude that occurs during the learning process is very important in directing human behavior (Kurniawan, Astalini, & Anggraini, 2018). Because, students who have this view will have different attitudes, with students who have more positive views during the learning process (Astalini et al, 2019).

Bulunuz (2015) states that in essence science is one of the subjects in schools that have various vision and mission that must be realized. Among the things that want to be realized in science subjects are trying to educate superior knowledgeable and skilled students, have a work

ethic, practice conducting research in accordance with scientific processes or methods, and learn by applying their best knowledge, having a disciplined attitude, being honest and to be responsible. According to Astalini et al (2019) integrated science subjects must implement character education, because the inclusion of character values into science learning can instill these values well with students who will eventually form a character the good one. Good character in students is obtained from their learning independence.

Akcay et al (2010) states that learning independence is an active learning activity, which is driven by intentions or motives to master a competency to overcome a problem, and is built up with the knowledge or competence possessed. Determination of competencies as learning objectives, and ways of achieving them - both learning time, place of learning, rhythm of learning, tempo of learning, ways of learning, and evaluation of learning - are carried out by the students themselves. Darmaji, Kurniawan & Irdianti, (2019), "Self-regulated learning is both a theory and a field of research on self-regulated school learning which emerged in the mid-1980s. Focusing on the principle that learning is an active and constructive process, research has enquired into the ways in which learners can take control of their own learning processes". Furthermore Putri and Rustika (2016) state that self-regulated learning is an activity in which individuals learn actively as regulators of their own learning processes, starting from planning, monitoring, controlling and evaluating themselves systematically to achieving learning goals.

Ali and Asrori (2017) there are a number of factors that are often referred to as chelates for the development of independence, namely: (1) Genes or offspring of parents. Parents who have high independence often reduce children who have independence as well; (2) Parenting parents. The way parents care for or educate

children will influence the development of the independence of their teenagers; (3) The education system in schools. The process of education in schools that do not develop the democratization of education and tend to emphasize indoctrination without argumentation will hinder the development of adolescent independence; (4) Life systems in society. The system of people's lives that emphasizes the importance of the social structure hierarchy, feels less safe or gripping and lacks respect for the potential manifestations of adolescents in productive activities can hinder the smooth development of adolescent independence.

The relationship between learning independence and attitudes on science subjects in junior high school has a significant relationship when viewed from cognitive processes, namely learning independence possesses cognitive processes in its application to create good learning independence. Attitudes need a cognitive process, because with the knowledge of attitudes on science subjects will manifest good student attitudes after students have knowledge. The cognitive process or knowledge process becomes an important component both for student learning independence and student attitudes on science subjects. This is because for students' learning independence knowledge process is needed as said by Christidou (2011), learning independence is a careful planning and self-monitoring process of cognitive and affective processes in completing an academic task, in today's, independence of learning itself is not a mental ability or certain academic skills such as fluency in reading, but is a process of self-direction in the metamorphosis of mental abilities into certain academic skills.

Indicators of learning independence are: (1) Independence of learning at home is an activity that occurs in students when learning is actively controlling themselves in the process of planning learning activities at home. Activities such as

preparing books, notes, assignments and learning science subjects regularly at home; (2) The independence of learning in school activities that occur in students while learning is actively controlling themselves in the process of planning learning activities in school. Activities such as active opinions in class discussions and careful attention when the teacher is explaining science lesson material in class; (3) Motivation for learning and assignment is an encouragement to learn in students who come from within themselves and the environment of students. Assignment is an exercise or form of activity given by the teacher to students so that students are more proficient in learning, especially in science subjects. learning motivation is closely related to assignment. Students who have good learning motivation so students tend to do the tasks given by the teacher well, and vice versa. If student learning motivation is low, students tend to be lazy to do the assignments given by the teacher; and (4) The activity of finding references or learning resources is an activity carried out by students in increasing their knowledge in learning, both from books, media, technology, libraries (Sakti, 2013).

Based on the results of preliminary observations, there are still many junior high school students who have less learning independence, this is because when the teacher provides training or assignments, students still often do the exercises or the task is to see the assignments of other students. It is a concern of researchers to explore more deeply the learning independence of junior high school students based on indicators of learning independence. There are four indicators of learning independence, namely: independence of learning at home, independence of learning in school, motivation to learn and assignment, and the active search for references or sources of learning. Based on the research conducted, the questions in this study are:

1. How do you describe the relationship between learning independence and student attitudes

on science subjects in junior high school using indicators of learning independence and student attitudes on science subjects in junior high school?

2. What obstacles are faced in relation to learning independence and student attitudes on science subjects in junior high school?

Based on the findings and results of this study, it is hoped that it can contribute to helping junior high school science teachers in designing learning so that it can improve learning independence and student attitudes on science subjects effectively and sustainably. Because if the student has good independence then his attitude is also good (Sakti, 2013). However, the results of the preliminary study conducted were that there were students who had good independence but whose attitude was affected by poor learning (interview, 2018). Therefore, research is needed to determine the relationship between independence and student attitudes, so that learning becomes better.

■ METHOD

A. Research Design

This study uses a type of quantitative research with associative research design. Kerlinger (2014) states that quantitative research methods can be interpreted as research methods based on the philosophy of positivism, used to examine certain populations or samples. And Creswell (2015: 15) states “In quantitative data analysis, you analyze the data using mathematical procedures, called statistics”. The subjects of this study were 482 students from third junior high schools. The sampling technique is total sampling. Creswell (2015) states that total sampling is a sampling technique if all members of the population are used as samples. The subjects taken are classes VII, VIII, and IX.

B. Research Instrumen

The instrument in this study used a questionnaire adapted from Sakti’s research (2013) for learning independence questionnaires. There are 24 valid statement items. Each statement is representative of each of the indicators of science learning independence. The focus of this study is on four indicators of science learning independence, namely the independence of natural science learning at home, the independence of natural science learning in school, learning motivation and assignment, and the active search for references or learning resources. For questionnaires student attitudes on science subjects were adapted from the research of Astalini and Kurniawan (2019). There are 37 valid statement items. Each statement is representative of each indicator of student attitudes on science subjects.

The focus of this study is on four indicators of student attitudes toward science subjects, namely social implications for science, attitudes toward inquiry in science, adoption of scientific attitudes, fun in learning science. The instrument uses a Likert scale. The Likert scale consists of fifth scales namely, scale fifth for very good categories, scale fourth for good categories, scale third for doubtful categories, and scale second for categories not good, and scale first for categories not very good. The opposite is true for negative statements. Research begins by following quantitative research procedures in stages. At the stage of finding the source of both empirical and theoretical problems, formulation of the problem. Furthermore, reading and thinking find relevant concepts and theories. Submission of hypotheses and research approach methods/strategies. Develop research instruments. Then collect data. At the stage of data collection, the science learning independence questionnaire and student attitude questionnaire on science subjects were given to junior high school students of class

VII, VIII, and IX. From the data, the data analysis is done by coding the data, filtering the data that is feasible and obtaining research findings.

C. Data Analysis

The data analysis technique in this study is to describe the data in the form of a relationship between learning independence and student attitudes on junior high school science subjects, so the statistics used are descriptive statistics. Descriptive statistics are statistics used to analyze data by describing or describing collected data as they are without intending to make conclusions that apply to general or generalizations (Creswell, 2015).

■ RESULT AND DISCUSSION

The results of the research and discussion of the four indicators of learning independence are as follows.

Independent Learning

The results of data processing at home learning independence on the Secondary School Natural Sciences training course can be described by the following figure 1:

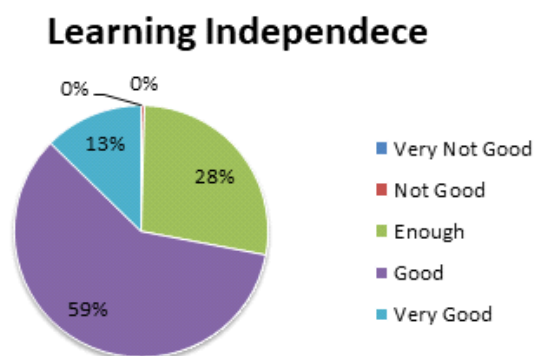


Figure 1. Classification of Learning Independence for Secondary School Science subjects

Based on figure 1, student responses to indicators of dominant learning independence are

found in good category of 59% for 286 out of 482 students, enough at 28% for a total of 133 out to 482 students, very good of 13% for 61 out of 482 students. Independence of learning is an activity that occurs in students when learning is actively controlling themselves in the process of planning learning activities at home. Activities such as preparing books, notes, assignments and studying science subjects regularly at home. The development of independence in students makes students able to do everything according to their abilities optimally and do not depend on others. Students who have high learning independence will try to complete all the exercises or assignments given by the teacher with their own abilities (Solichin, 2006).

Social Implications for Science

The results of data processing of social implications for Secondary School science subjects can be described by the following figure 2:

Social Implication in Science

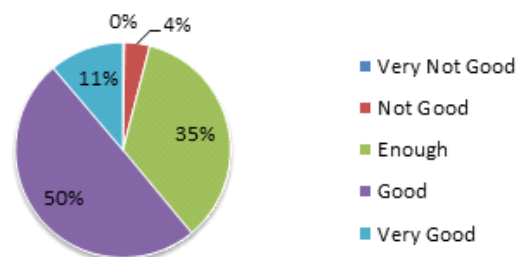


Figure 2. Classification of social implication for Secondary School Science subjects

Based on figure 2, student responses to indicators of dominant social implication are found in good category of 50% for 235 out of 482 students, enough at 35% for a total of 165 out to 482 students, very good of 11% for 53 out of 482 students, and not good of 4% for 18 out of 482 students. Of 482 students the Mean 32.0, Maximum Value 37,

and Minimum Value 9. This shows the existence of social implications towards junior high school science subjects. Indicators of social implications for science are good because students easily understand the material on science subjects because they are related to everyday life. As said Khusniati (2012) material that is close to the lives of students will certainly foster a character of curiosity and love of science.

Attitudes towards Investigation in Science

The results of processing data on attitudes towards investigation in Secondary School Science can be described by the following figure 3:

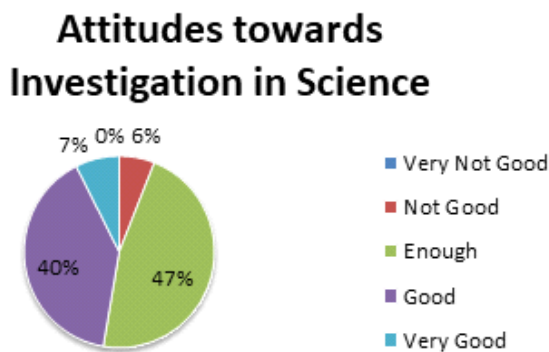


Figure 3. Classification of attitude towards investigation in science for Secondary School Science subjects

Based on figure 3 student responses to indicators of dominant attitude towards investigation in science are found in enough category of 47% for 225 out of 482 students, good at 40% for a total of 192 out to 482 students, very good of 7% for 36 out of 482 students, and not good of 6.0% for 29 out of 482 students. Of 482 students the Mean 32.0, Maximum Value 37, and Minimum Value 9. Indicators of attitudes toward investigation in science are good because when learning science subjects students enthusiastically attend lessons in accordance with existing sequences or

procedures and students are very enthusiastic about conducting experiments because these activities are rarely done before. Through discovery, students are trained to develop the ability of the science process, starting from the lowest stage, namely observing, to the stages of integrated process skills, such as the ability to plan and conduct investigations (Narmadha & Chamundeswari, 2013; Ester Agunbiade, 2017).

Adoption of Scientific Attitudes

The results of processing data on the adoption of scientific science in junior high school can be described by the following figure 4:

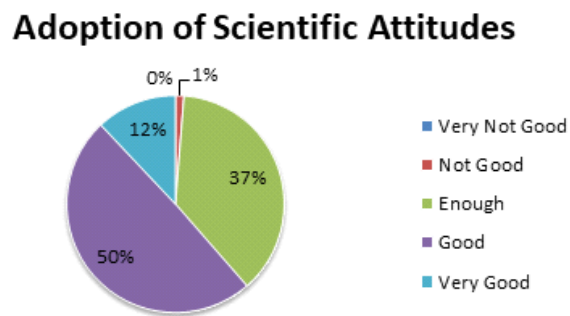


Figure 4. Classification of adoption of scientific attitudes for Secondary School Science subjects

Based on figure 4 student responses to indicators of dominant adoption of scientific attitudes are found in good category of 50% for 238 out of 482 students, enough at 37% for a total of 180 out to 482 students, very good of 12% for 58 out of 482 students, and not good of 1% for 6 out of 482 students. Of 482 students the Mean 31.0, Maximum Value 36, and Minimum Value 18. Rustan et al. (2016) stated that science is essentially a collection of knowledge in the form of facts, concepts, principles obtained by the discovery process and the development of knowledge to find out, understand the universe systematically and develop understanding of knowledge about

symptoms nature through a series of activities in the scientific method and demands a scientific attitude.

Enjoyment in Learning Science

The results of the fun in learning science can be described by the following figure 5:

Enjoyment in Learning Science

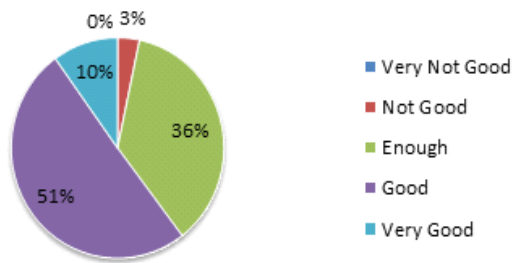


Figure 5. Classification of fun in learning science for Secondary School Science subjects

Based on figure 5 student responses to indicators of dominant fun in learning science are found in good category of 51% for 248 out of 482 students, enough at 36% for a total of 175 out to 482 students, very good of 10% for 48 out of 482 students, and not good of 3% for 16 out of 482 students. Of 482 students the Mean 30.0, Maximum Value 34, and Minimum Value 16. This indicated the existence of pleasure in learning science Junior high school Fun in learning is

shown when students feel happy learning by being directly involved in the learning process (Astalini et al, 2018; Lestari, 2016).

The results of the study and discussion of the relationship between learning independence and student attitudes on junior high school science subjects are as follows: Based on table 1, the testing of the learning independence hypothesis and attitudes science subjects with Pearson correlation numbers 0.657 with a sig 0.025 small of 0.05, meaning that the relationship between learning independence and student attitudes on science subjects has a relationship. Pratisto (2005: 87), states that the correlation coefficient is positive (+) means to have a unidirectional relationship”. This means that the relationship between learning independence and student attitudes toward science subjects is in the same direction so that if the learning independence of science increases, then the attitude of students to science subjects increases (Al-Fatihah, 2016; Sundayana, 2016). It can be concluded that learning independence and attitudes toward science subjects have a relationship.

Table 1. Relationship Learning Independence and attitude toward science

		Learning Independence	Attitude
Learning Independence	Pearson Correlation	1	.657*
	Sig. (2-tailed)		.025
	N	482	482
Attitude	Pearson Correlation	.657*	1
	Sig. (2-tailed)	.025	
	N	482	482

■ CONCLUSION

Based on the results of the analysis of the relationship between learning independence and students attitudes on junior high school science subjects, the three indicators show students' attitudes on science subjects dominant in good categories. Indicators of social implications for science, indicators of adoption of scientific science, and indicators of fun in learning science, and indicator of attitudes towards investigation have a category enough. The relationship between learning independence and students' attitudes junior high school science subjects with the Pearson correlation. This shows that there is a relationship between learning independence and student attitudes on science subjects in junior high school. The relationship shows a positive relationship

■ REFERENCES

- Akcay, H. Yager, R. E., Iskander, I., Srini, M., & Halil, T. (2010). Changes in students' beliefs about attitudes toward science in grades 6-9. *Asia-Pacific Forum on Science Learning and Teaching*, 11(1), 1-18. <https://eric.ed.gov/?id=EJ896200>
- Al-Fatihah, M. (2016). The relationship between learning independence and learning achievement in Islamic education subject matter class III students at elementary school Panularan Surakarta. *Journal At-tanbawi*. 1(2), 197-208.
- Ali, M. and Asrori, M. (2017). *Psychology of adolescents student development*. Jakarta: PT. Earth Literacy.
- Astalini., Kurniawan, D.A. (2019). Pengembangan instrumen sikap siswa Sekolah Menengah Pertama terhadap mata pelajaran IPA. *Jurnal Pendidikan Sains*. 7(1), 1-7. <https://doi.org/10.26714/jps.7.1.2019.1-7>
- 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), 475-484.
- Astalini, A., Kurniawan, D. A., Sulistiyo, U., Perdana, R., & Susbiyanto, S. (2019). E-Assessment motivation in physics subjects for Senior High School. *International Journal of Online and Biomedical Engineering (iJOE)*, 15(11), 4-15.
- Astalini., Kurniawan, D. A., Perdana, R., & Kurniawan, W. (2019). Identification attitudes of learners on physics subject. *EST Journal of Educational Science and Technology*. 5(1), 39-48.
- Astalini, Kurniawan, D.A., Darmaji., Sitorus, L. R., Perdana, R. (2019). Characteristic of students attitude to physics in Muaro Jambi High School. *Humanities & Social Science Reviews*, 7(2), 91-99. <https://doi.org/10.18510/hssr.2019.7210>
- Bulunuz, Mizrap. (2015). The role of playful science in developing positive attitudes towards teaching science in a science teacher preparation program. *Eurasian Journal Educational Research*, 58, 67-88. <http://dx.doi.org/10.14689/ejer.2014.58.2>
- Christidou, V. (2011). Interest, attitudes and images related to science: Combining students' voices with the voices of school science, teachers, and popular science. *International Journal of Environmental and Science Education*, 6(2), 141-159. <https://eric.ed.gov/?id=EJ944846>
- Creswell, J. 2015. *Educational research planning, implementation and evaluation of qualitative research (5th edition)*. Yogyakarta: Student Library.
- 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.
- Darmaji, D., Kurniawan, D. A., & Irdianti, I. (2019). Physics education students' science process skills. *International Journal of Evaluation and Research in Education (IJERE)*, 8(2), 293-298. <http://doi.org/10.11591/ijere.v8i2.16401>
- Esther Agunbiade, K. N. (2017). An exploratory study of the relationship between learners' attitudes towards learning science and characteristics of an afterschool science club. *African Journal of Research in Mathematics, Science and Technology Education*, 271-281. <https://doi.org/10.1080/18117295.2017.1369274>
- Ministry of National Education, 2003. Law Number 20 of 2003, Regarding the National Education System, Jakarta: Ministry of National Education.
- Kerlinger, F. N. (2014). *Foundations of behavioral research*. Yogyakarta: Gadjah Mada University Press.
- Khusniati, M. (2012). Character education through science learning. *Indonesian Science Education Journal*, 1(2), 204-210.
- Kurniawan, D. A., Astalini., & Anggraini, L. (2018). Evaluasi sikap SMP terhadap IPA di Kabupaten Muaro Jambi. *Jurnal Ilmiah Didaktika: Media Ilmiah Pendidikan dan Pengajaran*, 19(1), 123-139. <http://dx.doi.org/10.22373/jid.v19i1.4198>
- Lestari, Indah. (2016). Effect of learning time and interest in learning against Mathematics learning outcomes. *Formative Journal*. 3(2), 40-48.
- Narmadha, U., & Chamundeswari, S. (2013). Attitude towards learning of science and academic achievement in science among students at the secondary level. *Journal of Sociologi Research*, 4(2), 124-144. <http://dx.doi.org/10.5296/jsr.v4i2.3910>
- Pratisto, Arif. (2005). *Easy ways to overcome statistics and design trial problems with SPSS 12*. Jakarta: Gramedia.
- Rustan, et al. (2016). Implementation of discovery learning and authentic research to improve science process skills of Class VIIID students of secondary school 1 East Sinjai. *Journal of Physics and Education*. 12(3), 219 - 232.
- Sakti, Reza. G. (2013). Correlation between attitudes of independence of student learning and achievement of learning outcomes in music art Class VIIIC secondary school 3 Klaten in 2012/2013. *Jurnal Pendidikan Karakter*, 1-19.
- Solichin, M.M. (2006). Learning and teaching in the view of Al-Ghazati. *Tadrîs*. 1(2), 139-153.
- Sundayana, R. (2016). Linkages between learning style, learning independence, and problem solving abilities of secondary school students in mathematics lessons. *Mosharafa*, 5(2), 23-29.