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Research Article

A STUDY OF MIXED-METHOD: SCIENCE PROCESS SKILLS, INTERESTS AND LEARNING OUTCOMES OF NATURAL SCIENCE IN JUNIOR HIGH SCHOOL

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Abstract
This groundbreaking study unravels the intricate nexus between science process skills, learning interest, and student learning outcomes within natural sciences education. Adopting a pioneering mixed-method approach, this research transcends traditional boundaries by synergizing quantitative and qualitative methodologies to yield a multifaceted understanding of the underlying dynamics. Leveraging a purposive sampling technique, the study meticulously selects seventh-grade students and science teachers from junior high schools in the Batanghari district, positioning itself at the forefront of empirical inquiry into science education. Through a judicious blend of quantitative data analysis facilitated by sophisticated software and qualitative analysis of interactive interviews, the research unfurls a rich tapestry of insights. The findings underscore a compelling correlation between science process skills, learning interest, and learning outcomes, unveiling a nuanced interplay between these pivotal variables. The revelation that science process skills and learning interests collectively influence student learning outcomes is of particular significance, underscoring the holistic nature of science education. The novelty of this research lies in its holistic integration of three pivotal variables through a mixed-methods approach, engendering a deeper understanding of the complex dynamics at play. This study paves the way for a more comprehensive comprehension of the factors shaping science education outcomes by transcending the limitations of singular methodological approaches. Ultimately, the insights gleaned from this research hold profound implications for educational practice, highlighting the imperative of fostering science process skills and nurturing learning interest to optimize student learning outcomes in natural sciences education.

Keywords: Interest, Learning Outcomes, Natural Science, Science Process Skills

INTRODUCTION

Education is very important in an effort to improve the quality of a person. Quality education requires a large investment of resources whose aim is to improve human resources (Bentri, 2017; Johnes et al., 2017; Ernawati, et al., 2021). Education is a continuous learning process to acquire knowledge, skills, attitudes and thinking abilities (Quay, 2017; Nyarkoh & Intsiful, 2018; Nwune, Oguezue & Odum, 2023). The main goal of education is to teach students how to think, work and solve problems (Harlow et al., 2018; Alnasser, 2020; van den Heuvel et al., 2020). In education, we often hear about natural sciences.

Natural science is a science that is continuous and always evolving. Science subjects contain natural events or phenomena, the identification process and problem formulation of observing natural phenomena as well as ways to find answers and solve problems (Karyadi et al., 2018; Odom et al., 2021; Nahar, 2023; Jusmaniar et al., 2024). The contents of the natural sciences are biology, chemistry and physics (Birzina et al., 2019; Rybalko et al., 2020; Apeadido, Opoku-Mensah, & Mensah, 2024). Science develops theories that explain how the world works and important aspects of the application of activities (Luneeva& Zakirova, 2017; DeBoer, 2019). Thus increasing student interest in natural science is very necessary.

Science process skills help students develop skills that are important for students to have in carrying out scientific activities and a sense of responsibility in learning (Ongowo& Indoshi, 2013; Inayah et al., 2020). Skills in the scientific process help students to understand the concept more positively (Prasasti2017; Lestari et al., 2019). The results of experimental studies discuss the process of forming skills to acquire knowledge (Almazroa, 2020; Pherson-geyser & Kavai, 2020; Tersi, 2020). Scientific process skills are useful not only in the classroom learning process, but also in solving problems in everyday life. So that science process skills also support the success of student learning outcomes.

Interest is a very influential factor in learning. As stated by (Fathurrohman., M & Sulistirini., 2012; Sukendar et al., 2019; Maison et al., 2020; Hidayati, Thet, & Nouanthong, 2024) It states that one of the factors within the student that influences the learning process is the student's interest. Interest in learning as one of the student's emotional qualities that needs to be developed and taken into account during the learning process (Mardapi, 2008; Van, 2017; Amy, 2017; Andriani, Ramanayaka, & Bhatt, 2024; Buti, & Ansyah, 2024). Interest in learning plays an important role in the learning process as a determinant of learning outcomes, as evidenced by student tendencies towards attention, interest and active participation (Schukajlow et al., 2012; Meke et al., 2019; Ekasari, & Maulidinah, 2023). In addition to interest, one of the factors that influence learning is science process skills.

In the learning process, it is expected that students can obtain good learning outcomes. Learning outcomes are changes in abilities obtained by students, in the form of cognitive, affective, and psychomotor abilities to achieve educational goals (Nurhasanah & Sobandi, 2016; Atmoko et al., 2024; Ridwan et al., 2024). The achievement of a learning process can be seen from learning outcomes in the form of students' abilities (Gohet al., 2017; Saputra, 2018; Supena et al., 2021). Learning outcomes can be said to be something that can be learned. Students do what they previously could not do (Watson, 2002; Caspersen et al., 2017; van et al., 2019; Aningrum, Aliazas, & Kim, 2024). Learning outcomes are one of the references to success in the educational process in the form of abilities possessed by students.

In previous research on science process skills in natural science learning, it was rarely done, even though in natural science students' skills were needed. This study is consistent with previous studies conducted by Harahap et al., (2019), which discussed the development of science process skills in students. However, in previous journals that examined the development of science process skills based on learning strategies, however, this study links science process skills with other variables such as interest and learning outcomes. The results of this study show that $t = 3.769$, $P = 0.001$ at a significance level of 0.05 in learning achievement scores. In addition, the results show that $t = 5.435 > t$ table $= 1.661$, $P = 0.001$ at a significance level of 0.05 in the science process skills score. This study is consistent with previous studies conducted by Mumba et al., (2019), which examined the relationship between students' interests and science process skills, but in previous studies only examined 2 variables, namely examining the relationship to students' interests and science process skills. Results indicate that most teachers expressed high levels of familiarity with science process skills. The difference in this

study is to examine the relationship between interests, process skills science, and student learning outcomes, so that we know what the relationship is to learning outcomes.

Based on the results of observations made by researchers, the urgency of this research is to help readers, in order to add references to how the relationship between science process skills, learning interests and student learning outcomes, especially in natural science learning, can be applied in teaching and learning activities so that the results obtained maximum. This study aims to determine the relationship between scientific process skills, learning interests, and student learning outcomes in junior high school in the Batanghari district. Based on the research objectives that have been described, the formulation of the problem in this study includes: 1) How are the students' science process skills on learning natural science in junior high schools in Batanghari Regency?; 2) How is the student's interest in learning natural science in junior high schools in Batanghari Regency?; 3) How are student learning outcomes related to natural science learning at junior high schools in Batanghari Regency?

METHODOLOGY

The research method used in this research is a mix method research which consists of quantitative and qualitative research. This type of research combines qualitative research and quantitative research which is often called mixed method (Johnson et al., 2007; Yusuf, 2016). By applying a mixed methodology, one can explore both quantitative and qualitative dimensions, which involve in-depth investigation and constructive synthesis of data and analysis (Cortini et al., 2019). In terms of methodology, this mixed method develops a simple research design into a complex research framework with three paradigms including dialect attitude, critical realism, and pragmatism (Schoonenboom, 2019; Kansteiner & König, 2020). Quantitative methods are often called traditional, positivistic, scientific and discovery methods. Furthermore, qualitative methods are often referred to as new, postposivistic, artistic and interpretive research methods (Supriyati, 2015; Kasmawati, 2021).

Research targets/subjects (for qualitative research) or sample-population (for quantitative research) need to be explained clearly in this section. It is also necessary to write down the technique of obtaining subjects (qualitative research) and/or the sampling technique (quantitative research). In this study, the sample school was a junior high school in Batanghari Regency which had class VII and had science subject teachers. The choice of school is based on several considerations:

- Availability of Grade VII: The school was chosen because it has grade VII, which is the level relevant to this research.
- Availability of Science Subject Teachers: The school was chosen because it has teachers who teach science subjects, making it possible to obtain diverse perspectives from educators.
- Ease of Access: Schools were selected considering locations that were easily accessible to researchers to ensure a smooth data collection process.
- Socioeconomic Diversity: Efforts were made to select schools that represented the socioeconomic diversity of Batanghari Regency, so that research results could reflect the diverse backgrounds of students and teachers.

Thus, school selection is key to ensuring good representation of the population studied, namely students and teachers of science subjects in Batanghari Regency.

Table 1. Research sample

School	Student	Teacher
School A	84	2
School B	84	2
Number of samples	168	4

This research procedure begins by looking at existing problems through preliminary studies, namely looking at facts in the field and literature studies. Then collect information, then prepare research instruments, continue with data collection and obtain data. After obtaining the data, the data is processed using data analysis techniques used in this research. Then the results of data analysis are presented, data interpretation and conclusions are drawn.

Before conducting the research, the researcher had prepared a valid and reliable instrument to collect data. The instrument used in this study was an observation sheet with 12 valid statement items

using a Likert Scale 4 to collect data on students' science process skills, a learning interest questionnaire with 14 valid question items using a Likert Scale 5 to collect data on student interest in learning, multiple choice questions totaling 20 valid questions with a cronbach alpha of 0.78 using a Likert Scale 4 to collect data on student learning outcomes, and valid interview sheets, then interviewing the informants to collect qualitative data. Indicators for science process skills in this study are measuring, inferring, and predicting. Indicators of student interest in learning in the form of attention in learning, student involvement, and feelings of pleasure. The grid of students' science process skills instruments is listed in the table.

Table 2. Grid of students' science process skills instrumen

Variables	Indicator	Statement Item Number
Science process skills	Measure	1,2,3
	Conclusion	4,5,6,7
	Prediction	8,9,10,11,12
Number of Statements		12

While the categories of science process skills towards science learning are as follows:

Table 3. Category of Student Process Skills

Category	Indicator Interval		
	Measure	Conclusion	Prediction
Very Not Good	3.0-5.25	4.0-7.0	5.0-8.75
Not good	5.26-7.50	8.0-10.0	8.76-12.50
Good	7.51-9.75	11.0-13.0	12.51-16.25
Very good	9.76-12.00	14.0-16.0	16.26-20.0

The instruments for students' learning interest in science subjects are as follows:

Table 4. Grid of students' interest in learning instruments

Variables	Indicator	Statement Item Number
Interest to learn	Attention in learning	1,2,3,4
	Student engagement	5,6,7,8,9
	Feeling happy	10,11,12,13,14
Number of Statements		14

While the categories of learning interest in science subjects are as follows:

Table 5. Categories of student interest in learning

Category	Indicator Interval		
	Attention in learning	Student engagement	Feeling happy
Very Not Good	4.0 – 7.2	5.0-9.0	5.0-9.0
Not good	7.3 – 10.4	10.0-13.0	10.0-13.0
Enough	10.5 – 13.6	14.0-17.0	14.0-17.0
Good	13.7 – 16.8	18.0-21.0	18.0-21.0
Very good	16.9 – 20.0	22.0-25.0	22.0-25.0

And the categories of student learning outcomes in science subjects can be seen in the following table:

Table 6. categories of student learning outcomes

Category	Interval
Very Not Good	0.0 – 5.0
Not good	6.0 – 10.0
Good	11.0 – 15.0
Very good	16.0 – 20.0

This research started from the first time, namely compiling the instrument. Next, ask for a letter of request for observation of the sample to be addressed, after getting permission, the researcher makes observations by filling out the science process skill observation sheet, distributing learning interest questionnaires and question sheets which are then filled out by respondents, namely class VII junior high school students. After getting the data, the researcher conducted interviews with the informants to obtain additional information. After obtaining quantitative data from observation sheets, questionnaires, and question sheets, the next step is to test to get results. As for the qualitative data obtained from the interviews, then analyzed to draw conclusions. From the results of the combined quantitative and qualitative data, the final step is to conclude as a whole.

In this study, there are two data analysis techniques where the first is quantitative data analysis techniques with the help of SPSS Statistics 25 software to find descriptive statistics, test assumptions and test hypotheses. The assumption test (normality and linearity) is carried out before testing the hypothesis. The hypothesis test used is the T-test Paired sample T-test and the person correlation test, so the results of the data from quantitative data analysis will be strengthened by the results of qualitative data obtained from interviews with selected sources. The second is a qualitative data analysis technique, using Miles and Huberman qualitative data analysis which is carried out by taking the essence and concluding the results of the interview, where this analysis is carried out interactively until a strong conclusion is obtained to support the results of quantitative data.

RESULTS AND DISCUSSIONS

The results of descriptive statistical tests regarding students' science process skills on measuring indicators for science subjects are presented in the following table:

Table 7. Description of students' science process skills on measuring indicators

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	3.00 – 5.25	Not very good	0	0.0	9.67	9.00	7.00	12.00
	5.26 – 7.50	Not good	4	4.8				
	7.51 – 9.75	Good	39	46.4				
	9.76 – 12.00	Very good	41	48.8				
School B	3.00 – 5.25	Not very good	0	0.0	9.57	9.50	6.00	12.00
	5.26 – 7.50	Not good	3	3.6				
	7.51 – 9.75	Good	39	46.4				
	9.76 – 12.00	Very good	42	50.0				

The results of table 7 show that the students' science process skills on the measuring indicators in school A are dominated by the very good category with a percentage of 48.8% and in school B it is dominated by the very good category also with a percentage of 50.0%.

Table 8. Description of students` technological know-how procedure abilties on end indicators

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	4.0 – 7.0	Not very good	0	0.0	12.60	13.00	9.00	16.00
	8.0 – 10.0	Not good	16	19.0				
	11.0 – 13.0	Good	36	42.9				
	14.0 – 16.0	Very good	32	38.1				
School B	4.0 – 7.0	Not very good	0	0.0	12.94	13.00	9.00	16.00
	8.0 – 10.0	Not good	7	8.3				
	11.0 – 13.0	Good	44	52.4				
	14.0 – 16.0	Very good	33	39.3				

The results in Table 8 show that the students in the final index of school A have a 42.9% share of the scientific process skills in the "good" category, and the students in the "good" category of school B have a share of 52.4 %.

Table 9. Description of students' science process skills on predictive indicators

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	5.0 – 8.75	Not very good	0	0.0	16.26	17.00	10.00	20.00
	8.76 – 12.50	Not good	4	4.8				
	12.51 – 16.25	Good	34	40.5				
	16.26 – 20.0	Very good	46	54.8				
School B	5.0 – 8.75	Not very good	0	0.0	16.45	17.00	11.00	20.00
	8.76 – 12.50	Not good	2	2.4				
	12.51 – 16.25	Good	38	45.2				
	16.26 – 20.0	Very good	44	52.4				

The results in Table 9 show that students' scientific process skills in the predictive indicators of School A are 54.8% in the very good category and 52.4% in School B are very good.

Table 10. Description of students' interest in learning on indicators of attention in learning

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	4.0 – 7.2	Not very good	4	4.8	14.03	14.00	4.00	19.00
	7.3 – 10.4	Not good	5	6.0				
	10.5 – 13.6	Enough	20	23.8				
	13.7 – 16.8	Good	39	46.4				
	16.9 – 20.0	Very good	16	19.0				
School B	4.0 – 7.2	Not very good	0	0.0	14.23	14.00	11.00	20.00
	7.3 – 10.4	Not good	0	0.0				
	10.5 – 13.6	Enough	36	42.9				
	13.7 – 16.8	Good	35	41.7				
	16.9 – 20.0	Very good	13	15.5				

The results in Table 10 show that students' learning interest in index attention during learning is dominated by a good category of 46.4% in school A and a fairly good category of 42.9% in school B.

Table 11. Description of students' interest in learning on indicators of student involvement

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	5.0 – 9.0	Not very good	0	0.0	18.16	17.00	14.00	25.00
	10.0 – 13.0	Not good	0	0.0				
	14.0 – 17.0	Enough	46	54.8				
	18.0 – 21.0	Good	21	25.0				
	22.0 – 25.0	Very good	17	20.2				
School B	5.0 – 9.0	Not very good	0	0.0	18.20	18.00	14.00	24.00
	10.0 – 13.0	Not good	0	0.0				
	14.0 – 17.0	Enough	41	48.8				
	18.0 – 21.0	Good	29	34.5				
	22.0 – 25.0	Very good	14	16.7				

The results of table 11 show that students' interest in learning on the indicators of student involvement in school A is dominated by the fairly good category with a percentage of 54.8% and in school B it is dominated by a fairly good category with a percentage of 48.8%.

Table 12. Description of students' interest in learning on indicators of feeling happy

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	5.0 – 9.0	Not very good	0	0.0	18.33	18.00	12.00	25.00
	10.0 – 13.0	Not good	3	3.6				
	14.0 – 17.0	Enough	26	31.0				
	18.0 – 21.0	Good	39	46.4				
	22.0 – 25.0	Very good	16	19.0				
School B	5.0 – 9.0	Not very good	0	0.0	18.29	18.00	12.00	25.00
	10.0 – 13.0	Not good	5	6.0				
	14.0 – 17.0	Enough	34	40.5				
	18.0 – 21.0	Good	24	28.6				
	22.0 – 25.0	Very good	21	25.0				

The results of table 12 show that students' interest in learning on the indicators of feeling happy in school A is dominated by the good category with a percentage of 46.4% and in school B is dominated by a fairly good category with a percentage of 40.5%.

Table 13. Description of student learning outcomes on science subjects

Student Response	Interval	Category	F	%	Mean	Median	Min	Max
School A	0.0 – 5.0	Not very good	0	0.0	15.13	16.00	7.00	19.00
	6.0 – 10.0	Not good	16	19.0				
	11.0 – 15.0	Good	23	27.4				
	16.0 – 20.0	Very good	45	53.6				
School B	0.0 – 5.0	Not very good	0	0.0	14.33	15.00	7.00	19.00
	6.0 – 10.0	Not good	21	25.0				
	11.0 – 15.0	Good	27	32.1				
	16.0 – 20.0	Very good	36	42.9				

The results of table 13 show that student learning outcomes for science subjects in school A are dominated by the very good category with a percentage of 53.6% and in school B it is dominated by the very good category with a percentage of 42.9%. Prior to testing the hypothesis, the researcher had tested the assumptions and found that the data were normally distributed and linearly distributed so that further tests could be carried out, namely hypothesis testing. The hypothesis test in this study is the T test and the correlation test, where the test is used to find differences and relationships between the variables tested from the two schools.

Table 14. Description of the results of the T test of science process skills, interest in learning and student learning outcomes

Variables	School	N	Sig.(2-tailed)
Science Process Skills	School A	84	0.024
	School B	84	0.025
Interest to learn	School A	84	0.027
	School B	84	0.021
Learning outcomes	School A	84	0.030
	School B	84	0.032

The results of table 14 show the results of the T test with a significance value of <0.05 so it can be concluded that there are differences in science process skills, there are differences in learning interest, and there are differences in student learning outcomes from the two schools being compared.

Table 15. Description of the correlation test results of science process skills, interest in learning, and student learning outcomes

School	X	Y	Sig. F change	Pearson Correlation
School A	Science Process Skills Interest to learn	Learning outcomes	0.022	0.698
School B	Science Process Skills Interest to learn	Learning outcomes	0.024	0.617

The results of table 15 show the results of the correlation test with a significance value of <0.05, meaning that there is a relationship between the independent variable (X) and the dependent variable (Y), namely science process skills and student interest in learning related to student learning outcomes. This relationship is said to be closely related because the results of the Pearson correlation data are 0.698 and 0.617.

Science Process Skills

Q1 : How are the students' science process skills in learning Natural Sciences?

S1 : Science process skills in Natural Science learning are still lacking due to a lack of student interest in developing science process skills, one of which is in practical activities.

S2 : In learning natural sciences, students' science process skills are quite well developed, one of which is practicum activities.

S3 : Students' Science Process Skills are still underdeveloped because practicum activities are still rarely carried out.

S4 : Science Process Skills in natural science learning are quite good because they are supported by providing students with opportunities to use science process skills in each material.

Q2 : What are the efforts made by teachers in developing students' science process skills in Natural Science subjects?

S1 : Efforts that can be made by teachers in developing students' science process skills are by making students actively participate in the learning process, one of which is practicum activities.

S2 : Maximizing practicum activities is one of our efforts in developing students' science process skills.

S3 : So far, because in developing students' scientific process skills, they are still not optimal, one of the things we will do is by doing practicum in learning natural sciences.

S4 : Provide opportunities for students to use their science process skills in exploring learning materials such as discussing with other students during the learning process.

Interest To Learn

Q3 : How are students interested in learning Natural Sciences?

S1 : Students' interest in learning Natural Sciences is quite good, as evidenced by student learning outcomes in Natural Science subjects which are already good.

S2 :In natural science learning, students' interest is quite good, supported by practical activities so that students' interest in learning is good.

S3 :Students' interest in learning Natural Sciences is still not optimal because there are subjects that are considered difficult for students to understand.
S4 :Students' interest in learning Natural Sciences is quite good because students are very happy to do practicum, so students are always excited during learning activities.
Q4 :What are the efforts made by teachers in developing students' interest in Natural Science subjects?
S1 :Efforts that we can do in developing student interest include approaching and creating a fun learning atmosphere.
S2 :The effort that we do is by directly implementing the natural science material that has been studied by doing practicals
S3 :Creating fun learning so that students' interest in learning can increase.
S4 :By doing practicum, students' interest in learning Natural Sciences can increase, because with practicum students better understand the concepts taught during learning.

Learning Outcomes
Q5 :What is the relationship between science process skills and student learning outcomes in Natural Science subjects?
S1 :With students' scientific process skills, it will support students' understanding of concepts in learning so that student learning outcomes in Natural Science subjects can increase
S2 : Students' science process skills support students' ability to draw conclusions in learning in Natural Science subjects, so that it affects learning outcomes.
S3 : In the learning process requires students' science process skills, so that students have skills in predicting the solutions to existing problems.
S4 : Learning outcomes are closely related to students' science process skills, because in learning natural sciences students are always faced with problems in terms of science such as solving calculation problems.
Q6: How is the relationship between interest in learning and student learning outcomes?
S1 : With the interest of students, it will support the enthusiasm of students in learning so that student learning outcomes in Natural Science subjects can increase
S2 : Student's interest in learning affects learning outcomes, because it supports students' enthusiasm in learning in Natural Science subjects.
S3 : Student's interest in learning is very necessary in the learning process, because it greatly affects how active students are in class which has an impact on student learning outcomes.
S4 : Learning outcomes are closely related to students' interest in learning, because learning natural sciences is learning that requires high interest and enthusiasm for learning in students.

Hypothesis testing is carried out by T test and correlation test, based on the results of the T test table with a significance value of <0.05, therefore it can be concluded that there is a significant difference in science process skills, there are differences in learning interests, and there are differences in student learning outcomes from the two schools being compared. Meanwhile, for the correlation test, the results of the correlation test with a significance value of <0.05 means that there is a relationship between the independent variable (X) and the dependent variable (Y), namely science process skills and student interest in learning related to student learning outcomes. This relationship is said to be closely related because the results of the Pearson correlation data are 0.698 and 0.617.

Observations made by researchers were by conducting interviews with teachers regarding science process skills, learning interests and student learning outcomes in learning natural sciences at junior high schools in Batanghari Regency. In the question of students' science process skills and the efforts made by teachers to develop science process skills, it was found that the quality of science process skills in each school is still relatively lacking, because the development of students' science process skills is still not optimal, one of which is by practicum. Then the efforts made by the teacher are providing opportunities for students to develop their scientific process skills in conducting experiments and discussing learning materials.

In the question of students' interest in learning and the efforts made by teachers to develop interest in learning, it was found that the quality of student interest in learning in each school was still relatively lacking to sufficient, because students' interest in learning was not high due to learning natural sciences which was considered difficult. Then the efforts made by the teacher are providing

opportunities for students to increase their interest in learning by approaching students, creating a fun learning atmosphere and carrying out activities that involve students directly in learning.

In the question regarding the relationship between science process skills and student learning interest on student learning outcomes, it was found that with the existence of students' scientific process skills, it will support students' skills and understanding of concepts in learning so that student learning outcomes in Natural Science subjects will be better. Then student learning interest is very necessary in the learning process, because it greatly affects how the enthusiasm and activeness of students in the learning process has an impact on student learning outcomes (Hendrickson, 2021; Yu et al., 2022; Zen et al., 2022; Azis et al., 2024).

In previous research on science process skills in natural science learning, it was rarely done, even though in natural science students' skills were needed. This research is in line with previous research conducted by Harahap et al., (2019), which discussed the development of science process skills in students. However, in previous journals that examined the development of science process skills based on learning strategies, however, this study links science process skills with other variables such as interest and learning outcomes. This research is in line with previous research conducted by Mumba et al., (2019), which examined the relationship between students' interests and science process skills, but in previous studies only examined 2 variables, namely examining the relationship to students' interests and science process skills.

This research provides an important contribution to the theoretical understanding of the relationship between science process skills, learning interest, and student learning outcomes in natural science learning. By confirming that science process skills and interest in learning have a significant correlation with learning outcomes, this research enriches learning theory and provides a strong foundation for further research in this domain. This implication shows that non-cognitive factors such as interest in learning have an important role in influencing student learning outcomes, which indicates the need to pay attention to psychological and emotional aspects in curriculum development and learning strategies.

For students, the results of this research provide valuable information that developing science process skills and increasing interest in learning can contribute to improving learning outcomes. Therefore, students can allocate their time and effort to improve their learning skills and interest in science learning. For teachers, these findings provide valuable guidance in designing and implementing learning strategies that can facilitate the development of science process skills and foster students' interest in learning. By paying attention to these factors, teachers can create a learning environment that supports and motivates students to achieve better learning outcomes in science learning. For other readers, the results of this research provide a valuable source of information about the importance of science process skills, learning interest, and learning outcomes in the context of science learning. This can be a basis for them to deepen their understanding of the factors that influence student learning success and their implications in educational practice.

The novelty in this research is the use of three variables to determine the correlation between the variables, then this research also uses a mixed method that combines the results of quantitative and qualitative data so that the results obtained are more complex, then in this study, researchers conducted research in two different schools. in Batanghari District as respondents. This research is also not free from shortcomings and limitations, where in this study the sample used is still relatively small, namely junior high schools in Batanghari district. However, the variables used have been varied and the researchers tried to examine the three aspects optimally so that it can be concluded that there is a relationship between science process skills, student interest in learning and science learning outcomes. The limitations of the research in this study make the researchers hope that there will be similar studies with a more diverse sample.

CONCLUSION

From the research that has been done, it can be concluded that the science process skills possessed by each student, especially the sample studied, have different science process skills. Likewise, the interests and learning outcomes of students towards natural science lessons, of course, each student has different interests and learning outcomes. From these differences there is a relationship between science process skills, interest in learning and learning outcomes where science process skills and interest in learning simultaneously affect student learning outcomes. students who have science process skills and high interest in learning will find it easier to solve problems in learning so that their

learning outcomes will be relatively high. This research has implications for students, teachers, and readers as a reference and source of information in understanding the relationship between science process skills, learning interest and student learning outcomes in learning natural sciences. The researcher recommends to readers, especially teachers, to pay attention to science process skills and student interest in learning because they have a significant relationship with student learning outcomes.

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AUTHOR CONTRIBUTIONS

Yusnidar: Conceptualization, design, writing, supervision, data acquisition, data analysis / interpretation and concept and design, statistical analysis. Fuldiaratman: statistical analysis, writing and drafting manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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