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Comparative Analysis and the Influence of Science Process Skills on Students' Digital Literacy on Measurement Materials

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ABSTRACT

This research aims to determine the comparison and influence of students' science process skills on students' digital literacy in measurement material. This research uses a quantitative type of research with an explanatory approach. The sampling technique used was purposive sampling with a sample size of 60 students. Data collection techniques in this research included observation sheets and questionnaires. The data analysis technique in this research uses descriptive statistical methods and inferential statistics. Based on the independent sample t-test results for science process skills and digital literacy of Al-Falah High School students in Jambi City, a Sig. (2-tailed) value < 0.05 was obtained. Thus, it can be concluded that there are differences in science process skills and critical thinking skills between students in classes X A and X B. According to the results of a simple linear regression test to see the effect of science process skills on students' digital literacy at Al-Falah High School in Jambi City, it can be concluded that for class X A, science process skills affect students' digital literacy, with an R Square value of 0.46, meaning that 46% of science process skills influence students' digital literacy. For class X B, science process skills also affect students' digital literacy, with an R Square value of 0.42, meaning that 42% of science process skills influence students' digital literacy. Based on hypothesis testing, it is known that there are differences in science process skills and digital literacy between students in classes X A and X B. In addition, students' science process skills influence digital literacy in measurement material.

INTRODUCTION

In the ever-growing digital era, digital literacy is one of the essential skills that students must have (Haryani, 2023; Tinmaz, Lee, Fanea-Ivanovici, & Baber, 2022; Tohara, Shuhidan, Bahry, & Nordin, 2021). Digital literacy includes the ability to search, evaluate, and utilize information from various digital sources, as well as the skills to communicate and collaborate via digital media (Abrosimova, 2020; Akayoğlu, Satar, Dikilitaş, Cirit, & Korkmazgil, 2020; Churchill, 2020; Triandayani, Fadlozi, Barzegar, & Quijano JR, 2024). In modern science education, the goal is not only to provide students with conceptual understanding. One crucial aspect is developing skills that align with contemporary demands, including digital literacy. Measurement materials in science education should not only focus on theoretical knowledge but also equip students with practical skills that are relevant to the digital era (Anthonysamy, Koo, & Hew, 2020; Falloon, 2020; Napal, Mendióroz-Lacambra, & Peñalva, 2020).

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Science process skills are the basis of effective science learning. These skills include the ability to observe, classify, measure, predict, and conduct experiments (Dilek, Tasdemir, Konca, & Baltaci, 2020; Haryadi & Pujiastuti, 2020; Winda & Shofiardin, 2023). By developing science process skills, students can understand scientific concepts in depth and apply them in real situations (Dewi, Erna, Martini, Haris, & Kundera, 2021; Ozkan & Umdu Topsakal, 2021; Romadhona & Suyanto, 2020). One of the physics materials that requires scientific process skills is measurement.

Measurement is one of the fundamental concepts in physics that plays a crucial role in understanding and applying scientific principles. As a subject that relies on quantitative data to describe natural phenomena, physics requires precision and accuracy in measurement (Bikmukhametov & Jäschke, 2020). Measurement material includes understanding standard units, measuring tools, measurement techniques, and possible errors. A deep understanding of measurements is essential for laboratory experiments and practical applications in daily life and industry (Sharma, Kosasih, Zhang, Brintrup, & Calinescu, 2022). Thus, mastering this material will help students develop analytical and critical skills and equip them with a strong foundation for advanced studies in science and technology.

The relationship between science process skills and digital literacy is becoming increasingly relevant in modern education. As students develop science process skills, they also need to utilize digital tools to collect and analyze data, search for additional information, and communicate their findings (Safaruddin, Ibrahim, Juhaeni, Harmilawati, & Qadrianti, 2020; Shatri, 2020; Winarni, Hambali, & Purwandari, 2020). High digital literacy allows students to access a wider range of resources and deepen their understanding of the subject matter (Bravo, Chalezquer, & Serrano-Puche, 2021; Erwin & Mohammed, 2022; Morgan, Sibson, & Jackson, 2022). Thus, integration between science process skills and digital literacy is key to improving the quality of science learning (Queiruga-Dios, López-Iñesta, Diez-Ojeda, Sáiz-Manzanares, & Dorrío, 2020).

A curriculum that effectively integrates digital literacy with science process skills will help students understand the subject matter more deeply and equip them with relevant competencies for their future careers. However, models do not combine these elements meaningfully, especially in areas such as measurement (Beemt et al., 2020; Hawari & Noor, 2020; Kim, Lee, & Cho, 2022). It is hoped that the results of this research can significantly contribute to developing science curricula and learning methods that are more effective and adaptive to developments in digital technology.

Previous research conducted by Widiana (2020) highlighted that digital literacy is a significant factor influencing teachers' ability to develop assessments based on higher-order thinking Skills (HOTS). Without a high mastery of digital literacy, teachers will have difficulty developing HOTS-based assessments.

Furthermore, previous research conducted by Ilma, Al-Muhdhar, Rohman, and Saptasari (2020) regarding science process skills states that science process skills are an important ability that needs to be mastered in biology learning to strengthen student learning outcomes.

The novelty of this research lies in the dual focus on integrating science process skills and digital literacy in measurement, which is fundamental. By combining these two variables, this research opens up new space for a deeper understanding of how the integration of science and technology skills can improve students' understanding of complex physics concepts. The urgency of this research is to consider the importance of preparing students with relevant skills to face the demands of the digital era, where digital literacy is the key to academic and

professional success. Additionally, a better understanding of how science process skills can strengthen students' digital literacy will provide a solid foundation for developing more adaptive and effective curricula in science education. Based on the explanation above, this research aims to determine the comparison and influence of students' science process skills on students' digital literacy in measurement material.

METHODS

Types of research

This research employed quantitative research with an explanatory approach to analyze the comparison and influence of science process skills on students' digital literacy in measurement material. The explanatory approach was chosen because it allows researchers to test hypotheses and explain the causal relationship between science process skills and digital literacy systematically and measurably (Al-Ababneh, 2020; Mõttus et al., 2020; Toyon, 2021). This type of quantitative research with an explanatory approach is a research method that aims to test hypotheses and explain the causal relationship between the variables studied (Ekhsan & Setiawan, 2021; Sakerni, Suhaimi, Wahdini, & Amberansyah, 2021; Taherdoost, 2022). This approach relies on numerical data collected through standardized research instruments, such as questionnaires or tests, and analyzed using statistical techniques. In explanatory research, researchers seek to identify and explain how one variable influences another variable to provide a deep understanding of the mechanisms behind the observed phenomena (Mohajan, 2020; Wennberg & Anderson, 2020). This approach was very effective for testing existing theories and models and developing new explanations based on empirical data.

Population and Sample

The population in this study were the tenth-grade (X) students at Al-Falah High School, Jambi City. To obtain representative data, the selected sample consisted of students from classes X A and X B, with each class totalling 30 students. Thus, the total sample for this study was 60 students. The sampling technique used was purposive sampling. It is a sampling technique based on certain considerations determined by the researcher (Allam & Martin, 2021; Campbell et al., 2020; Darmaji, Astalini, Kurniawan, & Aldila, 2022). In this context, the researcher chose classes X A and X B because these classes were considered to have characteristics that were very appropriate for the research objectives. Specifically, these classes were chosen because of their diverse student demographics, familiarity with digital devices, and previous exposure to science concepts. Their characteristics made these classes very relevant to investigating science process skills and digital literacy with measurement. The characteristics determined by the researcher were students who studied measurement material.

Data Collecting Technique

The data collecting techniques in this research were two main instruments: observation sheets and questionnaires. Observation sheets were used to assess students' science process skills (Katz-Buonincontro & Anderson, 2020), where researchers recorded and evaluated students' activities and skills during the learning process of measurement material. This observation included students' ability to measure, classify, and design experiments. Furthermore, a questionnaire was used to assess students' digital literacy. This questionnaire contained questions designed to measure various aspects of digital literacy, including students' ability to search for information online and understand and evaluate digital content. Researchers obtained comprehensive data regarding the relationship between science process skills and students' digital literacy using these two techniques.

The science process skills indicators used in this study can be seen in Table 1.

Table 1. Indicators of Science Process Skills

No	Indicator	Statement Number
1	Measure	1,2,3,4,5
2	Classify	6,7,8,9,10,11
3	Designing Experiments	12,13,14,15

The science process skills observation sheet used was a 4-point Likert scale. The scores were 4 (excellent), 3 (high), 2 (low), and 1 (poor). Table 2 shows the category intervals used in this research.

Table 2. Interval Categories of Science Process Skills Observation Sheet

Indicator	Category	Interval
Measure	Poor	5.00 – 8.75
	Low	8.85 – 12.50
	High	12.60 – 16.25
	Excellent	16.35 – 20.00
Classify	Poor	6.00 – 10.50
	Low	10.60 – 15.00
	High	15.10 – 19.50
	Excellent	19.60 – 24.00
Designing Experiments	Poor	4.00 – 7.00
	Low	7.10 – 10.00
	High	10.10 – 13.00
	Excellent	13.10 – 16.00

Furthermore, the indicators used in the student digital literacy questionnaire sheet can be seen in the table below:

Table 3. Digital Literacy Indicators

No	Indicator	Statement Number
1	Search for information online	1,2,3,4,5
2	Understand and evaluate digital content	6,7,8,9,10

The digital literacy questionnaire sheet uses a 4 Likert scale: score 4 = excellent, score 3 = high, score 2 = low and score 1 = very bad. The category intervals used in this research can be seen in the following table:

Table 4. Digital Literacy Questionnaire Sheet Category Interval

Indicator	Category	Interval
Search for information online	Poor	5.00 – 8.75
	Low	8.85 – 12.50
	High	12.60 – 16.25
	Excellent	16.35 – 20.00
Understand and evaluate digital content	Poor	5.00 – 8.75
	Low	8.85 – 12.50
	High	12.60 – 16.25
	Excellent	16.35 – 20.00

Data Analysis Technique

This research used descriptive statistical methods and inferential statistics to evaluate the comparison and influence between science process skills and students' digital literacy. Data from observation sheets and questionnaires were processed and analyzed using statistical software like SPSS (Okagbue, Oguntunde, Obasi, & Akhmetshin, 2021). The first step was to test the validity and reliability of the data collection instrument to ensure that the data obtained was accurate and consistent. Next, descriptive analysis was carried out to describe the basic characteristics of the data collected, such as frequency distribution, percentage, mean, median, minimum and maximum (Kamid et al., 2021). To test the research hypothesis, linear regression analysis was used to see the influence of science process skills on students' digital literacy. In addition, t-tests were also used to compare digital literacy averages between different student groups. The results of this analysis will provide a clear picture of how science process skills can influence digital literacy, as well as help draw conclusions and provide recommendations based on research findings.

Research Procedure

This research procedure began with a preparation stage, which included preparing data collection instruments in the form of observation sheets to assess students' science process skills and questionnaire sheets to measure students' digital literacy. After the instrument had been prepared and validated, the next stage was to determine the research population and sample. The research was continued with data collection, where observations were made during measurement material learning activities. Furthermore, questionnaires were distributed for students to fill out. The collected data was then analyzed using statistical methods, starting with testing the validity and reliability of the instrument, followed by descriptive and inferential analysis to test the research hypothesis. The results of data analysis were then interpreted to answer research questions, draw conclusions, and provide recommendations based on the findings obtained. The procedures in this research can be seen in the Figure 1.

Figure 1. Research Procedure

RESULTS AND DISCUSSION

First, the researchers present descriptive statistical analysis results for students' science process skills and digital literacy in measurement material in classes X A and X B at Al-Falah High School, Jambi City. The results of the descriptive statistical analysis can be seen in the table 5.

Table 5. The Descriptive Statistical Tests on Students' Science Process Skills on Measuring Indicators

Class	Category	Interval	F	%	Mean	Med	Min	Max
X A	Poor	5.00 – 8.75	4	13.30	12.40	13.00	5.00	17.00
	Low	8.85 – 12.50	9	30.00				
	High	12.60 – 16.25	14	46.70				
	Excellent	16.35 – 20.00	3	10.00				
X B	Poor	5.00 – 8.75	6	20.00	11.96	13.00	5.00	17.00
	Low	8.85 – 12.50	7	23.30				
	High	12.60 – 16.25	15	50.00				
	Excellent	16.35 – 20.00	2	6.70				

Based on the results of statistical tests on students' science process skills at Al-Falah High School, Jambi City, on measuring indicators, it was found that class X A was dominant in the high category with a percentage of 46.70% for 14 students. Meanwhile, class X B is dominant in the high category with a percentage of 50.00% with 15 students.

The results of descriptive statistical tests on students' science process skills at Al-Falah High School, Jambi City, on the classifying indicators, can be seen in the Table 6.

Table 6. Results of Descriptive Statistical Tests on Students' Science Process Skills on Classifying Indicators

Class	Category	Interval	F	%	Mean	Med	Min	Max
X A	Poor	6.00 – 10.50	10	33.30	13.60	15.00	6.00	20.00
	Low	10.60 – 15.00	6	20.00				
	High	15.10 – 19.50	11	36.70				
	Excellent	19.60 – 24.00	3	10.00				
X B	Poor	6.00 – 10.50	5	16.70	14.23	15.00	7.00	19.00
	Low	10.60 – 15.00	12	40.00				
	High	15.10 – 19.50	13	43.30				
	Excellent	19.60 – 24.00	0	0.00				

Based on the results of statistical tests on students' science process skills at Al-Falah High School, Jambi City, on classifying indicators, it was found that class X A was dominant in the high category with a percentage of 36.70% for 11 students. Meanwhile, class X B was dominant in the high category, with a percentage of 43.30% of the total population of 13 students.

Furthermore, the results of descriptive statistical tests on students' science process skills at Al-Falah High School, Jambi City, on the indicators of designing experiments can be seen in the Table 7.

Table 7. The Results of Descriptive Statistical Tests on Students' Science Process Skills in Designing Experiments Indicators

Class	Category	Interval	F	%	Mean	Med	Min	Max
X A	Poor	4.00 – 7.00	8	26.70	9.46	10.00	5.00	15.00
	Low	7.10 – 10.00	6	20.00				
	High	10.10 – 13.00	15	50.00				
	Excellent	13.10 – 16.00	1	3.30				
X B	Poor	4.00 – 7.00	7	23.30	9.83	10.00	4.00	14.00
	Low	7.10 – 10.00	9	30.00				
	High	10.10 – 13.00	11	36.70				
	Excellent	13.10 – 16.00	3	10.00				

Based on the results of statistical tests on students' science process skills at Al-Falah High School, Jambi City, on the indicator of designing experiments, it was found that class X A was dominant in the high category with a percentage of 50.00% with 15 students. Meanwhile, class X B was dominant in the high category, with a percentage of 36.70%, with 11 students.

The results of descriptive statistical tests on students' digital literacy at Al-Falah High School, Jambi City, on indicators of seeking information online, can be seen in the Table 8.

Table 8. The Results of Descriptive Statistical Tests on Students' Science Process Skills in Searching for Information Online Indicators

Class	Category	Interval	F	%	Mean	Med	Min	Max
X A	Poor	5.00 – 8.75	0	0.00	14.00	13.50	10.00	18.00
	Low	8.85 – 12.50	3	10.00				
	High	12.60 – 16.25	22	73.30				
	Excellent	16.35 – 20.00	5	16.70				
X B	Poor	5.00 – 8.75	3	10.00	13.06	14.00	5.00	17.00
	Low	8.85 – 12.50	8	26.70				
	High	12.60 – 16.25	17	56.70				
	Excellent	16.35 – 20.00	2	6.70				

Based on the results of statistical tests on students' digital literacy at Al-Falah High School, Jambi City, on the indicator of seeking information online, it was found that class X A was dominant in the high category with a percentage of 73.30% with 22 students. Meanwhile, class X B is dominant in the high category with a percentage of 56.70% of the total population (17 students).

The results of descriptive statistical tests on students' digital literacy at Al-Falah High School, Jambi City, on indicators of understanding and evaluating digital content can be seen in Table 9

Table 9. The Results of Descriptive Statistical Tests on Students' Science Process Skills on Understanding and Evaluating Digital Content Indicators

Class	Category	Interval	F	%	Mean	Med	Min	Max
X A	Poor	5.00 – 8.75	4	13.30	11.83	12.00	7.00	17.00
	Low	8.85 – 12.50	9	30.00				
	High	12.60 – 16.25	16	53.30				
	Excellent	16.35 – 20.00	1	3.30				
X B	Poor	5.00 – 8.75	2	6.70	12.30	12.00	6.00	16.00
	Low	8.85 – 12.50	14	46.70				
	High	12.60 – 16.25	14	46.70				
	Excellent	16.35 – 20.00	0	0.00				

Based on the results of statistical tests on students' digital literacy at Al-Falah High School, Jambi City, on indicators of understanding and evaluating digital content, it was found that class X A was dominant in the high category with a percentage of 53.30% with 16 students. Meanwhile, class X B is dominant in the high category with a percentage of 46.70% (14 students).

After conducting descriptive statistical data analysis, the researcher will conduct inferential statistical data analysis in the form of assumption tests and hypothesis tests. Before testing the hypothesis, the researcher will first conduct an assumption test to determine whether the data obtained is normally, homogeneously, and linearly distributed.

The results of the data linearity test for science process skills and digital literacy for Al-Falah High School students in Jambi City can be seen in the Table 10.

Table 10. Data Normality Test Results for Science Process Skills and Digital Literacy of Al-Falah High School Students in Jambi City

Class	Variable	Asymp. Sig. (2-tailed)	Distribution
X A	Critical Thinking Skills	.112	Normal
X B		.200	Normal
X A	Digital Literacy	.119	Normal
X B		.200	Normal

Based on the results of the data normality test on science process skills and digital literacy of Al-Falah High School students in Jambi City, it was found that the Asymp. Sig. (2-tailed) > 0.05. So, it can be concluded that the data on critical thinking skills and digital literacy for classes X A and X B is normally distributed.

Next, a data homogeneity test will be carried out on Al-Falah High School students' science process skills and digital literacy in Jambi City. The results can be seen in the Table 11.

Table 11. Data Homogeneity Test Results for Science Process Skills and Digital Literacy of Al-Falah High School students in Jambi City

Class	Variable	Sig.	Distribution
X A X B	Critical Thinking Skills	.503	Homogenous
X A X B	Digital Literacy	.919	Homogenous

Based on the results of the homogeneity test data on science process skills and digital literacy of Al-Falah High School students in Jambi City, it was found that the value of Sig. > 0.05. So, it can be concluded that the data on critical thinking skills and digital literacy for classes X A and X B is homogeneously distributed.

Next, the researchers tested the linearity of data on science process skills and digital literacy of Al-Falah High School students in Jambi City, where the results can be seen in the Table 12.

Table 12. Results of Linearity Test Data on Science Process Skills and Digital Literacy of Al-Falah High School Students, Jambi City

Class	Variable	Sig.	Distribution
X A	Critical Thinking Skills*Digital Literacy	.182	Linear
X B		.175	Linear

Based on the results of linearity data on science process skills and digital literacy for Al-Falah High School students in Jambi City, a Sig. > 0.05. So, it can be concluded that the data on science process skills and digital literacy for Al-Falah High School students in Jambi City for classes X A and X B has a linear distribution.

After the assumption tests have been fulfilled, you can proceed with hypothesis testing. In this research, two hypothesis tests were carried out: a comparison test using the independent sample t-test and an influence test using a simple linear regression test. The results of the comparison test using the independent sample t-test can be seen in the Table 13.

Table 13. Independent Sample t-test Results of Science Process Skills and Digital Literacy of Al-Falah High School students in Jambi City

Class	Variable	Sig. (2-tailed)
X A X B	Critical Thinking Skills	.032
X A X B	Digital Literacy	.039

Based on the results of the independent sample t-test of science process skills and digital literacy of Al-Falah High School students in Jambi City, a Sig. (2-tailed) < 0.05. It can be concluded that there are differences in students' critical thinking skills in classes X A and X B. Apart from that, there are also differences in the digital literacy of students in classes X A and

Next, a simple linear regression test will be carried out to see the effect of science process skills on students' digital literacy in classes X A and X B at Al-Falah High School, Jambi City. Where the results can be seen in the Table 14.

Table 14. The Results of a Simple Linear Regression Test to See the Influence of Science Process Skills on Students' Digital Literacy at Al-Falah High School, Jambi City

Class	Variable	R	R Square	Sig.
X A	Science Process Skills*Digital Literacy	0.678	0.46	.032
X B		0.648	0.42	.041

Based on the results of the simple linear regression test to see the effect of science process skills on students' digital literacy at SMA Al-Falah Jambi City, it can be decided that for class X A, there is an influence of science process skills on students' digital literacy, namely the R Square value of 0.46 which means 46% of science process skills affect students' digital literacy, then for class X B there is an influence of science process skills on students' digital literacy, namely the R Square value of 0.42 which means 42% of science process skills affect students' digital literacy. Based on the test results above, it can be concluded that science process skills influence students' digital literacy. This can be seen from the significance value <0.05. The significance values obtained are 0.032 and 0.041.

Comparative analysis and the influence of science process skills on students' digital literacy in measurement materials is a very relevant topic in modern education. Science process skills include observing, classifying, measuring, predicting, and analyzing data (Sarker, 2021). These skills are essential for developing a deep understanding of scientific concepts, including the measurements that are the basis of many scientific experiments and observations. Digital literacy, on the other hand, encompasses the ability to use information and communication technologies effectively and efficiently, which is becoming increasingly crucial in today's digital age (Liu, Tretyakova, Fedorov, & Kharakhordina, 2020). Digital literacy skills enable students to access, evaluate and communicate information appropriately, thus supporting more interactive and immersive science learning (Dewi, Pahriah, & Purmadi, 2021).

A comparison of science process skills and digital literacy shows that they complement each other in the context of science education. Students with high science process skills tend to understand measurement concepts more easily because they can actively engage in the learning process through experimentation and direct observation (Suchyadi, Safitri, & Sunardi, 2020). On the other hand, digital literacy allows students to utilize various digital resources such as simulations, videos, and digital measurement applications that can enrich their learning experience (Alfia, Sumardi, & Kristina, 2020). Combining these two skills gives students a more comprehensive and in-depth understanding of measurement materials.

The influence of science process skills on students' digital literacy can be seen from several aspects (Phaeton & Stears, 2017). First, students accustomed to conducting scientific experiments and observations will be more skilled in using digital devices to collect and analyze data (Brenig et al., 2016). For example, digital sensors and data analysis software can facilitate measuring and interpreting experimental results. Second, science process skills can improve students' critical and analytical abilities, which are important components of digital literacy. Students who can think critically and analytically will be better able to evaluate the credibility and relevance of information they find in the digital world.

Overall, integrating science process skills and digital literacy in learning measurement materials can significantly benefit students (Ernawati et al., 2022). Not only does it improve their understanding of scientific concepts, but it also prepares them to face challenges in an increasingly complex digital world.

Researching the comparative analysis and influence of science process skills on students' digital literacy in measurement materials has significant short-term and long-term impacts (Tomczyk, 2020). In the short term, this research can provide educators with direct insight into the effectiveness of learning methods that integrate science process skills and digital literacy so they can immediately implement more effective and interactive teaching strategies (Manik, 2020). This can increase students' motivation and participation in science learning. In the long run, the results of this study can contribute to the development of a more holistic and competency-based curriculum, which not only strengthens students' conceptual understanding of measurement science but also prepares them with essential digital skills for the future. Thus, students trained through this approach will have better critical and analytical thinking skills and be ready to adapt to future technological developments and global challenges.

Although research on the comparative analysis and influence of science process skills on students' digital literacy in measurement offers many valuable insights, some limitations must be considered (Khasawneh, 2024). One of the main limitations is the variability in the implementation of learning methods across schools, which may affect the consistency of the results. In addition, limitations in access to technology and digital resources in some areas may hinder the development of students' digital literacy, so the study results may not fully represent the student population at large (Husain, 2021). Research methodologies, such as the experimental design and measurement tools used, may also affect the validity and reliability of the findings. Finally, external factors such as students' socio-economic background and support from the family environment also need to be considered, as they can significantly affect students' science process skills and digital literacy.

CONCLUSION AND SUGGESTION

Based on the results of the independent sample t-test test of science process skills and digital literacy of Al-Falah High School students in Jambi City, the Sig. (2-tailed) <0.05. So, it can be concluded that there are differences in students' critical thinking skills in classes X A and X B. In addition, there are also differences in the digital literacy of students in classes X A and X B at Al-Falah High School in Jambi City. Based on the results of the simple linear regression test to see the effect of science process skills on students' digital literacy at SMA Al-Falah Jambi City, it can be decided that for class X A, there is an influence of science process skills on students' digital literacy, namely the R Square value of 0.46 which means 46% of science process skills affect students' digital literacy, then for class X B there is an influence of science process skills on students' digital literacy, namely the R Square value of 0.42 which means 42% of science process skills affect students' digital literacy. Based on the test results above, it can be concluded that science process skills influence students' digital literacy. This can be seen from the significance value <0.05. The significance values obtained are 0.032 and 0.041. Future research is recommended to explore the influence of socio-economic environment and family support on the development of students' science process skills and digital literacy, as well as testing the effectiveness of more varied and inclusive learning approaches in various educational contexts. This research aims to explore how factors such as socio-economic background influence family support and the influence of varied and inclusive learning approaches in various subjects.

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AUTHOR CONTRIBUTIONS

AA: Conceptualization, design, writing, and supervision. DD: Data acquisition and data analysis/interpretation. DAK: Concept and design and statistical analysis. MZA: Writing and drafting the manuscript.

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