Empowering Young Learners: Effects of Differentiation-Based Educational Curriculum and Literacy Engagement on Student Learning Outcomes in Elementary School Science

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Abstract: This study examines the effect of implementing Indonesia's Educational Curriculum and literacy interest on grade IV students' Natural Science learning outcomes. The Indonesia's Educational Curriculum, which emphasizes independent and flexible learning, is expected to improve students' understanding and skills in Natural Science lessons. This study uses a quantitative approach with an ex post facto method. The population and sample in this study were all grade IV elementary school students in the same cluster, which amounted to 106 students. Data collection techniques using documentation and closed questionnaires with a Likert scale with four answer options. Documentation in this study is in the form of natural science learning outcomes of elementary school students obtained during the end-of-semester assessment. The data analysis technique uses the t-test, f-test, and the coefficient of determination test. Based on t-test calculations, Indonesia's Educational Curriculum results are sig. 0.000 <0.05 and literacy interest sig. 0.042 <0.05, which indicates that both Indonesia's Educational curriculum and learning literacy have a significant effect on Natural Science learning outcomes. In the F test, the sig value was obtained. 0.000 <0.05 indicates that Indonesia's Educational Curriculum and Literacy Interest variables simultaneously affect Natural Science Learning Outcomes. The coefficient of determination test results obtained the adjusted R square value of 0.748, which indicates that the independent variable affects the dependent variable by 73.1%, which means that this regression model is effective. Based on the overall final test results of the data analysis used, it is known that there is a positive influence between the two variables.

Keywords: indonesia's educational curriculum, literacy interest, learning outcomes, natural science.

▪ **INTRODUCTION**

Natural and Social Sciences is a discipline that studies living and non-living things in the universe, including their interactions and human life as individuals and social beings interacting with the environment. Knowledge is "a combination of various information organized logically and systematically by considering cause and effect relationships" (Dictionary of Indonesian Language, 2016).

This knowledge includes natural and social sciences. Science education plays a role in realizing Pancasila's values and describes the ideal profile of Indonesian students. Science encourages students' curiosity about the phenomena around them. The basic principles of scientific methodology in science learning train scientific attitudes, such as high curiosity, critical thinking skills, analysis, and the ability to draw correct conclusions, ultimately producing students' wisdom (Hardiansyah et al., 2022).

According to the official website of the (Direktorat Sekolah Dasar, Kemendikbud 2022), an important aspect of Indonesia's Educational Curriculum at the primary level is the science subject, which focuses on strengthening basic competencies and understanding of the surrounding environment. Science and social studies are combined

into Natural and Social Sciences, and computational thinking is integrated into Indonesian, Mathematics, and Natural Science subjects.

Many problems cannot be solved solely from a natural or social science perspective. Therefore, a more holistic approach involving various disciplines is required. Students need to study both natural and social sciences to understand this concept as a whole, known as Natural Science (Mengziyoyevna, 2022). Understanding these two areas and developing process skills are two important components of science learning. In primary schools, natural and Social Science learning focuses on knowledge of living and non-living things in the universe and their interactions. It also examines human life as individuals and social beings interacting with the environment. The natural and social sciences curriculum at the primary school level includes material understanding and process skills (Betari, 2023).

A good understanding of the material will be seen in the student's learning outcomes if the student can achieve his learning objectives (Supena et al., 2021). Ensuring that students understand the learning they receive and learn can be seen from the learning outcomes obtained either through written or unwritten tests, such as the learning outcomes obtained at the end of the semester after students carry out the end-of-semester assessment. Learning outcomes themselves have an important role in the learning process because they can provide teachers with information about student achievement to achieve their learning goals (Alam, 2023). Learning outcomes describe how students can understand the material presented by the teacher. It is from the learning outcomes that the teacher can receive information on how far students understand the material studied (Harefa et al., 2023).

Students with good learning processes and learning outcomes are determined by how the learning system in schools. Education is defined as a conscious and planned effort to create a learning atmosphere and learning process that allows students to develop their potential actively. The goal is for them to have religious and spiritual strength, self-control, personality, intelligence, good morals, and skills needed for themselves, society, nation, and state (Pramana et al., 2021).

As formal educational institutions, schools provide various types of structured learning environments, which provide many opportunities for teaching and learning activities for students. The formal education system can achieve national education goals as schools have a huge role. This role can be realized through learners' directed development and growth, with the support of various learning opportunities. A curriculum guideline regulates this and is the basis for implementing the learning process (Shaturaev, 2021).

The initiative to change the curriculum to the "Merdeka Belajar Curriculum" was spearheaded by Nadiem Makarim from the Ministry of Education. This curriculum emphasizes the development of student independence, where they are free to access knowledge from formal and non-formal sources (Podungge et al., 2024). The intended independence is to give students the freedom to learn without strict restrictions on how the teaching and learning process should be carried out, which can take place inside or outside the school. The curriculum also strongly supports creativity for both students and teachers.

There has been a transformation in the learning paradigm from conventional teaching methods to approaches that align with 21st-century education (Rohmah et al.,

2023). In this more modern paradigm, the role of students is more significant in learning activities, in contrast to the dominant role of teachers in the old model. Students are more directly and proactively involved in their learning process, while teachers act as guides or facilitators.

The Indonesia's Educational Curriculum is implemented by prioritizing the principles of New Paradigm learning. The five principles that must be developed in learning the New Paradigm of Indonesia's Educational Curriculum include: a) Learning that pays attention to the developmental stage and achievement level of students; b) Learning that aims to build the capacity of students to become lifelong learners; c) Learning processes that support the comprehensive development of students' competencies and characters; d) Relevant learning, which is designed according to the context, environment, and culture of students, and involves parents and the community as partners; and e) Learning that is oriented towards a sustainable future (Fransiska et al., 2023).

Many programs are implemented in this curriculum, one of which is the school literacy movement. Improving students' literacy skills can be achieved by requiring a literacy culture in every school to increase reading interest and broaden students' knowledge horizons. Literacy itself is a movement programmed by the Ministry of Education and Culture. Literacy is the ability and skill by which a person must understand, process, and use the information received flexibly. Literacy is listening, speaking, reading, writing, and thinking, which is part of literacy (Häggström & Schmidt, 2021). Therefore, with the implementation of Indonesia's Educational Curriculum and the launch of literacy programs closely related to student life, home, school, and community environments.

Literacy programs can be integrated into teaching and learning activities; the aim is to increase students' involvement in the learning process, motivate them to read more, and gradually develop reading as a culture among students. Through this approach, students become more active in learning, and their motivation to read increases, which can cultivate the habit of reading among them (Abdel-Al Ibrahim et al., 2023).

By promoting literacy programs through habituating students to read for 15 minutes before starting learning activities, we can increase their interest in literacy. With a high interest in literacy, students will better understand concepts in Natural Sciences subjects. This will strengthen students' ability to seek, understand, and apply information from various sources to develop the knowledge and skills needed in their learning process.

Literacy interest is important in building students' ability to understand and analyze learning materials (Vuong et al., 2021). In Natural Science subjects, literacy skills will greatly assist students in understanding complex scientific and social concepts. Science literacy is one of the basic competencies that must be possessed by every individual in the 21st century (Laura & Maria, 2022). The concept of science literacy includes the ability to understand, apply, and communicate scientific information in everyday life (Ramadhani & Erviastiwi, 2023).

This literacy focuses on knowledge of science concepts and the ability to think critically, analyze problems, and use scientific methods in solving challenges (Mathioudaki & Gkaravelas, 2023). Science literacy is important for children's future development. Therefore, it is important to be familiarized early, especially in elementary

school. This study can reveal how students' literacy interest can affect their learning outcomes in grade IV.

Grade IV students are an age group that is in the early stages of understanding more in-depth concepts of Natural Science (Bima et al., 2023). By knowing the effect of Indonesia's Educational Curriculum and literacy interest on their learning outcomes, this study can help teachers understand student needs better and develop more effective and appropriate learning strategies.

Implementing Indonesia's educational curriculum and literacy program and replacing subjects with Natural Science are expected to influence these three variables positively. Indonesia's Educational Curriculum brings a new approach to learning that is more flexible and student-centered. At the same time, the literacy program aims to increase students' interest in reading and understanding of information. Replacing subjects with Natural Science is also expected to encourage students to understand better the relationship between Natural and Social Sciences in everyday life. Some domestic research has shown alignment with this topic, but a lack of research specifically addresses the three variables together.

To date, limited research thoroughly explores the influence of literacy interest and Indonesia's Education Curriculum on Science learning outcomes at the primary school level. This lack of research suggests a significant opportunity for researchers to investigate how literacy interest can influence students ' understanding of the Science material taught in the context of Indonesia's Education Curriculum.

In addition, it is important to identify the mechanisms that link these three factors: literacy interest, the Indonesian Education Curriculum, and learning outcomes with a better understanding of these relationships. This research aims to provide new insights that can be used to improve the quality of education and student learning outcomes in primary schools.

This study examines the effect of implementing Indonesia's Educational Curriculum and literacy interest on grade IV students' Natural Science learning outcomes. Indonesia's Educational Curriculum, which emphasizes independent and flexible learning, is expected to improve students' understanding and skills in Natural Science lessons, which include scientific and social aspects. In addition, high literacy interest allows students to understand and analyze subject matter more easily, so it is expected to contribute positively to their learning outcomes (Adijaya et al., 2023). With a quantitative approach, this study will analyze the extent to which the implementation of Indonesia's Educational Curriculum and literacy interest relate to improving Natural Science learning outcomes, providing insights that can help develop more effective learning methods at the basic education level. The methods applied include empirical analysis and case studies, which provide an in-depth understanding of the effect of Indonesia's Educational Curriculum and literacy interest on grade IV students' learning outcomes. The results of this study are expected to broaden insights related to learning dynamics in elementary schools and become the basis for designing more effective learning strategies.

▪ METHOD
Participants

The population in this study was grade IV elementary school students, and a research sample of 106 students was obtained. According to (Sugiyono, 2021), the

population itself is defined as a generalization area consisting of objects/subjects with specific characteristics set by researchers to study and then draw conclusions. The sample is part of the number and characteristics possessed by the population.

The sampling technique used in this sampling is nonprobability sampling with saturated sampling, where the sample is taken based on the total population due to the small population. The population in this study consisted of grade IV students from 5 public schools: State Elementary School 1, State Elementary School 2, State Elementary School 3, State Elementary School 4, and State Elementary School 5.

The selection of the five primary schools as research sites was based on several considerations. First, the five schools are in one cluster, making coordination and data collection easier. Second, these schools have implemented Indonesia's Educational Curriculum since its inception, which aligns with the focus of the research topic. Third, grade IV was chosen because Indonesia's Educational Curriculum was first piloted at this level. Fourth, the five schools have implemented a literacy program, which is an integral part of Indonesia's Educational Curriculum, so grade IV students meet the criteria needed by researchers. Here are the details.

Table 1. Population data of IV grade students

No.	School Name	Student
1.	State Elementary School 1	30
2.	State Elementary School 2	30
3.	State Elementary School 3	15
4.	State Elementary School 4	15
5.	State Elementary School 5	16
	Total	106

Source: Primary Data, 2024

Recapitulation Diagram of Natural Science Learning Outcomes of Fourth-Grade Elementary Students
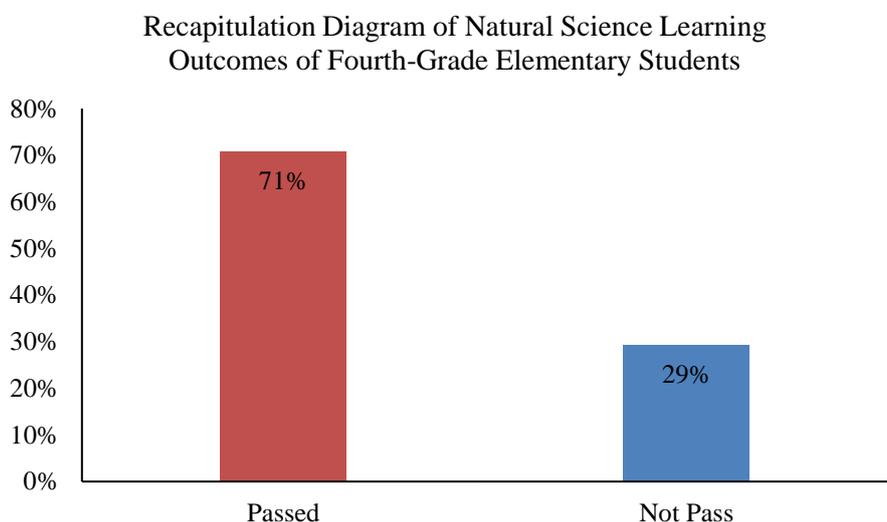

Figure 1. Diagram of passing grade of science learning outcomes of fourth-grade students

This data is an end-of-semester assessment obtained by documenting student learning outcomes in the five elementary schools; this student learning outcomes data is interpreted as variable Y (Natural science learning outcomes).

Research Design and Procedures

This research uses the ex post facto method with a quantitative approach, the ex post facto method which is a systematic empirical investigation in which the researcher does not have direct control over the independent variables because the manifestation of the phenomenon has already occurred or because the phenomenon is complex to manipulate (Hikmawati, 2020). The purpose of this study is to analyze and describe whether the implementation of Indonesia's Educational Curriculum and Literacy Interest affects the learning outcomes of fourth-grade elementary school students.

The variables in this study consist of independent variables and dependent variables. The variables or independent variables in this study are the application of Indonesia's Educational Curriculum (X1) and literacy interest (X2), while the dependent variable or dependent variable in this study is Natural Science learning outcomes (Y); the researcher assumes that Indonesia's Educational Curriculum (X1) affects science learning outcomes (Y), where the two independent variables, namely X1 and X2, are interconnected, the X2 variable is also assumed to have an influence on the variable (Y) which means that Y is influenced by the two independent variables (X1 & X2). The data collection techniques used documentation and a closed questionnaire with a Likert scale with four answer options. The documentation in this study is the data on Natural Science learning outcomes, namely the Semester Assessment scores for the 2023/2024 school year.

According to (Sugiyono, 2017), research implementation includes the entire process from data collection to processing and drawing research conclusions. Researchers collect data from samples using appropriate methods, such as questionnaires and documentation. This data collection is also related to instrument testing; before being used to collect data, the questionnaire instrument is distributed in one school first and then tested for validity and reliability; after obtaining valid and reliable questionnaire statement data, the questionnaire is again distributed in one cluster. The data that has been collected is analyzed using statistical methods or other analytical techniques to test the hypothesis. Based on the results of the data analysis, the researcher concludes the problem under study.

This research was conducted at State Elementary School 1, State Elementary School 2, State Elementary School 3, State Elementary School 4, and State Elementary School 5, with a research period carried out during March 2024.

Instruments

The instrument used is a non-test instrument in the form of Indonesia's Educational Curriculum questionnaire and literacy interest, each consisting of 30 statements. Indonesia's Educational Curriculum questionnaire consists of 4 indicators, each including several statements. The first indicator is (1) Understanding Indonesia's Educational Curriculum, which consists of 3 statement items. The second indicator (2) Involvement in Learning Based on Indonesia's Educational Curriculum consists of 9 statement items. The third indicator, (3) Indonesia's Educational Curriculum Learning Support Facilities, consists of 4 statement items, and the fourth indicator, (4) Indonesia's Educational Curriculum Learning Atmosphere, consists of 14 statement items, totaling 30 statement items.

The literacy interest questionnaire consists of 4 indicators where each indicator has several statements in the first indicator (1) School Literacy Movement, consisting of 4 statement items; the second indicator (2) 15 Minute Reading Activities, consisting of 8 statement items; the third indicator (3) Literacy support facilities, consisting of 8 statement items and the fourth indicator (4) Student Literacy Interest, consisting of 10 statement items.

The instruments used in this study consisted of an Indonesia's Educational Curriculum questionnaire and a Literacy Interest questionnaire, each with 30 statement items tested for validity through factor analysis and reliability using Cronbach's Alpha method. The data analysis process was conducted using SPSS version 25 statistical software, which included descriptive statistics to describe the characteristics of the data, classical assumption tests (normality, linearity, multicollinearity, and heteroscedasticity), as well as Pearson correlation analysis and multiple linear regression to test the relationship and contribution of the independent variables to the dependent variable. This study also adhered to ethical standards by obtaining informed consent from all participants, including natural Scientists, and maintaining the confidentiality of the data collected.

Indonesia's Educational Curriculum and literacy interest instruments included 30 statement items. Based on the results of the validity test with the significance value criteria (P-value), it was found that for the Indonesian Education Curriculum variable (X1), 18 statements met the valid requirements. In contrast, for the reading interest variable (X2), there were 15 valid statements. A significance value <0.05 means valid. A significance value > 0.05 means invalid.

The P-value for Indonesia's Educational Curriculum (X1) is <0.041 based on the validity testing results. Likewise, the P-value for Literacy Interest (X2) also shows <0.041. Because the significance value of the two variables is <0.05, it can be concluded that the validity test results for the two X variables are valid. This indicates that the instruments used in the study can be relied upon to measure these variables accurately.

Based on the data generated in testing the reliability of Indonesia's Educational Curriculum (X1) variables and Literacy Interest (X2), the questionnaire component is considered reliable if the Cronbach Alpha value >0.60 (Hikmawati, 2020). Based on the results of the reliability test, the Cronbach Alfa value obtained for Indonesia's Educational Curriculum (X1) is $0.739> 0.618$; it can be concluded that the statement items on Indonesia's Educational Curriculum (X1) variable are reliable while testing the reliability of the Literacy Interest (X2) variable obtained a Cronbach Alfa value of $0.618> 0.60$. Therefore, the conclusion that can be drawn is that the statement items related to the Literacy Interest (X2) variable are reliable.

Data Analyses

Data analysis techniques include validity and reliability tests, normality tests, linearity tests, and hypothesis testing. This is done to determine whether or not there is an influence with the specified variables.

The validity test was carried out to measure the series of statement items in the trial questionnaire whether were valid or not, seen from the initial distribution of each questionnaire consisting of 30 statement items each for the variable (X1) Indonesia's Educational Curriculum and variable (X2) literacy interest distributed to the trial class, after being tested for validity with SPSS 25, the results obtained valid statement items

rtabel> 0.05 for (X1) there were 18 items and (X2) there were 15 items. The reliability test is carried out to ensure that the research instruments used are consistent and ready for further research. The normality test aims to measure whether the data under study is normal; besides that, the purpose of this test is also to determine whether the questionnaire instrument is standard. Based on data decision-making, it is considered normal if Asymp. Sig> 0.05. The linearity test helps know whether the model used is correct; this test aims to ensure a significantly linear relationship between the two variables tested with SPSS 25. The multicollinearity test aims to detect a high correlation between the independent variables in the regression model. A good regression model should not have a high correlation between the independent variables (Yaldi et al., 2022). The context of regression analysis is critical to doing a classic assumption test; this test is needed to ensure that the regression results are valid and reliable so that they can explain the test results correctly. If the classical assumption test is ignored, it does not rule out the possibility that the regression coefficient is unstable; the resulting P-value is inaccurate, affecting the wrong conclusion. Through the classical assumption test, it can be determined whether the independent variables are truly significant in explaining variations in the dependent variable.

Determination analysis is research used to measure how well the regression model explains the data variables; in multiple linear analysis, the R-squared value is helpful as an explainer of the relationship between variables, namely the dependent variable and the independent variable.

The F test is the final result of the study where this test aims to determine whether there is an influence between the independent variable and the dependent variable to prove the hypothesis with the independent variables Indonesia's Educational Curriculum (X1) and Literacy Interest (X2) and Natural Science learning outcomes (Y) this test was carried out with SPSS for the sig value. <0.05, which means that the dependent variable affects the independent variable.

▪ RESULT AND DISSCUSSION

The description of the data used in this study is the independent variable of Indonesia's Educational Curriculum implementation and learning motivation and the dependent variable, namely Natural Science learning outcomes.

This study assesses how implementing Indonesia's Educational Curriculum and literacy interest affects Natural Science learning outcomes in grade IV students. The data collected in this study were calculated, processed, and analyzed using the SPSS version 25 program. This data is collected to identify the relationship between Indonesia's Educational Curriculum, literacy interest, and Natural Science learning outcomes.

The research results section includes data description, prerequisite analysis testing (such as basic assumption tests and classical regression assumption tests), and final analysis or hypothesis testing (including simple correlation analysis, simple regression analysis, multiple correlation analysis, multiple regression analysis, coefficient of determination, and F-test). Basic assumption tests include normality and linearity tests, while multicollinearity tests are examples of classical regression assumption tests (Bayu Septiyan Hadinata, 2020).

Table 2. Descriptive statistic

	N	Min.	Max.	Sum	Mean	Std. Deviation
Indonesia's Educational Curriculum	106	61	94	8243.00	80.00	8.683
Literacy Interest	106	50	93	8476.00	77.04	8.339
Natural Science Learning Outcomes	106	43	96	7984.00	75.32	12.167

Source: Primary Data, 2024

Based on the descriptive statistics table, 106 respondents participated in Science. The mean score for Indonesia's Educational Curriculum was 80.00, indicating good understanding among respondents, with reasonable variation (standard deviation 8.683). Literacy interest had a mean of 77.04, indicating positive interest, although the range of values was quite wide. Natural Science learning outcomes showed an average of 75.32, indicating good performance but with greater variation (standard deviation 12.167). Overall, respondents showed good comprehension and positive interest.

Table 3. Frequency distribution score frequency distribution of quesioner indonesia's educational curriculum

Interval	Frequency	Percentage (%)
61-64	6	5.7%
65-68	8	7.5%
69-72	9	8.5%
73-76	14	13.2%
77-80	11	10.4%
81-84	22	20.8%
85-88	16	15.1%
89-92	11	10.4%
93-96	9	8.5%

Source: Primary Data, 2024

The frequency distribution table of Indonesia's Educational Curriculum Questionnaire scores shows that out of 106 respondents, the 81-84 score interval has the highest frequency with 22 respondents (20.8%). The interval 73-76 also recorded a significant number, namely 14 respondents (13.2%). Most respondents were in the 61-64 to 89-92 score range, with frequencies varying between 6 to 16 respondents per interval. The highest score range, 93-96, was filled by nine respondents (8.5%), indicating that despite the variation, most respondents understood Indonesia's Educational Curriculum well. The distribution shows a positive trend in respondents' understanding of the material.

Table 4. Natural and Social Sciences Learning Outcome Categories

	Class Interval	f	%
Excellent	>81	25	23.5849
High	73-81	32	30.1887

Medium	65-73	31	29.2453
Low	<65	18	16.9811
Total		106	100

Source: Primary Data, 2024

The table shows the Natural Science learning outcome categories based on class intervals. Of the 106 respondents, 25 (23.58%) were in the "Excellent" category with scores above 81. The "High" category includes 32 respondents (30.19%) with scores between 73 and 81, while 31 respondents (29.25%) belong to the "Moderate" category with scores of 65 to 73. The "Low" category is filled by 18 respondents (16.98%) with scores below 65. The distribution of learning outcomes showed that most respondents were in the "High" and "Medium" categories, indicating a good understanding of the subject.

Normality Test

Table 5. Normality test one sample kolmogorov-smirnov test

Data	Indonesia's Educational Curriculum	Literacy Interest	Natural Science Learning Outcomes
Test Statisctic	0.093	0.106	0.150
N	106	106	106
Asymp. Sig. (2-tailed)	.200[c,d]	.200[c,d]	.200[c,d]

Source: Primary Data, 2024

The normality test results show a significance value above 0.05, indicating that the data is typically distributed. Based on the normality test results listed in the table, the test applied is the Kolmogorov-Smirnov Test for one sample, which determines whether the data is normally distributed (Sugiyono, 2021). The normality test table shows the results of three variables: Indonesia's Educational Curriculum, Literacy Interest, and Science Learning Outcomes, each with 106 respondents. The test statistic value for Indonesia's Educational Curriculum is 0.093, for Literacy Interest is 0.106, and for Science Learning Outcomes is 0.150. Based on the normality test results, the Asymp can be seen. Sig. (2-tailed) value for all variables is 0.200. This value is greater than the significance limit of 0.05, which indicates that the data of the three variables are normally distributed. Thus, this data meets the normality assumption and is suitable for further analysis.

Linearity Test

Table 6. Linearity test

Data			Mean Square	Sig.
Natural Science Learning Outcomes * Indonesia's Educational Curriculum	Between Groups	(Combined)	213.471	0.049
		Linearity	2477.716	0.000
		Deviation from Linearity	115.026	0.605

Source: Primary Data, 2024

The linearity test table shows the results of the analysis between Science Learning Outcomes and Indonesia's Educational Curriculum. For the "Between Groups (Combined)" variable, the Mean Square value is 213.471 with a significance (Sig.) of 0.049, which indicates a significant effect between the two variables. The linearity test shows a Mean Square value of 2,477,716 with a significance of 0.000, indicating a very significant linear relationship between Science Learning Outcomes and Indonesia's Educational Curriculum. Meanwhile, the "Deviation from Linearity" value of 115.026 with a significance of 0.605 indicates that the deviation from linearity is insignificant. These results indicate a strong linear relationship between the two variables.

Multicollinearity Test

Table 7. Multicollinearity test

Model	Sig.	Collinearity	
		Tolerance	VIF
1 (Constant)	0.000		
Indonesia's Educational Curriculum	0.000	0.875	1.143
Literacy Interest	0.042	0.875	1.143

Source: Primary Data, 2024

The presence or absence of a linear relationship between the independent variables in the regression model is assessed through the multicollinearity test. The absence of multicollinearity is a condition that the regression model must meet. The multicollinearity test will examine the inflation factor (VIF) value in this discussion.

The multicollinearity test table shows the analysis results for models involving two predictor variables: Indonesia's Educational Curriculum and Literacy Interest. Multicollinearity aims to test whether there is a correlation between the independent variables in the regression model. A good regression model should not show any correlation between the independent variables (Ghozali, 2018).

The multicollinearity test table shows the analysis results for models involving two predictor variables: Indonesia's Educational Curriculum and Literacy Interest. The tolerance for both variables is 0.875, indicating no serious problem with multicollinearity, as tolerance values above 0.1 are considered good. The Variance Inflation Factor (VIF) value for both variables is 1.143, below the threshold of 5, indicating no significant multicollinearity. These results indicate that the two variables do not influence each other excessively in the analytical model used.

Heteroskedasticity Test

Table 8. Heteroskedasticity test

	Coefficients[a]				
	Unstd. Coefficients		Std. Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	.170	.477		.358	.721

Indonesia's Educational Curriculum	-.116	.061	-128	-1.889	.060
Literacy Interest	.022	.011	.131	1.936	.054

The heteroscedasticity test is used to test whether, in the regression model, there is an inequality of variance from the residuals of one observation to another. The heteroscedasticity test is carried out with Spearman's rho test, which correlates the residual value (unstandardized residual) with each independent variable. The results of the heteroscedasticity test show that the significance value for the relationship between Indonesia's Educational Curriculum and unstandardized residuals is 0.060, and for the relationship between Literacy Interest and unstandardized residuals is 0.054. With a significance value greater than 0.05, it can be concluded that the regression model does not experience heteroscedasticity problems.

According to (Priyatno, 2017) There is no heteroscedasticity problem if the significance value between the independent variable and the absolute residual is greater than 0.05.
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T-test

Table 9. T-test

	Model	t	Sig.
1	(Constant)	3.703	0.000
	Indonesia's Educational Curriculum	4.948	0.000
	Literacy Interest	-2.061	0.042

Dependent Variable : Natural Science Learning Outcomes

The t-test table shows the analysis results for the regression model with the dependent variable Science Learning Outcomes (Asmawan et al., 2024). The t value for the constant is 3.703 with a significance (Sig.) of 0.000, which indicates that the constant is significant. For Indonesia's Educational Curriculum variable, the t value is 4.948 with Sig. 0.000, indicating that the sig value. 0.000 < 0.05 means that Indonesia's Educational Curriculum affects learning outcomes, and df 105 = 1.661, t count > t table is 4.948 > 1.661, meaning that H0 is rejected and Ha is accepted. In the literacy interest variable, the Sig. 0.0422 < 0.05 and the value of -t count < -t table is -2.061 < -1.661, meaning that H0 is rejected and Ha is accepted. Based on the calculation in the t-test, both Indonesia's Educational Curriculum and literacy interest have a significant effect on science learning outcomes. These results are reinforced by research by (Rizqi et al., 2023), which states that Indonesia's Educational Curriculum has a positive and significant effect on Natural Science learning outcomes. In addition, previous research conducted by (Nugraha, 2022) also shows a close relationship between literacy and Natural Science learning outcomes. The urgency of science literacy skills for elementary school students is related to the demands for maximum science learning outcomes. The significant relationship between the two variables requires educators to realize a meaningful science learning process.

Science learning, from value-oriented, needs to be shifted to science learning that is oriented towards optimizing stimulus to science literacy skills and mastery of science concepts in depth.

Coefficient of Determination Test

Table 10. Coefficient of determination test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.865[a]	.748	.703	1.385

Source: Primary Data, 2024

The coefficient of determination test results shows that the R-value of 0.865 indicates a strong positive relationship between the independent and dependent variables. R Square of 0.748 means that the independent variable can explain 74.8% of the variation in the dependent variable, indicating that this model is effective. Adjusted R Square of 0.731 indicates that after adjustment, the model can still explain 73.1% of the variation, indicating consistency. However, the standard error of 1 385,000 reflects a high degree of uncertainty in the predictions, indicating that although the model is robust, actual values can be significant fluctuations.

F-test

Table 11. F-Test

Model	Mean Square	F	Sig.
1 Regression	1497.670	12.294	,000[b]
Residual	121.823		

Source: Primary Data, 2024

The F-test table shows the regression analysis results for the dependent variable of Science Learning Outcomes with two independent variables, Indonesia's Educational Curriculum and Literacy Interest. In the F test table, it is known that the significance value is 0.000 < 0.05.

These results indicate that the regression model is significant, meaning that Indonesia's Educational Curriculum and Literacy Interest variables simultaneously affect Science Learning Outcomes with a very small Sig. Value, this model can explain variations in Science Learning Outcomes well.

The following explains the discussion of the effect of applying Indonesia's Educational Curriculum and literacy interest in literacy on grade IV Natural Science learning outcomes. This study was conducted to determine the effect of the application of Indonesia's Educational Curriculum and literacy interest on the learning outcomes of Natural Science based on the results of the final test carried out, namely in the t-test, shows that the application of Indonesia's Educational Curriculum and literacy interest has an effect on Natural Science learning outcomes with the results of the calculation for each variable being Indonesia's Educational Curriculum (X1) t = 4.948 which shows that Indonesia's Educational Curriculum has an effect on Natural Science learning outcomes

and the literacy interest variable has a sig value of 0.0422 <0.05. Thus, this shows that the literacy interest variable also affects Natural Science learning outcomes.

Based on the research findings, implementing the Education Unit Level Curriculum has proven to have a positive and significant effect on improving student learning outcomes in Science subjects.

In the F test, the Sig result is also obtained, namely 0.000 <0.05, which shows that the two independent variables, Indonesia's Educational Curriculum (X1) and Literacy Interest (X2), simultaneously affect the dependent variable Natural Science Learning Outcomes (Y).

Based on the coefficient of determination test, we can also see that the R-value of 0.865 indicates that there is a strong positive relationship between the application of Indonesia's Educational Curriculum (X1) and Literacy Interest (X2) and Natural Science Learning Outcomes (Y) based on the test results obtained R Square of 0.748 means that 74.8% of the variation in the dependent variable can be explained by the independent variable, indicating that this model is effective. Based on the overall final test results of the data analysis used, it is known that there is a positive influence between the two variables.

This finding aligns with theory (Martatiyana et al., 2023), which states that a flexible curriculum focusing on student needs can encourage better understanding. Indonesia's Educational Curriculum focuses more on essential material and developing learner competencies according to their phases. The goal is that learning is not rushed to pursue material completion so that students can enjoy the learning process through more meaningful learning. With this approach, students become more active in learning, increasing their motivation and interest in the material being taught.

In addition, students' literacy interest also contributes positively to Natural Science learning outcomes. This study found that students interested in reading tend to understand scientific concepts more easily. This suggests that literacy programs implemented in schools improve reading skills and enrich students' knowledge of the world around them. Thus, literacy interest is an important factor in supporting academic success.

This is in line with previous research by (Lestari et al., 2021) , where in her research, it was proven that literacy affects student learning outcomes; literacy influences a person's insight or knowledge, which, of course, will make someone able to think critically. When a culture of literacy is implemented in a class, the students will have a lot of insight, which certainly makes students think critically about the learning that is carried out, which will undoubtedly affect the learning outcomes that students will get.

▪ **CONCLUSION**

Based on research that has been carried out with a sample of 106 fourth-grade elementary school students, it is found that there is a significant influence between the dependent variables X1 (Indonesia's Educational Curriculum) and X2 (Literacy Interest) on the independent variable Y (Natural Science Learning Outcomes). As we can see from the total effect of the t-test and F-test in the t-test, the two variables, namely Indonesia's Educational Curriculum and literacy interest, significantly influence Natural Science learning outcomes. The significance value for Indonesia's Educational Curriculum is 0.000, and for literacy, interest is 0.0422, less than 0.05. In addition, the t count for Indonesia's Educational Curriculum (4.948) and literacy interest (-2.061) are greater than

the t table (1.661 and -1.661, respectively), so H0 is rejected, and Ha is accepted. In the F-test it is known that the F-test has a significance value of 0.000 < 0.05. These results indicate that the regression model is significant, meaning that Indonesia's Educational Curriculum and Literacy Interest variables simultaneously affect Natural Science Learning Outcomes.

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