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Development of Science Literacy-Based IPAS Teaching Materials to Improve the Character of Environmental Care of Grade IV Elementary School Students

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Abstract: This research aims to describe validity, practicality, and effectiveness Science literacy-based teaching materials can improve the character of caring for the environment in grade IV elementary school students. This study uses the *Research and Development* (R&D) held at SD Negeri Blado 03 Blado District, Batang Regency in the 2024-2025 school year A total of 24 children. The test instruments used are Authentic assessment tests, validation sheets and teacher and student response questionnaires. The normality test and the homogenity test were used for the test question test. Data analysis used t-test and N-Gain. Based on the results of the study, it can be concluded as follows: (1) Validation of science literacy-based science literacy teaching materials to Improve the Character of environmental care in grade IV elementary school students including aspects of materials, media, and science questions about the Impact of Human Activities on the Environment at an average level of 90.85% in the very valid category, (2) The practicality of science literacy-based teaching materials to Improve the character of environmental care in grade IV elementary school students including the perception of teachers and participants educated at an average level of 86.14% in the very practical category, (3) Effectiveness of Teaching Materials (1) based on the results of the N Gain test proves that the IPAS score on the Impact of Human Activities on the Environment was obtained with an average gain increase of 0.61 (61%), in the category of quite effective, namely the interval value of 56 – 75; (2) based on Test *Indipendent Sample test* resulting in a calculated t value of 13,280 > t table (2,024) means that there is a significant difference in the IPAS test score on the Impact of Human Activities on the Environment using science literacy-based IPAS teaching materials to Improve the Character of Environmental Care in Grade IV Elementary School students before and after *Treatment*.

Keywords: Teaching Materials, Science Literacy, Character Caring For The Environment

INTRODUCTION

Science literacy is important for students to master in relation to the way they can understand the environment, health, economy, and problems faced by modern society which is

highly dependent on technology and progress, as well as the development of science. Science literacy is a benchmark for the success of science in schools. In the process of achieving this, teaching materials are needed that prioritize aspects of the process such as body of knowledge, way of thinking, way of investigating, interaction of social science and technology. By prioritizing these aspects in science learning books (Aqil: 2017).

Science literacy has an important role in science and technology. Science literacy is considered one of the main topics in science education. For this reason, the science learning process must contain science literacy. Because of the age at elementary school, students have skepticism and curiosity, so they need to be accommodated with science literacy, so that they can conduct simple experiments (Nuro, 2020:179-187).

Teaching Materials With science literacy, this SAT began to be developed a lot. Teaching materials with science literacy make it easier for students to understand the content of the reading correctly. Fill in science literacy teaching materials by being able to achieve the selected basic competencies. In addition, the use of language in teaching materials uses simple and clearer sentences, so that it is easy for every student to understand. Sentence by sentence should use proper spelling. The teaching materials developed must also be designed with attractive color gradations, so that they can motivate students to follow the learning process well (Arlis: 2020). Based on the results of the research, literacy-based pocket textbooks show the effectiveness and feasibility of pocket textbooks with a learning completion percentage of 84.21% (Pangestu et al., 2013). Mirnawati (2021) in her journal stated that textbooks are a learning medium based on cognitive conflict. The results of the research that have been conducted show that cognitive conflict-based textbook learning media is included in the category of suitable use with a score of 92% (Mirnawati et al., 2021).

In elementary education, the pattern of education moves and develops in accordance with the development of science and technology which not only teaches cognitive aspects (knowledge) but also affective aspects (attitudes) and psychomotor aspects (behavior/habits). Environmental character education is instilled from an early age in students so that they can manage the natural resources around them wisely, as well as to foster a sense of responsibility for the interests of future generations. When the character of caring for the environment has grown into a strong mentality, it will underlie a person's behavior in daily life. For this reason, the cultivation of love and care for the environment must grow and become a positive character in our students from an early age, starting from childhood, early childhood, elementary school, junior high, high school to college (Mamu, 2023: 2227).

Learning tools that can learn students' environmental care attitudes, in this case the learning tools developed are learning tools in the form of potential-based teaching materials to learn students' environmental care attitudes, therefore the purpose of this study is to get the results of students' environmental care attitudes after the learning process is carried out using local potential-based teaching materials (Rahmi, 2023: 688). Based on the explanation above, the researcher developed science literacy-based teaching materials to improve the character of environmental care in grade IV elementary school students.

METHOD

Types of Research

This study uses the *Research and Development* (R&D). Borg and Gall (1983) explained that development research is a process used to develop and validate existing products or new products, as well as to find knowledge or answer problems.

This research will be carried out at SD Negeri Blado 03, Blado District, Batang Regency in the 2024-2025 odd semester school year. The subject of this study is a grade IV student of State Elementary School Blado 03 Batang has 24 children.

Data Analysis

The test instruments used are Authentic assessment tests, validation sheets and teacher and student response questionnaires. The normality test and the homogenity test were used for the test question test. Data analysis used t-test and N-Gain.

In this study, the data collection techniques are questionnaires, tests, and Expert tests to assess validity. (1) Questionnaire technique in research "Development Teaching Materials Based Science Literacy to Improve the Character of Environmental Care for Grade IV Elementary School Students" is used to measure teacher response/satisfaction with the product Teaching Materials Based Science Literacy. It is then used to measure the response of students and teachers to Teaching Materials Based Science Literacy; (2) The test is a technique used to determine the quality and learning outcomes of IPAS material "The impact of human activities on the environment" in accordance with the teaching materials selected for the development of learning tools; (3) The expert test aims to find out the opinion of experts on the validity of use Teaching Materials Based Science Literacy. Manuscripts are given to experts (material experts/ media experts/ science learning) to provide an assessment of the quality of the material, media, suggestions for improvement to the content, design, or technical Teaching Materials Based Science Literacy, validation of content on the curriculum and characteristics of elementary school students.

RESULTS AND DISCUSSION

Based on the results of the study Science literacy-based teaching materials can improve the character of caring for the environment in grade IV elementary school students proven to have a high level of validity, high practicality, and sufficient effectiveness. The discussion related to the results of the research is as follows.

Results

1. **Validation of the Development of Science Literacy-Based Science Teaching Materials to Improve Environmental Care Character**
   a. **Subject matter expert validation**

The score data of Material Expert Validation of Science Literacy-Based IPAS Teaching Materials to Improve the Environmental Care Character of Grade IV Elementary School Students from the material aspect was obtained from the following expert observations.

Table 1
Recapitulation of Material Expert Validation Results

No.	Aspects assessed	%
1	Content Eligibility	90
2	Language	79,2
3	Serving	89,6
4	Science Literacy	87,5
5	Supporting Materials for Environmentally Friendly Characters	87,5
	Average score	86,57

Based on the table mentioned above, the validation of Material Experts on Science Literacy-Based Science Literacy Teaching Materials to Improve the Environmental Care Character of Grade IV Elementary School Students as a whole at an average level of 86.57% in the category is very valid.

b. Media Expert Validation

Table 2
Recapitulation of Media Expert Validation Results

No.	Aspects assessed	%
1	Interface display	90,6
2	Serving	95,0
3	Language	95,8
	Average score	94,17

Based on the table mentioned above, the validation of Media Experts on Science Literacy-Based IPAS Teaching Materials to Improve the Environmental Care Character of Grade IV Elementary School Students as a whole at a level of 94.17% in the category is very valid.

2. The Practicality of the Development of Science Literacy-Based Science Teaching Materials to Improve the Character of Environmental Care

a. Based on Teacher Responses

Practicality score data on Science Literacy-Based Science Teaching Materials to Improve the Environmental Care Character of Grade IV Elementary School Students was obtained from the observation of education practitioners as follows.

Table 3 Recapitulation of Teacher's Practicality Observation Results

No.	Aspects assessed	Subtotal
1	Interface display	90,0
2	Material	84,7
3	Language	84,0
4	Serving	87,5
	Average score	85,88

Based on the table mentioned above, according to teachers as educational practitioners of Science Literacy-Based IPAS Teaching Materials to Improve the Character of Environmental Care of Grade IV Dasa School Students as a whole at a level of 85.88% in the very practical category.

b. Based on Student Responses

Researchers use checklists in grade IV classes SDN Blado 03 Blado District, Batang. The research instruments used were filled in by the respondents and returned to the researcher. The researcher immediately went to the school field and met directly with the students, teachers and principals.

Table 4 Recapitulation of Practical Observation Results by Students

No.	Aspects assessed	Subtotal %
1	Material	86,9
2	Display	85,9

No.	Aspects assessed	Subtotal %
3	Motivation to take lessons	85,8
4	Understanding of the material	87,2
	Average score	86,40

Based on the table mentioned above, according to the students of the Science Literacy-Based IPAS Teaching Materials to Improve the Environmental Care Character of Grade IV Elementary School Students as a whole at an average level of 86.40% in the category **very practical.**

3. The Effectiveness of the Development of Science Literacy-Based Science Teaching Materials to Improve the Character of Environmental Care

a. Test result data

Researchers use tests in grade IV classes SDN Blado 03 Blado District, Batang to find out the average pre-test and post-test scores of 249 children. The tabulation of the results of the Human Activities on the Environment test is seen in the table below.

Table 5
Average test result data on Entrepreneurship

Yes	Average test results	Average score
1	Pre-test	58,8
2	Post-test	84,0
	Increased value	25,2
	%	42,85%

On the pre-test, the average IPAS on the Impact of Human Activities on the Environment is 58.8. In the post-test, the average IPAS on the Impact of Human Activities on the Environment is 84.0. Increase of 25.2 or 42.85%

Data Normality Test Results

The following is presented the results of the data normality test using SPSS for IPAS score data on the Impact of Human Activities on the Environment.

Table 6 Results of the Kolmogorov Smirnov Normality Test IPAS Ability Score on the Impact of Human Activities on the Environment

One-Sample Kolmogorov-Smirnov Test

	IPAS post test score 4	IPAS pre test score 4
N	20	20
Test Statistic	,229	,192
Asymp. Sig. (2-tailed)	.007c	.051c
Exact Sig. (2-tailed)	,211	,400
Point Probability	,000	,000

Based on table 8 above, the results of the normality test results of the data normality test can be seen that the significance value is Exact. Sig. (2-tailed) in the post-test score is 0.211

and the pretest is 0.400 which means it is greater than 0.05 or 0.211 > 0.05 so that it can be concluded that the data of the post test score of the experimental class is normally distributed and is eligible for parametric statistical calculation.

c. Homogeneity Test

*Levene's Test*is the most popular test and is often used to perform homogeneity tests. *Levene's Test*has the main purpose of knowing the differences of two data groups with different variances. The results of the calculation from this test will show the significance value (p) of two different data groups.

Table 7 Homogeneity Test Analysis Results

Test of Homogeneity of Variances

		Living Statistic	df1	df2	Sig.
IPAS test score 4	Based on Mean	1,859	1	38	,181
	Based on Median	1,851	1	38	,182
	Based on Median and with adjusted df	1,851	1	36,691	,182
	Based on trimmed mean	1,661	1	38	,205

Significance value (p) score *Based on trimmed mean* 0.205 > 0.05 indicate that the data group comes from a population with the same (homogeneous) variance. After the data is confirmed to be homogeneous, the analysis can be continued using *T Test*.

d. T Test Results

The t-test was used to determine the difference in the score of the IPAS test on the Impact of Human Activities on the Environment using science literacy-based science teaching materials to improve the character of caring for the environment in grade IV elementary school students before and after *treatment*. In this study, the t-test using the SPSS program, the data was processed with *a Paired Sample test*, which is a paired sample test in the form of data before and after *treatment*. The results of the SPSS program processing showed that *the paired* t sample was tested for each of the following variables.

Table 8 Paired *Sample Test Results*

	t	Df	Sig. (2-tailed)
Post test score - Pre test score	15,507	46	,000

The *Indipendent* test sample test using SPSS produced a calculated t value of 15.507 while t table with df 36 = 2.024, thus the calculated t value of 15.507 > t table (2.024). This means that there is a significant difference in the score of the IPAS test on the Impact of Human Activities on the Environment using science literacy-based IPAS teaching materials to improve the character of caring for the environment in grade IV elementary school students before and after *treatment*. The difference in the IPAS test score on the Impact of Human Activities on the Environment before and after *treatment* showed that science literacy-based IPAS teaching materials to improve the character of caring for the environment in grade IV elementary school students had a positive and significant effect on the learning outcomes of social studies about

the Impact of Human Activities on the Environment by students

e. N-Gain Calculation Results

Table 4.9 Results of the calculation of N-Gain of Entrepreneurship value

Yes	Class	Pre-test average	Post-test average	Gain	%	Category
1	IV SD	58,8	84,0	0,61	61	Quite effective

The effectiveness of increasing the IPAS test score on the Impact of Human Activities on the Environment by comparing IPAS test data on the Impact of Human Activities on the Environment before and after the implementation of learning using science literacy-based IPAS teaching materials to improve the character of caring for the environment in grade IV elementary school students. The increase in IPAS on the Impact of Human Activities on the Learning Environment was analyzed based on the average gain value normalized using pre-test and post-test data.

In the pre-test, the average IPAS ability score is about the Impact of Human Activities on the Environment by 58.5. In the post-test, the average IPAS ability score on the Impact of Human Activities on the Environment by 84.2. Based on the Gain formula, it is calculated as follows:

$$g = \frac{S_f - S_i}{Maks - S_i}$$

Information:

g = gain (increase)

The = Initial Test

Sf = final test (post-test score).

$g = \frac{84,0-58,8}{100-58,8} = 0.61 \text{ x } 100\% = 61\%$

The results of the gain test analysis of the increase in the IPAS ability score on the Impact of Human Activities on the Environment were obtained with an average gain increase of 0.61, meaning that the increase in the IPAS test score on the Impact of Human Activities on the Environment with science literacy-based IPAS teaching materials to improve the character of environmental care in grade IV elementary school students is in the **category of quite effective**, which is an interval of 56 – 75%.

Discussion

1. Validity of Science Literacy-Based Science Teaching Materials to Improve Environmental Care Character in Grade IV Elementary School Students

Validation of science literacy-based science teaching materials to improve the character of environmental care in grade IV elementary school students includes aspects of material, media, and science questions on the Impact of Human Activities on the Environment. In observation **Material Aspects**, there are statements to reveal aspects of science literacy-based science literacy teaching materials to improve the character of caring for the environment. Based on the results of the analysis of observation score data by three Subject Matter Experts, it is proven that science literacy-based teaching materials are based on science literacy to improve the character of environmental care in grade IV elementary school students in terms of: (1) content feasibility at an average level of 90.0% in the very valid category, (2) diversity

at an average level of 79.2% in the very valid category, (3) presentation at an average level of 89.6% in the very valid category, (4) Science Literacy in learning at an average level of 87.5% in the very valid category, (5) Environmental Care Character Support Materials at an average level of 87.5% in the very valid category. Based on the table mentioned above, the validation of Material Experts on the Teaching Module as a whole at an average level of 86.57% in the category is very valid.

Media Expert Validation of Science Literacy-Based Science Teaching Materials to Improve Environmental Care Character in Grade IV Elementary School Students **Media Aspects** In terms of: (1) Interface display at an average level of 90.6% in the very valid category, (2) Presentation of Material at an average level of 95.0 in the very valid category, (3) Linguistics at an average level of 95.8 in the very valid category. Based on the table mentioned above, the validation of Media Experts on science literacy-based IPAS teaching materials to improve the overall character of environmental care at an average level of 94.2% in the category is very valid.

This is in accordance with the research of A'yun, Q., and Fawaida, U. (2023) who conducted a development study to determine the effectiveness of pocket books *(Pocket Book)* as a science teaching material in improving students' science literacy. The results showed that the average posttest score of the experimental class was 88.44 higher than the average posttest score of the control class of 82.04. The effectiveness value obtained by comparing the n-gain value of the experimental class and the control class was 1.16 which indicates that the pocket book *(Pocket Book)* effectively used to improve students' science literacy.

In the implementation of learning, especially in the field of science, professionalism from educators is needed. In this case, educators must have enough knowledge to explain a science material in its entirety. In addition, in the process of delivering science materials, of course, a learning facility in the form of appropriate teaching materials is needed (Rahayu et al., 2022). An educator is required to be able to create a learning atmosphere that is in accordance with the character of the students and the character of the material presented in the form of a learning model equipped with learning resources and supporting media (Irfan et al., 2019).

Science literacy skills are important for students to have. One of the skills that students are expected to master after learning science is their science literacy skills. Science literacy is the ability to formulate scientific problems, identify questions, and draw conclusions based on facts in order to understand the universe and its changes as a result of human activities (Oktaviani, 2019). The final goal of science literacy is expected that students can apply the knowledge that has been obtained at school to understand the surrounding environment so that later the knowledge obtained will be more meaningful (Robiyanto, 2019).

2. Practicality of science literacy-based science teaching materials to improve the character of caring for the environment in grade IV elementary school students

Practicality of science literacy-based teaching materials to improve the character of caring for the environment in grade IV elementary school students based on the perception of education practitioners, namely teachers and students. As a result of the teacher's questionnaire, there were statements to reveal the practicality of science literacy-based IPAS teaching materials to improve the character of environmental care in the Material on the Impact of Human Activities on the Environment for students. Based on the results of the analysis of observation score data by 10 teachers, it is proven that science literacy-based IPAS teaching materials to improve the character of environmental care in grade IV elementary school students from the following aspects: (1) Interface display at the level of 90.0% in the very practical category, (2) Material suitability at the level of 84.7% in the very practical category, (3) Language at the level of 84.0% in the very practical category, (4) Screening at a rate of 87.5% in the category is very practical. Based on the table mentioned above, according to

teachers as practitioners of science literacy-based science literacy-based IPAS teaching materials to improve the character of caring for the environment in grade IV elementary school students / overall at a level of 85.88% in the very practical category.

As a result of the student questionnaire, there were statements to reveal the practicality of science literacy-based IPAS teaching materials to improve the character of caring for the environment in the Material on the Impact of Human Activities on the Environment for students. Based on the results of the analysis of observation score data by ten students, it is proven that science literacy-based IPAS teaching materials to improve the character of environmental care in grade IV elementary school students from the aspect: (1) **Material** at an average rate of 86.9% in the category **very practical, (2) Display** at an average rate of 85.9% in the category **very practical, (3) Motivation** took lessons at an average rate of 85.8% in the category **very practical, (4) Understanding the character of environmental concern** at an average rate of 87.2% in the **very practical.** Based on the table mentioned above, according to the students, the science literacy-based IPAS teaching materials to improve the character of environmental care in grade IV elementary school students / overall at an average level of 86.4% in the category **Very practical**.

The results of the study showed that science literacy-based science teaching materials to improve the character of caring for the environment in grade IV elementary school students are practically used in learning. This is in line with the research of Sugianto, Paramita, and Rusilowati (2017) showing that students' ability in the aspect of science as a way of thinking is still relatively low because the practice questions contained in the textbook used in the control class are more likely to ask students to do calculations using formulas directly, or as if students only enter the known quantity into the existing formula and then calculate it. Questions that require the use of concepts are still lacking so that students are not used to answering questions *Post-test* with such a type of question. Therefore, to improve learning outcomes, habituation is needed as stated by Rusilowati (2015) that to develop students' ability to construct concepts cannot be done spontaneously. In order to develop a concept map, students need to be given practice or habituation first. Eggen (2017: 110) also states that the more students learn about a topic, the better they are able to think about that topic. Thus, the more often students are faced with problems of analysis and the use of concepts, the better their abilities will be.

Pocket book *(Pocket Book)* as science teaching materials in the classroom are well received by students. In the learning process with pocket books *(Pocket Book)*, students play an active role during the learning process starting from formulating a problem in the surrounding environment related to the learning material, then conducting an experiment related to the material, and students are also directed to be able to process data based on previous evidence and sources to then draw conclusions independently. This is in accordance with the definition of science literacy, which is the ability to use scientific knowledge, identify questions, and draw conclusions based on evidence, in order to make decisions related to nature and the changes made to nature by human activities (Yuliati, 2017).

This result is in accordance with the research of Agustini (2013) which shows that the use of science, technology and society learning models can improve science problem-solving skills in daily life. *American National Science Teachers Association* (NSTA) even considers that the interaction between science, technology and society is the basis of science education because it emphasizes the importance of teaching the interactive relationship between science, technology and society in decision-making on everyday problems (Mansour, 2009).

The results of the analysis reflect that the use of existing textbooks has emphasized more on the content dimension than the process and context dimension as required by PISA. This result is in line with the research conducted by Maturradiyah, N & A. Rusilowati (2015) on the analysis of high school physics textbooks in Pati district based on the content of science

literacy. The study showed that the textbooks in circulation contained a lot of knowledge, while the activities of thinking, investigating and interacting with science, technology and society were very few.

3. Effectiveness of science literacy-based science teaching materials to improve the character of caring for the environment in grade IV elementary school students

The results of the N Gain test prove that the IPAS ability score on the Impact of Human Activities on the Environment was obtained with an average gain increase of 0.61, meaning that the increase in the IPAS ability score on the Impact of Human Activities on the Environment with science literacy-based IPAS teaching materials to improve the character of caring for the environment is at **Medium Category** i.e. the gain value $0.3 < g \leq 0.7$. The results of the Independent t test using SPSS produced a calculated t value of 13.280 while t table with df 38 = 2.024, thus the calculated t value of 13.280 > t table (2.024). This means that there is a significant difference in the score of the IPAS test using science literacy-based IPAS teaching materials to improve the character of caring for the environment in grade IV elementary school students before and after *Treatment*. Differences in IPAS test scores on the Impact of Human Activities on the Environment before and after *Treatment* shows that science literacy-based teaching materials to improve the character of caring for the environment have a positive and significant effect on the learning outcomes of science about the Impact of Human Activities on the Environment.

The results of the research conducted by Ningsyih, S., Yulianci, S. Julaifah, N. (2019) produces problem-based teaching material products that are feasible and practical to use. This research focuses on testing the effectiveness of problem-based teaching materials in improving students' Science Literacy skills. This quasi-experimental research uses a pretest-postest one group design. Science literacy data was obtained through an essay test, and analyzed using the N-Gain test. The results of the data analysis obtained an N-Gain value of 0.47 and are included in the sufficient category. Based on the results of data analysis, it can be concluded that problem-based teaching materials are effective in improving students' science literacy skills.

Low science literacy is caused by learning that does not facilitate the development of students' science literacy. Learning activities emphasize more on the aspect of remembering the material and pay less attention to the process of discovering knowledge (Fatmawati & Utari, 2015). Another study conducted by Paramita (2016) stated that the practice questions contained in the textbook mostly use direct formulas, while the questions that require the use of concepts are still lacking so that students are not used to science literacy tests that are close to daily life. This is supported by research by Winata, Cacik & Seftia (2016) the cause of low science literacy is that they are not used to completing science literacy ability tests or problems related to science literacy. Science literacy is scientific knowledge and skills that are able to carry out various scientific competencies on issues related to science. (OECD, 2019).

The teaching materials that have existed so far emphasize more on the content dimension than on the process and context dimensions, so it is suspected that it has caused a low level of student science literacy in Indonesia. Therefore, an alternative teaching material is needed that involves aspects that contain science literacy, namely the content, processes and attitudes of science in a real-life context. Based on this, a process of reconstruction of teaching materials is needed (Rostikawati, 2016).

Susanto (2015) said that problem-based learning will make students accustomed to facing problems and challenging to solve problems both in the classroom and in daily life (real world) so that students can improve science literacy. Furthermore, Sulistyarini (2015) stated that the learning environment in the problem-based learning model is open, uses a democratic process, and emphasizes the active role of students. In addition, the problem-based learning model uses learning with environmental exploration which is used in the form of students' daily

experiences so that they can lay real foundations for thinking so that students will be used to improving science literacy (Atmojo, 2013).

Sani (2015) revealed that education at this time should lead to a process of activities that can shape students to be able to face the era of globalization, environmental problems, information technology advances to the influence and impact of science-based technology. In connection with this, the mastery of science literacy is something that must be taken into account. Curiosity in a person is essential to solve and study and investigate various phenomena that exist. Pitafi & Farooq (2012) state that a person's curiosity is shown by asking questions, reading to find information, and conducting research.

CONCLUSION

Based on the results of data analysis as presented in chapter IV, the following are some conclusions that can be obtained from this study: (1) Validation of Science Literacy-based IPAS Teaching Materials to Improve the Character of Environmental Care in Grade IV Elementary School Students including aspects of materials, media, and IPAS questions on the Impact of Human Activities on the Environment. Based on the results of the analysis of the observation score data of the Material Expert, it is proven that the science literacy-based teaching materials to Improve the Character of caring for the environment from the Material aspect at an average level of 87.5% in the very valid category, from the media aspect at an average level of 94.2% in the very valid category. The average level of validity of two aspects of science literacy-based science teaching materials to Improve the Character of environmental care in grade IV elementary school students at an average level of 90.85% in the very valid category, (2) The practicality of science literacy-based science teaching materials to Improve the character of environmental care in grade IV elementary school students includes the perception of teachers and students. Based on the results of the analysis of teacher perception scores, it is proven that science literacy-based science teaching materials at an average level of 85.88% in the very practical category and based on the average perception of students 86.4% in the very practical category. The average level of practicality of teachers' and students' perceptions of science literacy-based science literacy-based teaching materials to improve the character of environmental care at an average level of 86.14% in the very practical category, (3) The effectiveness of science literacy-based science teaching materials to improve the character of environmental care in grade IV elementary school students based on the N Gain test and the T test: (1) based on the results of the N Gain test proves that the IPAS score on the Impact of Human Activities on the Environment obtained an average gain increase of 0.61 (61%), meaning that the increase in the IPAS score on the Impact of Human Activities on the Environment is in the category of quite effective, namely the interval value of 56 – 75; (2) based on Test *Indipendent Sample test* Produces a calculated t value of 13.280 > T table (2.024). This means that there is a significant difference in the IPAS test score on the Impact of Human Activities on the Environment using science literacy-based IPAS teaching materials to Improve the Character of Environmental Care in Grade IV Elementary School students before and after *Treatment*.

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