THE INFLUENCE OF DIORAMA LEARNING MEDIA ON SCIENCE LEARNING OUTCOMES FOR CLASS III ELEMENTARY SCHOOLS

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Abstract
Education plays a crucial role in shaping intellectually capable and well-prepared generations, which necessitates the use of effective and engaging learning media at the elementary school level. This study aims to examine the influence of diorama-based learning media on science learning outcomes of third-grade elementary school students, particularly on the topic of butterfly metamorphosis. A quantitative approach employing a quasi-experimental design with a nonequivalent control group was used. The sample consisted of Grade III students selected purposively, involving an experimental group taught using diorama media and a control group receiving conventional instruction. Learning outcomes were measured using a 20-item achievement test that was validated and reliability-tested on 48 students. Instrument analysis using Jamovi indicated a high level of internal consistency, with a Cronbach's Alpha coefficient of 0.967. Prior to hypothesis testing, assumption tests were conducted. The Shapiro–Wilk normality test showed that both pretest ($p = 0.104$) and posttest ($p = 0.356$) data were normally distributed. Statistical analysis using an independent samples t-test revealed no significant difference between groups at the pretest stage, while a significant difference was found in posttest scores, favoring the experimental group. These findings confirm that diorama-based learning media significantly enhance students' science learning outcomes, and the observed improvements can be attributed to the instructional treatment rather than initial group differences. The study suggests that integrating concrete, three-dimensional learning media can effectively support meaningful learning experiences in elementary science education.

Introduction

Education is a conscious and planned effort to prepare students through guidance, teaching, and training so that they can develop their potential and reach maturity. Education is one of the most important aspects in shaping a generation that is intelligent, possesses strong character, and is able to face the challenges of the times. It also serves as a medium for shaping individuals' character, which plays a crucial role in determining a country's future progress. In other words, education can be viewed as a platform for building national character, which significantly influences the advancement of a nation (Dewi & Putri, 2025).

Education is a learning process that occurs continuously throughout an individual's life (Nata, 2024). Therefore, everyone has the right to receive proper education. Through education, individuals can acquire fundamental knowledge and skills that are useful in everyday life,

improve their quality of life, make appropriate decisions, maintain their health, and plan their future.

An educational process, teaching and learning activities carried out in a school. School is the main forum for students to acquire knowledge, skills and attitudes that are useful for their future lives. Education is a process by which a person obtains knowledge that he does not yet understand and has never studied (Rahayu & Zainuddin, 2024). Teaching and learning activities often use learning media which is usually replaced by the term teaching aids (Munisah, 2024). In the world of education, the role of teachers is very important because teachers become guides who guide students so they can understand the various knowledge and skills needed in the future. A teacher not only opens a window to the world for his students, but a teacher also selects, filters and provides the best information for his students.

Learning is generally carried out in schools by a teacher and students who will study. In the learning process, of course, there are various obstacles that arise, one of which is in the delivery of material provided by the teacher. With these obstacles, of course there are solutions that can be used to solve them. One of them is the use of learning media. Learning media is anything that aims to attract attention, stimulate children's thinking, and skills in the ongoing learning process (Karomah et al., 2024). Learning media is very important to use in the process of teaching and learning activities, one of which is at the elementary school level. Learning media is part of the learning process that can attract students' attention to learning. The right learning material to use depends on the learning that will be used; in order to create a comfortable and enjoyable environment, it is important to experiment with learning media, besides that it can also help deliver material through learning media (Maharani et al., 2025). Learning media can attract students' attention, including learning media in the form of dioramas for learning, one of which is in science subjects with the material of butterfly metamorphosis. So that the learning process runs properly without any disruption.

Science lessons certainly really need concrete learning media. Science subjects are lessons related to nature and the environment around us. Concrete items are unique items that we often encounter in the environment around us, which function as unique and interesting learning tools (Kustini & Adri, 2025). Concrete object media in science learning has a positive and constructive impact on learning outcomes (Fadli & Ardiyani, 2025). Therefore, science requires a learning media that is concrete to the environment around us. So that students can and are able to understand well and deeply. Apart from that, students not only imagine the metamorphosis process of butterflies but see it concretely.

The results of observations made at SDN 1 Kalidawir show that the learning process uses various innovative and creative learning media. One of them is in class 3, the teacher uses learning media in the form of an open diorama which contains material on the stages of butterfly metamorphosis. The important role of learning media is to attract interest, motivate students and facilitate understanding of the material (Hafis, 2024). With the diorama learning media, students are very enthusiastic, enthusiastic about the learning process. This condition makes it suitable as an experimental class. Learning media can make it easier for teachers to convey the material being taught, where learning media must also meet the requirements and can encourage students to be enthusiastic about learning during the learning process (Nurhakim et al., 2024). In this way, students will know concretely and realistically the stages of butterfly metamorphosis. Students will understand more about the sequence of metamorphosis in butterflies.

Especially in science lessons with butterfly metamorphosis material. Butterfly metamorphosis is the life cycle of a butterfly from egg to becoming a butterfly. So in this material it is very relevant to use three-dimensional diorama media. Three-dimensional media that can be seen from all directions and is real is very suitable for learning media about butterfly metamorphosis (Sya'diah et al., 2024). So that students can observe each butterfly's metamorphosis process in real life. Three-dimensional diorama media can support better learning (Puspitasari, 2025). Three-dimensional diorama media can enable students to know and not just imagine what happens in the metamorphosis process of butterflies. With four stages placed on diorama media so that students can easily understand them more specifically.

Diorama is a concrete learning media that can visualize objects in three-dimensional miniature form. Dioramas are three-dimensional visual media that can enable students to simplify and understand science concepts in a more in-depth, realistic and interactive manner (Novitasari, 2024). Diorama learning media is very significant for student learning outcomes (Lingga, 2025). Dioramas allow students to see the relationships between objects in a realistic form. The use of three-dimensional diorama media helps students to understand concepts in depth. In this way, dioramas can increase effectiveness in the learning process.

Diorama media can also increase students' interest and motivation to learn. Diorama media makes learning interactive to regenerate students' curiosity about the material being studied (Almadania, 2025). Diorama media plays a very active role in improving student learning outcomes and motivation for student learning (Camilia, 2024). An attractive miniature display can make students have a high curiosity so that students are enthusiastic about wanting to know. Apart from that, diorama media can also provide a more active learning experience so that it is easy to remember.

The main problem that can be seen from the results of the school's observations is the low learning outcomes on metamorphosis material in butterflies. Learning outcomes are the achievement of learning outcomes and learning outcomes can be measured using learning outcomes tests (Telaumbanua & Harefa, 2024). Student learning outcomes are achievements achieved by a student academically through exams and assignments, actively asking and answering questions that support the acquisition of learning outcomes (Dakhi, 2020). Various factors can cause low student learning outcomes. explained that the factors that influence learning outcomes can be grouped into three, namely: internal factors, external factors, and learning approach factors, namely the methods, techniques or strategies used by educators in the learning process.

Assessing the effectiveness and efficiency of the learning process, one of the components of facilities and infrastructure that also influences learning outcomes is the use of media, so that choosing the right media can improve student learning achievement (Latifaturrohmah et al., 2025). Educational facilities and infrastructure are very important in improving an effective learning process (Gusniati et al., 2024). Therefore, as a teacher, you need to choose learning media that suits the learning material. Make sure that learning can run well and there are no obstacles. The learning process must of course run effectively without any obstacles. One of them is choosing learning media that is suitable for the learning process. Choosing effective learning media will certainly make it easier to deliver the material. Apart from that, it can also make it easier for students to understand the material provided by the teacher.

SDN 1 Kalidawir is a quite appropriate research location given the previous learning conditions which still minimally use concrete media. In this research, SDN 1 Kalidawir was the

experimental class. Learning uses learning media in the form of three-dimensional media called dioramas. Inappropriate use of learning media greatly influences student learning outcomes (Nadia, 2022). The use of learning media is not only sufficient for theoretical mastery but also requires tests and practice so that the media can be developed (Alifah et al., 2023). Learning with dioramas is expected to produce significant changes in student learning outcomes. Comparison of the pretest and posttest treatment scores will provide an objective picture. This research carried out a quantitative approach so that the results were measurable.

This research aims to determine the effect of learning media, learning media is able to make students gain knowledge, skills and attitudes (Laili et al., 2024). Through the use of diorama media in learning, students not only see the material abstractly, but also experience more concrete learning experiences. This media helps students to better understand the material. The learning process becomes more interesting, interactive, and able to improve student learning outcomes. Learning outcomes are actually a factor of the students themselves (Astiti, 2021). However, the existence of learning media can encourage students to be active in the learning process. The use of diorama media is expected to provide an increase in student learning outcomes compared to conventional learning methods.

Method

Types of research

The research method used in this study is quantitative research. Quantitative research is a research method based on the philosophy of positivism, used to research certain populations or samples, with sampling techniques which are generally carried out, data collection using research instruments, quantitative or statistical data analysis with the aim of testing predetermined hypotheses (Sugiyono, 2023:10).

The type of research used is Quasi Experimental Design research, which is widely used in the educational field to investigate causal relationships when randomization of subjects is not possible. Quasi Experimental Design is designed to approximate the conditions of true experimental research while adapting to various practical limitations that often occur in real classroom environments. This research uses Nonequivalent Control Group Design, namely a design that involves the use of an experimental group and a control group without randomization. The experimental group received treatment through the application of diorama learning media, while the control group continued to follow conventional learning methods. The purpose of using this design is to evaluate the influence of the independent variable, namely learning media, on dependent variables such as student learning outcomes. The Quasi Experimental Design method is considered appropriate for classroom-based research because it allows testing interventions without disturbing the natural conditions of the learning environment (Hermawa n, 2020). Although the absence of randomization may introduce certain biases, rigorous statistical analysis as well as administering a pretest helps minimize potential threats to validity. Thus, this approach provides a structured framework for assessing the effectiveness of diorama learning media in realistic educational contexts.

Quasi Experimental Design research is very valuable in educational research because it allows researchers to carry out systematic comparisons between groups under relatively controlled conditions, despite various limitations. In this study, a Nonequivalent Control Group design was chosen to facilitate a balanced comparison between two intact classes that could not be randomized. A pretest was given to the experimental group and the control group to assess initial equality before the treatment was implemented. This step is important to ensure that

differences that emerge after the intervention can be more confidently attributed to the indepen dent variables, rather than to pre-existing baseline differences. The use of pretest and posttest measurements strengthens the internal validity of the research design. In addition, the Nonequivalent Control Group design has the advantage of reflecting real learning conditions, thereby increasing the external validity of the findings (Sudrajat, 2025). By integrating these methodological considerations, the research provides meaningful insight into how game-based learning media can influence outcomes.

Research Sample

The research sample in this study consisted of elementary school students who were selected purposively to represent the population of class III students. A total of 48 class III students were first involved in the trial phase to test the validity and reliability of the learning outcomes instruments. In the main experimental stage, two intact classes from grade III level were involved and divided into an experimental group (KE) and a control group (KK). The experimental group was taught using diorama learning media, while the control group received learning through conventional methods. Both groups took a pretest and posttest so that researchers could measure differences in learning outcomes before and after the intervention (Widodo, 2021). This sampling design follows the nonequivalent control group model, which is commonly used when randomization is not possible in an educational context. The sample selection process ensured that both groups had similar academic characteristics, thereby increasing the comparability of research results.

Data Analysis Techniques

Instrument Test

This research uses a learning outcome instrument in the form of test questions. The score obtained can be said to have a high correlation with the actual score, which shows that the instrument is reliable. Reliability can be defined as the correlation coefficient between scores obtained from measurements using parallel tests. Based on this definition, a test is considered reliable if the measurement results are very close to the actual condition of the test taker (Ewing & Park, 2020). To calculate reliability using JAMOVI application version 2.7.12. Values ≥ 0.70 are usually considered sufficiently reliable for social, educational, and psychological research. This is the threshold most commonly used by researchers (Nunnally, 1978). Nunnally (1978), the minimum limit for Cronbach's Alpha is 0.70. The following are the Cronbach's Alpha values presented in Table 1.

Table 1. Cronbach's Alpha values and interpretation

Cronbach's Alpha	Interpretation
≥ 0.90	Excellent
0.80 – 0.89	Good
0.70 – 0.79	Acceptable
0.60 – 0.69	Questionable → still acceptable for exploratory research
0.50 – 0.59	Poor
< 0.50	Not reliable

Source: George & Mallery (2003); DeVellis (2016)

Reliability (U) in a test is generally expressed numerically in the form of a coefficient ranging from -1.00 to +1.00. High reliability is indicated by a high coefficient, while low test scores are associated with low reliability. If reliability reaches a perfect level, then the reliability coefficient is +1.00. Ideally, the reliability coefficient should be positive. Reliability also has a close relationship with measurement error. High reliability shows that the error in obtaining measurement results is very minimal. In other words, the higher the reliability of an instrument, the

smaller the measurement error. Conversely, if the reliability of the test score is low, the measurement error will be greater.

This research uses construct validity, which measures the extent to which an instrument is able to reveal certain abilities or theoretical constructs that are intended to be assessed. The construct validation process begins by identifying and formulating the variables to be measured, then these variables are expressed in the form of a logical construct based on relevant theory. From this theory, practical consequences related to measurement results under certain conditions are derived, and these consequences are then tested. If the results are as expected, the instrument is considered to have good construct validity (Mahmud, 2011). In this research, because mathematical creative thinking skills are an extension of creative thinking skills, metacognitive abilities, and learning readiness which are relatively new concepts, it is necessary to further explore the factors related to these variables. Construct validity in this research was determined using Exploratory Factor Analysis (EFA), which is used when the measurement model of an instrument construct is still at the exploration stage. Next, the computer generates a variance-covariance matrix and calculates eigenvalues, which are used to determine the percentage of variance explained and to create a scree plot. Construct validity was assessed using the JAMOVI application version 2.7.12.

Test Assumptions

For operational product testing, this research uses a quasi-experimental design. Before data analysis is carried out, two prerequisite tests are carried out: first, the normality test which aims to determine whether the data from each variable is normally distributed. The normality test was applied to learning motivation data (pretest and posttest) collected from two classes, namely the control class (KK) and the experimental class (KE). The data was then analyzed statistically using Jamovi version 2.7.12 with the Shapiro-Wilk Multivariate Normality Test to evaluate the normality assumption. If $p > 0.05$, the data is considered normally distributed; if $p < 0.05$, the data is considered not normally distributed (Leedy & Ormrod, 2020). The normality test was carried out on the pretest and posttest scores. The criteria for hypothesis testing are as follows:

H_0 : Data is normally distributed
H_1 : Data is not normally distributed

The homogeneity test was carried out to determine whether the samples used in the research came from a population with the same variance. This process was carried out using Jamovi version 2.3.28. Homogeneity is determined based on the significance value (sig.); if sig. > 0.05, the data is considered homogeneous, whereas if sig. < 0.05, data is considered not homogeneous. The homogeneity test was applied to the pretest and posttest data. The criteria for hypothesis testing are as follows:

H_0 : homogeneous group
H_1 : the group is not homogeneous

The field trial used a nonequivalent control group design, which is similar to a pretest-posttest control group design. This design allows for comparisons between the control class and the experimental class, so that researchers can assess the effect of the intervention while taking into account initial differences between the two groups.

Experimental Group (EG):
$O_1 \rightarrow X \rightarrow O_2$

Control Group (CG):
$O_3 \rightarrow - \rightarrow O_4$

Where: O_1 and O_3 represent the pretest scores, O_2 and O_4 represent the posttest scores, and X denotes the treatment applied to the experimental group.

Figure 1. Research design of the quasi-experimental study using a nonequivalent control group design (Sugiyono, 2021).

Hypothesis Testing To determine the difference in average scores between the control class and the experimental class, the independent sample t-test was used. Before hypothesis testing is carried out, all prerequisite tests have been carried out to ensure the suitability of the data (assumption tests). The t test is used to test the effect of the independent variable, namely learning using diorama media on material about Indonesian cultural diversity, on the dependent variable which includes motivation. Analysis was carried out using JAMOVI version 2.7.12, with a significance level of 5% ($\alpha = 0.05$). The research hypothesis is formulated as follows:

H_0: There is no significant difference in the learning motivation of those who receive learning using diorama media and students who do not use it ($\mu 1 = \mu 2$).
H_a: There is a significant difference in learning motivation between students who receive learning using diorama media and students who do not use it ($\mu 1 \neq \mu 2$).

This design allows examining the effect of treatment with control and experimental groups, there is a clear comparison between the experimental group and the control group, so that the impact of diorama learning media on student motivation can be assessed reliably.

Results

The results of this research provide an overview of the quality of learning outcomes instruments and the influence of diorama learning media on the learning outcomes of class III students.

Instrument Test

This research uses a learning outcomes instrument in the form of a test consisting of 20 questions. The test questions were tested on 48 grade III elementary school students to assess the reliability and validity of the research instrument. Based on the test results of learning outcomes instruments analyzed using the JAMOVI application, research findings are presented.

Table 2. Scale reliability statistics

	Cronbach's α
Scale	0.967

Source: Jamovi (2025)

Based on the results of the reliability analysis in Table 2, Cronbach's Alpha value of 0.967 was obtained, which shows that the learning outcome instrument used in this research is in the good category according to the reliability interpretation criteria according to George & Mallery (2003) and DeVellis (2016). This value exceeds the minimum reliability limit of 0.70 as recommended by Nunnally (1978), so it can be concluded that the questionnaire instrument has high

internal consistency. High reliability indicates that the score obtained has a strong correlation with the actual score, so the measurement error is relatively small. In the context of reliability theory, a coefficient of 0.967 indicates that the instrument is able to measure learning outcomes stably and accurately and is close to the actual conditions of students. Thus, the instrument used in this research has met adequate reliability standards, so it is suitable to be used to measure the learning outcomes of class III students consistently and responsibly.

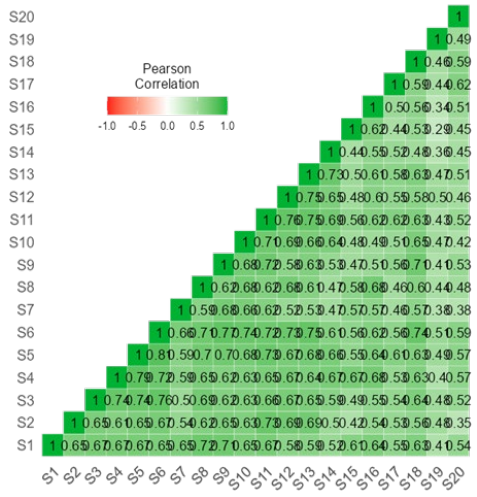

Figure 2. Correlation heatmap reliability instrument results (Jamovi, 2025)

These reliability results are further strengthened by the correlation heatmap which is dominated by green, which illustrates the positive correlation between statement items in the instrument. The green color on the heatmap indicates that each item has a harmonious relationship with other items, so that all items work in the same direction to measure the learning outcomes construct. Consistent positive correlation between items is an important indicator that the instrument has internal coherence, which is the main prerequisite for the formation of a high Cronbach's Alpha value. Thus, the combination of a reliability coefficient of 0.967 and the positive correlation pattern depicted in the heatmap confirms that this learning outcomes questionnaire instrument is not only reliable, but also well structured and able to consistently measure the construct of learning outcomes in class III students.

Table 3. Bartlett's sphericity test

χ^2	Df	P
1642	190	<.001

Source: Jamovi (2025)

The results of construct validity testing in Table 3 show that the Bartlett's Test of Sphericity value is $\chi^2 = 1642$ with df = 190 and $p < .001$. This very small significance indicates that the correlation matrix between instrument items is not identical, so there is a strong enough relationship between items to carry out factor analysis. In theory, Bartlett's Test is used to check whether the correlation between variables is large and meaningful enough to be worthy of further analysis through Exploratory Factor Analysis (EFA). When the p value <0.05, this indicates that the correlation between items is significant, which means the instrument has an internal linkage structure that is sufficient for the formation of theoretical constructs. Thus, the results of the Bartlett test in this study support that the data meets the requirements for a factor extraction process in order to assess construct validity.

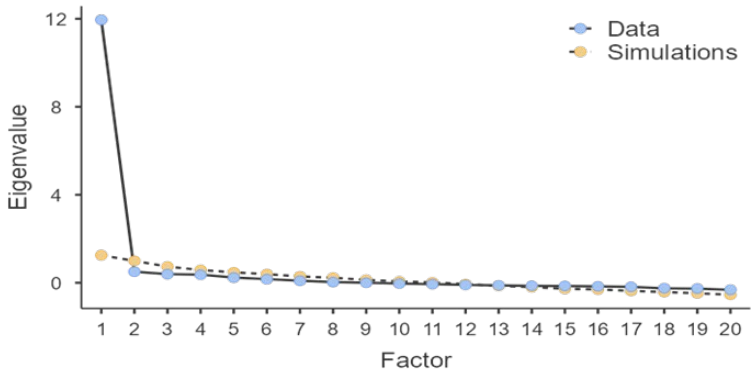

Figure 3. Scree plot Exploratory Factor Analysis (EFA)

The findings from the scree plot in Figure 3 further strengthen Bartlett's results, because the scree plot shows a clear one-factor drop before the line starts to flatten (*elbow*). This shows that there is only one dominant factor that explains most of the data variance. Theoretically, when the scree plot shows one main factor, the instrument is considered unidimensional, meaning that all items consistently measure the same core construct in this context, namely learning outcomes. The agreement between the scree plot results and Bartlett's test shows that the internal structure of the instrument is very strong and consistent in one main dimension.

One of the research problems in this study is to examine the effect of diorama learning media on the learning outcomes of third grade elementary school students. To answer this problem, this research uses a quasi-experimental method with a pretest-posttest design. Therefore, it is necessary to calculate the pretest and posttest results. Testing was carried out on 48 elementary school students, consisting of 20 students in the control class (who studied using conventional learning methods) and 28 students in the experimental class (who studied using diorama learning media). The control class was held at SDN 1 Ngunut in class III, while the experimental class was held at SDN 1 Kalidawir in class III.

Test Assumptions

The test consists of 20 questions from learning outcomes tests that have been validated and tested for reliability. Because this research uses a nonequivalent control group design, measurements are needed on both pretest and posttest data. Data on science learning outcomes (*pretest and posttest*) were collected from two classes, namely the control class (KK) and the experimental class (KE), then analyzed statistically using Jamovi version 2.7.12 to test the assumptions of normality and homogeneity. Table 4 shows a p value of 0.104 for the pretest and 0.356 for the posttest, both of which are greater than 0.05. This shows that the data is normally distributed, and the null hypothesis (H0) is accepted.

Table 4. Normality Test (Shapiro-Wilk)

	W	P
Pretest	0.960	0.104
Postest	0.974	0.356

Table 5. Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Pretest	3.7064	1	46	0.060
Postest	0.0174	1	46	0.896

Table 5 shows a p value of 0.060 for the pretest and 0.896 for the posttest, both of which are greater than 0.05. This shows that the data is homogeneous, and the null hypothesis (H¬0) is accepted. The prerequisite tests for carrying out an independent sample t-test have been fulfilled, namely *that* the data is normally distributed and homogeneous, thus allowing further testing to be carried out. Next, an independent sample t-test was carried out.

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Table 6. Independent Samples T-Test

		Statistic	Df	P
Pretest	Student's t	-1.60	46.0	0.115
Postest	Student's t	-6.12	46.0	<.001

Based on Table 6, the Independent Samples T-Test results show that in the pretest, the t value was -1.60 with degrees of freedom (df) 46.0 and p value = 0.115. A p value greater than 0.05 indicates that there is no significant difference between the average scores of the control group and the experimental group before the intervention, so that the two groups are in an equal initial condition. Meanwhile, in the posttest, the t value was -6.12 with df 46.0 and p value <0.001 indicating a significant difference between the control and experimental groups after being given the intervention. A negative t value indicates that the average score of the experimental group is higher than the control group. This confirms that the use of diorama learning media has a significant influence on the variables measured, both learning outcomes, and the differences that emerge in the posttest can be attributed to the treatment given, not to the initial conditions of the two groups. Thus, diorama-based learning media has proven to be effective in student learning motivation on the subject of butterfly metamorphosis.

Discussion

Based on research results, the application of diorama media can improve the learning outcomes of class III elementary school students, especially in science and science lessons in elementary schools (Krisnawati et al., 2023). Students who participated in assisting this research were guided through the process of butterfly metamorphosis using diorama learning media, to improve student learning outcomes. The use of diorama learning media has a very significant influence on student learning outcomes in science learning in class III (Sinaga, 2024). By using diorama media, students become interested and active during the learning process. Students not only listen to explanations from the teacher but also observe and interact directly with the learning objects, so that students are active in asking the teacher. Students remember and understand the material taught better so they can improve their learning outcomes.

Figure 4. Butterfly metamorphosis diorama media

The aim of this research is to examine the influence of learning media in the form of dioramas on learning outcomes for class III elementary schools. In science and science lessons, the material on the stages of butterfly metamorphosis, the stages of butterfly metamorphosis through diorama learning media makes abstract material easier for students to understand and remember (Afnanin et al., 2024). Previous research emphasized that concrete learning media can increase students' mastery of biological concepts (Nurkahfi et al., 2024). Learning that uses concrete objects, one of which is a diorama that can be seen from various sides, makes it easier for students to observe each stage of metamorphosis in butterflies, starting from the egg stage to becoming an adult butterfly that will lay eggs again in real life, not just reading from book summaries. The research results show that the use of diorama media can increase students' understanding compared to conventional learning without media.

The positive impacts of using diorama media include being able to increase students' active learning, so that they can improve their learning outcomes. Apart from that, it can also increase learning activities such as physical, psychological and emotional (Sari et al., 2024). The use of this media makes students more active, motivated, and able to understand the life cycle stages of butterflies more concretely (Nurmalia & Fitriyeni, 2025). The use of diorama media can have a positive impact on students in improving learning outcomes. Thus, the results of this research add to the evidence that learning using diorama media has a significant positive influence on the science and science learning process of butterfly life cycles in elementary schools.

Learning media is learning that can attract students' attention during the learning process (Barik & Putri, 2025). However, there are also limitations in this research, such as limited learning time and a small amount of diorama media, so students have to take turns using diorama media (Hurwanani et al., 2025). Apart from that, diorama learning media cannot reach large targets and also requires care and storage so that the learning media remains durable and can be used repeatedly (Jannah, Arafat, & Heldayani, 2023). It is hoped that future research can overcome these challenges by developing more efficient media models. Researchers can also study long-term learning using diorama learning media on students' academic achievement and critical thinking skills, not limited to the life cycle of living creatures in butterflies but also the life cycles of other living creatures.

Diorama learning media has a significant influence on learning on students' understanding of the material being studied (Yahya et al., 2025). Diorama media has the advantage that it is suitable for learning physics, biology, history subjects, apart from that, diorama media can provide real and concrete depictions of situations or conditions like the original so that students can easily appreciate it, not just imagine it from the material presented by the teacher (Ariani, 2023). Diorama media which has a three-dimensional display that can be seen from various sides and has an attractive appearance can attract students during learning so that students do not get bored and always pay attention during the learning process. Diorama media can also improve students' independent attitudes and critical thinking abilities, students become enthusiastic in the learning process and can express what they see (Pidada & Lasmawan, 2023). Through the butterfly metamorphosis diorama media, students can understand the material correctly and apart from that, students become more active, have high curiosity, and can think critically. Students also become aware of the metamorphosis process in a real and concrete way with the presence of diorama media which clearly shows each stage of butterfly metamorphosis starting from egg, larva, imago, to becoming a butterfly in detail and in real time. Therefore, this diorama media is very effective and efficient to use in the learning process to improve the learning outcomes of grade III elementary school students on the topic of butterfly metamorphosis.

Conclusion

This research proves that there is an influence of diorama learning media on student learning outcomes. The use of diorama media can have a positive and significant influence on improving the learning outcomes of class III students. This can show that diorama media is able to help students understand the material concretely, make students enthusiastic about learning, and encourage students' active involvement during the learning process so that it can improve student learning outcomes. However, this research is limited by the limited scope of the sample and the relatively short duration of media use. Future researchers are advised to involve a larger number of samples, a variety of learning materials, and study the effectiveness of diorama media over a longer period of time.

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