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The Effeect of the Conextual Learning Model on Science Learning Outcomes of Grade IV Student at SD Inpres Sibedi

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A R T I C L E I N F O

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A B S T R A C T

This study investigated the impact of a contextual learning model on fourth-grade students' learning outcomes in Natural and Social Sciences (IPAS) at SD Inpres Sibedi. A quasi-experimental design employing a Nonequivalent Pretest–Posttest Control Group framework was applied. The participants comprised 34 students, divided equally into an experimental group (n = 17) and a control group (n = 17). The experimental group was taught using a video-assisted contextual learning approach, whereas the control group received instruction through a Direct Instruction model supported by images. Data were collected using a validated and reliable 15-item multiple-choice test administered as pretest and posttest. Prior to hypothesis testing, assumption tests including normality and homogeneity were conducted. Data analysis was performed using the Independent Samples t-test and N-gain analysis, supported by SPSS version 26. The findings revealed a statistically significant difference between the two groups. The Independent Samples t-test produced a significance value of 0.000, which was lower than the alpha level of 0.05 ($p < 0.05$). Accordingly, the null hypothesis was rejected and the alternative hypothesis was accepted. It can therefore be concluded that the contextual learning model significantly improves students' learning outcomes in fourth-grade IPAS at SD Inpres Sibedi, demonstrating its effectiveness compared to the conventional instructional approach

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INTRODUCTION

Education is a process aimed at helping individuals change attitudes and values, broaden their knowledge, broaden their horizons, and develop their potential to form better humans. Therefore, education is a deep human endeavor shape character in accordance with prevailing societal values, while also equipping students with knowledge, skills, attitudes, values, and behaviors that are useful in everyday life (Wulan Sriyana et al., 2025).

Natural and Social Sciences (IPAS) is an important subject in the Indonesian education curriculum. This field of study integrates elements of natural science with social science. IPAS was developed to help students gain a comprehensive understanding of natural and social phenomena, as well as the reciprocal relationship between humans and their environment (Guru et al., 2022). Science and social studies learning in the Merdeka curriculum are combined into IPAS (Science and Social Studies). The goal of IPAS in the Merdeka curriculum is to develop interest, curiosity, and active participation, as well as to develop knowledge and skills. Science (IPAS) helps students understanding living and non-living objects throughout the universe., as well as human life, both as an individual and a social being who is connected to his environment. Scienc learning aims to develop students' abilities in order to study and implement scientific and social concepts in everyday life, while simultaneously improving scientific and social literacy. However, in practice, many students still experience difficulty understanding the material and show low interest in the subject (Wahyudi et al., 2023).

The contextual learning model is present as a potential innovation to increase students' interest and attention in Learning stages, thus having providing an influence on increasing their learning achievements. Contextual learning model in Natural and Social Sciences (IPAS) is an innovation aimed at making the learning process more relevant, interactive, and engaging for students. This approach emphasizes active student involvement through exploration, discovery, discussion, critical thinking, and the construction of new knowledge and skills, particularly through group work. Furthermore, this approach encourages students to connect their knowledge with its application in everyday life, both individually and collaboratively (Barokah et al., 2025).

Based on observational findings and interviews conducted with a fourth-grade teacher at Sibedi Inpres Elementary School, it was identified that students' achievement in science remains at a relatively low level.The observations also revealed that classroom learning is still dominated by on the teacher. In addition, many students still have difficulty understanding the subject matter and are less interested in the subject of science. This shows that researchers can conduct research using a more colorful learning model so that learning is not monotonous, able to grow self-confidence and can improve student learning outcomes.

Thus, teachers provide opportunities for students to express their opinions. Students are shy to answer them, so that learning is less effective and often becomes an obstacle in the learning process. If this continues to occur, it will affect student learning outcomes. This shows that researchers can conduct

research using a more colorful learning model so that learning is not monotonous, can increase self-confidence and can support increasing student learning success (Prastikawati & Irawan, 2020).

In connection with the above problem, the researcher suggests using a contextual learning model with several advantages, namely creating a classroom in which students will become active students, helping students think critically, logically, and systematically, and helping students understand the relationship between the material being studied and real life.

LITERATURE REVIEW

The Contextual Teaching and Learning (CTL) approach represents an instructional framework that integrates academic content with learners' real-life experiences. By situating learning within familiar everyday contexts, this model enhances the relevance of instructional material and promotes deeper conceptual understanding among students. Through this approach, students not only act as recipients of information but also actively construct knowledge through direct experience. This approach is particularly well-suited for science and natural sciences (IPAS) learning, as the material is directly related to natural and social phenomena in the students' environment. This learning emphasizes the importance of student activities such as exploring, discovering, discussing, thinking critically, and constructing their own knowledge and skills through group work. IPAS (Natural and Social Sciences) is a subject that integrates science and social studies concepts into a single learning environment.

According to the Ministry of Education and Culture (2022), IPAS learning aims to develop scientific and skills in critical analysis, as well as an understanding of the natural and social environment. The close connection between IPAS and everyday life necessitates the use of a contextual learning approach. However, in practice, IPAS learning often relies on conventional methods, which result in student inactivity and suboptimal learning outcomes. Evidence from prior studies consistently indicates the effectiveness of CTL in enhancing educational outcomes. Sari (2019) demonstrated that students who were taught using CTL exhibited significantly higher academic achievement than those who experienced conventional instructional approaches. In addition, Dewi (2021) confirmed that the application of CTL not only increased student engagement but also contributed positively to learning achievement in elementary science education. According to this description, the researcher was motivated to conduct research with the title "The Effect of Contextual Learning Models on Science Learning Outcomes of Grade IV Students at SD Inpres Sibedi."

METHODS

This research employed a quantitative methodology within a quasi-experimental framework, specifically utilizing a nonequivalent control group pretest–posttest design. The study involved a comparative analysis between two distinct groups, namely an experimental group and a control group, in order to examine differences in outcomes following the intervention.

Table 1. Nonequivalent Control Group Desain

Group	Pretest	Treatment	Posttest
Experiment	O_1	XE	O_2
Control	O_3	-	O_4

Description:

$O1$ and O_3 = Initial test (pretest) given to the experimental class before the treatment process

XE = Treatment taken from experimental group in the form of using a contextual learning model

$O2$ and O_4 = Final test (posttest) given to the control class after the treatment process.

All fourth grade students were the population in this study. Students at Sibedi Inpres Elementary School, totaling 34 people, consisting of 17 fourth grade A students and 17 fourth grade B students.

Table 2. Population of Grade IV Students at Sibedi Inpres Elementary School

No	**Class**	**Total**
1.	IV A	17 Students
2.	IV B	17 Students
Total		34 Students

RESULTS

This school research uses two classes as research samples: a control class and an experimental class. The pretest and posttest results were nearly identical. The pretest and posttest were conducted to measure students' initial and final abilities using different learning models. The results for the two classes are as follows:

Pre-test Data Analysis Results

The pre-test, or initial test, is a test conducted before compiler administers action to both experimental class and control class. This test was conducted to determine students' initial abilities on the topic "States of Matter and Their Changes" in both groups. The following are findings of pretest data analysis from the experimental team and the control team classes:

Table 3. Pre-Test Data Analysis Results

Statistik	Data *Pre-Test*	
	Experimental Class	Control Class
Mean	42,14	42,76
Score Minimum	27	27
Score Maximum	60	53

Table 3 indicates that the experimental group obtained a mean score of 42.14, with individual scores ranging from a minimum of 27 to a maximum of 60. In comparison, the control group recorded a slightly higher mean score of 42.76, with scores distributed between 27 and 53. These results suggest that the baseline

performance of students in both groups was comparable, indicating an initial equivalence in their prior abilities before the treatment was implemented.

Post-Test Data Analysis Results

The post-test, or final test, is an evaluation conducted after the researcher administered treatment to the experimental and control classes. This test aims to measure students' final abilities after receiving the treatment, namely the use of a video-assisted contextual learning model in the experimental class and a picture-assisted direct Instruction learning model in the control class. The following presents data analysis findings after treatment in the group eksperimen and control classes:

Table 4. Post-Test Data Analysis Results

Statistik	Data *Post-Test*	
	Eksperimental Class	Control Class
Mean	76,36	55,18
Score Minimum	60	33
Score Maximum	100	73

Post-test findings indicated a clear disparity in mean academic performance between students in the experimental group and those in the control group. A comparison of average scores revealed that learners in the experimental condition experienced a substantially greater improvement in learning outcomes than those in the comparison group.

Overall, the data demonstrate that the application of the Direct Instruction model supported by image-based media produced a positive effect on student achievement in the control class, as reflected in an increase in the mean post-test score to 55.18. Although this improvement indicates progress, its magnitude remained lower than that observed in the experimental condition. Conversely, students in the experimental class, who were taught using a contextual learning model assisted by video media, showed a more pronounced enhancement in performance. Their average post-test score reached 76.36, exceeding that of the control group. This result suggests that the instructional approach implemented in the experimental group exerted a stronger and more effective impact on improving the learning outcomes of fourth-grade students at SD Inpres Sibedi.

Data Normality Test Results

In this study, data normality was assessed using the Shapiro–Wilk test, which was executed through IBM SPSS Statistics software. The decision criterion was based on the significance (p-value), where a threshold of 0.05 was applied. Specifically, when the significance value exceeded 0.05 ($p > 0.05$), the dataset was interpreted as conforming to a normal distribution. In contrast, if the significance value was below 0.05 ($p < 0.05$), the data were classified as not normally distributed. The resulting output of the analysis is presented as follows:

Table 5, The Significance Value of the Shapiro-Wilk

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest Kelas Eksperimen	.215	17	.066	.892	17	.060
Posttest Kelas Eksperimen	.211	17	.063	.948	17	.419
Pretest Kelas Kontrol	.215	17	.065	.892	17	.060
Posttest Kelas Kontrol	.165	17	.200*	.905	17	.081

Referring to Table 5, the significance value of the Shapiro-Wilk test in the pre-test for the experimental class was 0.060 (> 0.05), and the significance value for the control class was 0.060 (> 0.05). This indicates that the pre-test data for both classes were normally distributed. Furthermore, in the post-test, the significance value for the Shapiro-Wilk test for the experimental class was 0.419 (> 0.05), while for the control class it was 0.081 (> 0.05).

Homogeneity Test Results

The criterion used to determine whether data is classified as homogenous by looking at the significance value. If the significance value exceeds 0.05, the data is considered homogeneous. However, if the significance value is below 0.05, the data is considered heterogeneous. The following presents the results of the homogeneity test analysis obtained using IBM SPSS Statistics version 26.

Table 6. Results of Homogeneity Test of Pre-Test and Post-Test

Test of Homogeneity of Varianve					
Results		*Lavene Statistik*	df1	df2	Sig.
	Based on Mean	10,813	1	76	0,102

Hypothesis Test Results

Table 7. Hypothesis Test Results (t-Test)

		T-test for Equality of Means						
		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
IPAS Learning Outcomes	Equal variances assumed	21.187	3.801	13.486	28.888	5.575	37	.000

The findings summarized in Table 4.7 demonstrate that the Independent Samples t-test produced a p-value of 0.000. Because this probability value is below the predetermined significance threshold of 0.05 ($p < 0.05$), the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is supported. This statistical decision confirms that the application of the contextual learning model has a significant impact on students' Science achievement among fourth-grade learners at SD Inpres Sibedi.

Ui N-Gain Tes

Table 8. N-gain Test Results

Descriptives Statistic			
N-gain	Minimum	Maximum	Mean
Eksperimen	29.79	100.00	58.1805
Kontrol	-42.55	59.70	20.4845

The N-gain test results from the pretest and posttest scores showed an average increase with a high effectiveness category. The application of contextual learning models in science instruction demonstrates a beneficial effect on students' academic achievement.

DISCUSSION

A quantitative methodological framework was adopted in this research, specifically employing a quasi-experimental design with a non-equivalent control group structure incorporating both pretest and posttest assessments. The investigation was conducted at SD Inpres Sibedi. The study involved two naturally existing classes, where class IV A was designated as the experimental group and class IV B served as the control group. The main purpose of the study was to examine the impact of a contextual learning approach on the science learning outcomes of fourth-grade primary school students. The statistical analysis indicated that the experimental group achieved an average pretest score of 42.14, whereas the control group demonstrated a marginally higher mean score of 42.76 prior to the intervention. These initial findings indicate that the baseline performance of students in the control class was marginally superior to that of the experimental class prior to treatment. Following the instructional intervention, both groups demonstrated improvement in their learning outcomes.

The experimental class, which was taught using a video-assisted contextual learning model, achieved a posttest mean score of 76.36. In comparison, the control group, which received instruction through a conventional Direct Instruction approach supported by visual media, achieved a comparatively lower average posttest score of 55.18. Accordingly, the final achievement of students in the experimental group significantly exceeded that of the control group.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings obtained from the study on the implementation of a video-assisted contextual learning model in fourth-grade science (IPAS) at SD Inpres Sibedi, it is evident that the instructional approach produces a statistically meaningful improvement in student learning outcomes. Inferential analysis was conducted using an Independent Samples t-test with a significance level of 5% ($\alpha = 0.05$). The computed significance value was 0.000, indicating that it is substantially lower than the predetermined alpha threshold ($p < 0.05$). This statistical condition confirms that the observed differences are not attributable to

chance variation. Consequently, the null hypothesis (H_0) was rejected, whereas the alternative hypothesis (H_1) was supported. In summary, the results substantiate that the application of the video-assisted contextual learning model has a significant positive effect on students' academic performance in IPAS learning.

FURTHER STUDY

Teachers are advised to implement conventional learning models such as Direct Instruction supported by visual media, as this activity can encourage students to be more active and creative in the learning process. The author is aware that there are a number of aspects that still need to be improved in this research, so further research with similar titles is expected to refine the existing information and broaden the insights of readers of this journal.

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