Proceedings Series on Social Sciences & Humanities, Volume 25
Proceedings of International Conference on Social Science (ICONESS)
ISSN: 2808-103X

The Effect of Experimental Methods on Visuals Activities and Skills Think Critical on Learning IPAS Change of Form Material

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ARTICLE INFO

Article history:

DOI:
10.30595/pssh.v25i.1735

Submited:
July 22, 2025

Accepted:
August 11, 2025

Published:
August 24, 2025

Keywords:

Method Experiment; Visual Activities; Skills Think Critical; Science Learning; Kebonmanis 01 Elementary School

ABSTRACT

Study This aiming For researching influence method experiment to visual activities and critical thinking skills in science learning for grade IV at SD Negeri Kebonmanis 01. The research method used is the quasi-experimental method of sample selection in the Quasi Experimental type Nonequivalent Control Group Design. The research sample consisted of 59 fourth grade students who were divided into two groups, namely the experimental group and the control group. The experimental group was given learning treatment. IPAS with use method experiment, whereas group control was given the treatment of science learning using conventional methods. Research data were collected through observation, visual activities tests , and critical thinking tests. The results of the study showed that there was a significant influence on visual activities and critical thinking skills of fourth grade students taught using experimental methods compared to students taught using conventional methods. This shows that the experimental method is effective in improving visual activities and critical thinking skills of fourth grade students in science learning.

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1. INTRODUCTION

Change paradigm education the 21st century demands learning that is not only mastery oriented knowledge, but also on development skills think critical, collaborative, creative, and communicative (4C). In the context of this, learning Knowledge Natural and Social Sciences (IPAS) in Elementary Schools play a role important in grow ability student For think logical and complete problem based on experience real (Ministry of Education, Culture, Research and Technology, 2022).

One of IPAs material that requires approach concrete and visual is *change form objects*. This material covers concepts like melting, freezing, evaporating, condensing, and sublimating, which require understanding the process through observation directly. However In fact, science learning in several school base Still done in a way conventional and teacher - centered, so student not enough involved in a meaningful learning process (Sanjaya, 2021).

Experimental method is one of the learning strategies that can increase participation student in a way active, especially through visual activities such as observe change form object in test simple. Activities This potential increase *visual activities* student as well as trigger skills think critical, because student sued For formulate hypothesis , do observation , recording data, and drawing conclusions conclusion (Trianto, 2019).

A number of study previously show that method experiment capable give experience learn more deep and enhance understanding draft in a way significant compared to method conventional (Utami & Sugiyanto, 2020). However, it is still A little research that is special to study influence method This on two aspects important: visual activities and skills think critical students in science learning material change form.

Based on background behind said, researchers feel need do study more carry on For know to what extent does it influence method experiment to *visual activities* and skills think critical student class IV on material change form object.

2. METHOD STUDY

This research is a quantitative research, so all observed symptoms are measured. And changed in form number, so that use technique analysis statistics. This type of research is a quasi-experiment of sample selection in *the Quasi Experimental* type of *Nonequivalent Control Group Design* .

This research was conducted in class IV of Kebonmanis 01 Elementary School, North Cilacap District, Cilacap Regency. The research period was in the 2023/2024 academic year in March- April.

The population in this study was all students of Kebonmanis State Elementary School 01 years old. teachings 2023/2024 Which amount to 436 student. Sample on study This is students in class IVA and IVB of Kebonmanis 01 State Elementary School. Class IVA as an experimental class consists of 29 student whereas class IVB as class control amount to 30 student. The independent variable in this study is the experimental method. The dependent variable in this study is *Visual Activities* And Skills Think Critical on Learning IPAS. Before conducting data analysis testing, a prerequisite analysis test is first carried out, namely by testing normality And homogeneity between subject on group experiment and group control. Researcher use software SPSS For analyze data research with normality tests, homogeneity tests, and hypothesis tests.

3. RESULTS AND DISCUSSION

This research was conducted at Kebonmanis 01 Elementary School, North Cilacap in the odd semester of the 2023/2024 academic year. The results of the study include student learning outcomes (cognitive aspects, affective, psychomotor), response student, response Teacher to learning process with utilization environment school as source Study. Value data The pre-test and post-test of each student were recorded and analyzed. In study This analysis reliability can seen based on Kolmogorov-Smirnov using IBM program SPSS version 23.

1. Normality Test

	Class	Kolmogorov-Smirnov [a]			Shapiro- Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Critical thinking skills	Pre-Test Experiment (experimental method)	.259	29	.000	.745	29	.000
	Post-Test Experiment (experimental method)	.205	29	.003	.915	29	.023
	Pre-Test Control (conventional)	.236	30	.000	.806	30	.000
	Post-Test Control (conventional)	.247	30	.000	.881	30	.003

a. Lilliefors Significance Correction

From the test results above, it can be seen that the significance value (Sig.) for the experimental pre-test is 0.00 < 0.05, the experimental post-test is 0.003 < 0.05, the control pre-test is 0.00 < 0.05, and the control post-test is 0.00 < 0.05. 0.00 < 0.05 means normally distributed.

1. Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistics	df1	df2	Sig.
Skills critical thinking of students	Based on Mean	6.212	3	114	.001
	Based on Median	3,797	3	114	.012
	Based on Median and with adjusted df	3,797	3	98,369	.013
	Based on trimmed mean	5,706	3	114	.001

Based on data in on, known mark Sig. For the variables as big as 0.012. Because the Sig. value is 0.012 < 0.05 , which means there is a significant difference between the pre-test and post-test values in both groups.

2. Uji Hipotesis

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Nilai	Equal variances assumed	.670	.416	-2.914	57	.005	-4.315	1.481	-7.280	-1.350
	Equal variances not assumed			-2.912	56.656	.005	-4.315	1.482	-7.282	-1,347

The results of the hypothesis test (T-Test) in the table above show that the significance value of the *equal variances assumed variable* is 0.005, which is smaller than 0.05. Matter the show that there is difference significant between mark pretest and posttest in both groups.

4. CONCLUSION

Based on results study This, can concluded that method experiment proven to be effective in improving visual activities and critical thinking skills of grade III students in science learning at SDN Negeri Kebonmanis 01. Therefore, the experimental method recommended For applied in learning IPAS in school basic, especially to improve students' visual activities and critical thinking skills.

REFERENCES

Ministry of Education, Culture, Research, and Technology. (2022). *Independent Curriculum: A Guidebook for Elementary School Science Teachers for Grade IV*. Jakarta: Ministry of Education, Culture, Research, and Technology.

Sanjaya, W. (2021). *Learning Strategy: Oriented to Educational Process Standards*. Jakarta: Kencana Prenadamedia Group.

Trianto. (2019). *Integrated Learning Model: Concept , Strategy, and Implementation in School Level Curriculum (KTSP)* . Jakarta: Bumi Aksara.

Utami, R., & Sugiyanto. (2020). The Influence of Experimental Methods on Elementary School Students' Science Learning Outcomes. *Journal of Elementary Education*, 8(2), 122–130.