



The Effect of Teachers' Questioning Skills on Students' Critical Thinking Skills in IPAS Subjects Class V SD Inpres Parangbanoa, Gowa Regency

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Abstract

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Doi:

<https://doi.org/10.47435/jpdk.v10i02.3990>

This study analyzes the critical thinking skills of students in IPAS subjects using a quantitative approach in the form of pre-experimental design, and one-group pretest-posttest design research, which aims to find out the influence of teachers' questioning skills on students' critical thinking skills in IPAS subjects. The independent variables of this study are the teacher's questioning skills and the bound variable, namely students' critical thinking skills in IPAS subjects. This study uses a class V sample with a total of 26 students, the sampling technique used in this study is total sampling. Data collection techniques are in the form of observation, questionnaires, tests and documentation. The data collection procedures, namely pretest, treatment, and posttest, were then analyzed in descriptive statistics and inferential statistics with the help of the IBM SPSS Statistics version 30 program. The results of this study show that there is an influence between teachers' questioning skills on students' critical thinking skills in the IPAS subject of grade V of SD Inpres Parangbanoa, Gowa Regency.

Keywords: *Teacher's Questioning Skills; Critical Thinking; IPAS*

1. Introduction

One of the most important aspects of human life is education. A person can strengthen his or her potential and acquire knowledge, skills, and values that are useful for daily life through education. In this context, the role of teachers becomes very important, since they not only convey information, but also guide students to internalize those values. (Sanjani, 2020) emphasizing that teachers have a strategic role in education, because they are at the forefront of the learning process, interact directly with students to convey knowledge and educate with good values through guidance and example.

As professional educators, in accordance with the Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia article 1 of 2021, teachers have the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students. To carry out this task effectively, a teacher must equip himself with various skills, one of which is teaching skills. The aspect that plays the most role in a teacher is the way of teaching or the way of delivering lessons, because this has a crucial role in fostering students' thinking skills. This is in line with the opinion (Dewi et al., 2025) which states that in order for students to develop optimally, teachers must have qualified teaching skills. one of them is Questioning skills. This questioning skill is a basic skill inherent in pedagogic competence, which is one of the four main competencies that teachers must have.

By asking the right questions, teachers not only invite students to memorize information, but also encourage them to analyze, evaluate, and relate concepts critically and creatively (Dewi, 2022). This process actively trains critical thinking skills, which is one of the essential abilities to face future challenges. According to (Nurhayati et al., 2024) Critical thinking skills are related to the ability to



identify, analyze and solve problems in a creative way and think logically so as to produce appropriate considerations and decisions.

This effective questioning skill is needed in all subjects, including in IPAS in elementary schools. According (Suhelayanti et al., 2023) to learning IPAS is designed to increase students' interest in the phenomena around them, encourage an understanding of how the universe works and its interaction with human life, as well as allow them to relate the concepts learned to real situations. In this context, a teacher is expected to have questioning skills as a communication tool to trigger students' motivation to learn and think.

Questioning skills are a simple method that is effective in improving students' thinking skills. However, the urgency of this research arises because in practice there are still many teachers who have not mastered the skills of asking questions optimally. Previous studies (Suryana et al., 2021) have shown that many teachers fail to ask effective questions during learning, which has a significant impact on students' critical thinking skills. This is reinforced by (Waruwu et al., 2023) and (Awaliah et al., 2023) which equally emphasizes the importance of mastering questioning skills to build fun, effective, and shaping students' critical thinking skills. However, there are still variations in the application of questioning skills by teachers in the field. Some teachers may not have fully mastered effective questioning techniques or have not realized the importance of questioning skills in improving students' critical thinking skills.

This issue is also a concern in a global context. According to (Chin & Osborne, 2008; McNeill & Krajcik, 2008), the use of well-designed questions by teachers can stimulate scientific discussion and improve students' understanding and high-level thinking skills. They stated that teachers' ability to ask reflective questions is an important indicator of the quality of science teaching. Furthermore, according to (Paul & Elder, 2012), critical thinking skills are not only an additional component in the curriculum, but are essential 21st century competencies and must be instilled from an early age through a structured learning process. They emphasize that high-level questions from teachers are the main tool to encourage students' cognitive development.

The novelty of this study lies in its specific focus on the influence of teachers' questioning skills in IPAS learning on the critical thinking ability of elementary school students. Most previous studies have emphasized the importance of critical thinking at the secondary or university level, while this study tries to explore the potential for the development of critical thinking at the elementary level, especially in the context of integrative and exploratory IPAS subjects. Using empirical research methods, this study contributes to the development of dialogue-based learning approaches and inquiry at the basic education level, which until now has not been explored in depth in Indonesia.

In this regard, this study aims to examine the teacher's questioning skills in IPAS learning in grade V of SD Inpres Parangbanoa, Gowa Regency, as well as to find out its influence on students' critical thinking skills. This research more specifically examines students' critical thinking skills at the elementary school level, which makes a new contribution to the development of innovative learning strategies among elementary school students. By using empirical research methods, it is hoped that this research can provide deeper insight into the effectiveness of teachers' questioning skills in IPAS subject, especially in materials that require analysis and problem-solving.

2. Method

This study uses a quantitative approach, which is a research approach that uses data in the form of numbers and uses statistical analysis to answer the formulation of research problems (Danuri & Maisaroh, 2019), with a type of *pre-experimental research design* to test the influence of teachers' questioning skills on students' critical thinking skills in IPAS subjects grade V of Parangbanoa Elementary School, Gowa Regency. The design used is *One Group Pre-test Post-test Design* with the following schema form:



Tabel 1. One Group Pre-test Post-test Design

Eksperimen	O1	X	O2
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Information:

O1 = Pretest (before treatment)

X = Treatment with the teacher's questioning skills

O2 = Posttest (after treatment)

The subjects in this study are students in class V as an experimental class totaling 26 students. This research was carried out with two treatments. The researcher conducts research activities accompanied by homeroom teachers who act as observers or observers of the process of implementing research activities.

This study uses tests as a data collection tool consisting of a series of questions or exercises designed to assess students' critical thinking skills in the form of *pretest* and *posttest questions*. Furthermore, observation, which is carried out through observation during learning activities with teacher questioning skills, takes place. As well as questionnaires/questionnaires in the form of a series of questions or written statements to respondents to observe the teacher's questioning skills through student perception (Ardiansyah et al., 2023).

The data analysis technique applied in this study is a statistical test, which functions to calculate and analyze the data that has been collected using descriptive and inferential statistical methods (Marinu, 2023). The type of parametric statistics used is *the Paired Sample t-test*, which serves to test whether there is a difference in test results before and after the teacher's questioning skills are applied in the experimental class. Before conducting a hypothesis test, a data normality test was first carried out. Data analysis in this study was carried out using *the IBM SPSS Statistics Version 30* program.

3. Results and Discussion

The results obtained in this study were analyzed using descriptive statistics to express the frequency distribution of respondent scores and processing, as well as inferential statistics as hypothesis testers. The results of the research in more detail will be described as follows:

a. Teacher's Questioning Skills in IPAS Subjects Class V SD Inpres Parangbanoa

An overview of the implementation of learning with teacher questioning skills in grade V students is presented based on the assessment of the results of observation of the implementation of teacher questioning skills which have been held in two meetings, namely the first meeting on May 14, 2025 and the second meeting on May 17, 2025. The recap of the assessment of the results of the observation of the implementation of teachers' questioning skills can be seen in the following table.

Table 3 Implementation of Teacher Questioning Skills

NO	Aspects observed	Score	
		Meeting 1	Meeting 2
1.	The teacher gives an introduction before addressing the question	4	4
2.	The teacher directs the students' answers according to the subject of learning	3	4
3.	The teacher conveys the questions clearly according to the subject of learning.	3	4
4.	The teacher conveys questions in words that are appropriate to the student's development	2	3
5.	Questions can be answered by several students in turn by being appointed by the teacher	3	4



6.	Teachers convey different questions shown to different students	3	3
7.	The teacher waits for a while before pointing to the student to answer	3	4
8.	Teachers provide students with opportunities to discuss with friends	4	4
9.	The teacher asks questions that are memorable.	3	4
10.	The teacher conveys questions that are comprehensible	3	4
Score gained/Maximum Score		31/40	38/40
Percentage of Implementation		77%	95%
Category		Good	Excellent

Based on table 3 data, it can be seen that the percentage of the implementation of teachers' questioning skills in IPAS subjects. In the first treatment, it showed a percentage of 77% with the good category. Meanwhile, in the second learning process, it went very well by showing a percentage of 95% in the category of very good learning processes. Based on the two treatments in meetings 1 and 2, it shows that the implementation of teachers' questioning skills in the learning process is very good.

In addition to the observation sheet, an overview of the implementation of teachers' questioning skills was also obtained from a questionnaire focused on students' perceptions of teachers' questioning skills which contained statements filled in by students after being given treatment. The distribution of this teacher questioning skills questionnaire will be carried out on May 19, 2025. The results of the teacher questioning skills questionnaire can be seen in the following table

Table 4 Teacher Questioning Skills Questionnaire

No	Category	Number of Students	Presentase (%)
1	Excellent	14	53,85
2	Good	10	38,46
3	Enough	2	7,69
4	Less	-	-

Based on table 4, it can be seen that the tendency of teachers' question skills score in IPAS subjects is 53.85% of students in the very good category, 38.46% in the good category, and 7.69% in the fair category. So it can be concluded that the tendency of respondents' scores on teachers' questioning skills in IPAS subjects is in the very good category.

These findings are in line with research by (Chin & Osborne, 2008) which states that teachers who master good questioning techniques are able to encourage students to actively engage in critical thinking and discussion in the classroom. An effective questioning strategy will form a reflective learning environment and encourage in-depth exploration of concepts.

b. Students' Critical Thinking Skills in IPAS Subject Class V SD Inpres Parangbanoa

The descriptive analysis is intended to obtain an overview of students' understanding of IPAS subjects through *pretest* and *posttest* in grade V students of SD Inpres Parangbanoa, Gowa Regency

1) Pretest Data on Students' Critical Thinking Ability in IPAS Subjects

Table 5 Distribution and Percentage of Pretest Results

No.	Shoes	Category	Frequency	Presentase
1	86-100	Excellent	-	0%
2	70-85	Good	4	15,4%
3	50-69	Enough	10	38,5%
4	≤49	Less	12	46,2%



Sum	26	100%
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Based on table 5, it is known that out of the sample of 26 experimental classes, none of the students obtained a score with a very good category in the pretest. Students who obtained the good category were 4 students with a percentage of 15.%. The number of students who obtained the sufficient category was 10 students with a percentage of 38.5% and the number of students who obtained the insufficient category was 12 students with a percentage of 46.2%, so that the total reached 100%. Based on the results of the descriptive analysis that has been carried out, it can be concluded that the pretest results are in the category of lacking.

2) Posttest Data on Students' Critical Thinking Ability in IPAS Subjects

Table 5 Distribution and Percentage of Posttest Scores

No.	Shoes	Category	Frequency	Presentase
1	86-100	Excellent	13	50%
2	70-85	Good	9	34,6%
3	50-69	Enough	4	15,4%
4	≤49	Less	-	0%
Sum			26	100%

Based on the frequency table, it is known that students who obtained scores with the very good category in the post-test were 13 students with a total percentage of 50%. Students who obtained the good category were 9 students with a total percentage of 34.6%. Meanwhile, in the sufficient category, there are 4 students with a total percentage of 15.4% and there are no students in the insufficient category. Based on the results of the descriptive analysis that has been carried out, it can be concluded that the post-test results are in the very good category.

These findings are reinforced by studies from Said-Metwaly et al., (2020) which concluded that the practice of asking questions with higher-order questioning significantly improves students' critical thinking skills. In addition, research by González-Zamar & Abad-Segura (2021) also revealed that teachers' use of open-ended and reflective questions provides space for students to explore ideas, evaluate information, and build logical arguments.

c. The Effect of Teachers' Questioning Skills on Students' Critical Thinking Skills in IPAS Subjects in Class V of SD Inpres Parangbanoa, Gowa Regency

As stated by the normal distriation data, a hypothesis test was carried out, namely *the Paired sample t-test* which aims to find out the difference in test results before and after the teacher's questioning skills were applied to the IPAS class V subject.

Table 6 Paired Sample T-Test Pretest and Posttest Scores

Data	t	df	significance	
			One-Sided p	Two-Sided p
Nilai Pretest	-15.765	25	<,001	<,001
Posttest				

Based on table 6 obtained a significance value of <0.001 smaller than 0.05, the researcher can conclude that there is a difference in the average critical thinking ability of students for the pretest and posttest with the teacher's questioning skills. Thus, it can be said that H_0 is rejected and H_1 is accepted. So, in other words, the Teacher's Questioning Skills have a significant influence on the Critical Thinking Ability of Students in the IPAS Subject Class V of SD Inpres Parangbanoa, Gowa Regency. Therefore, to develop students' critical thinking skills, teachers should facilitate and take actions that encourage students to reflect on their abilities. One way that can be done is to improve the teacher's questioning skills to students, so that students become critical thinkers,



especially in IPAS studies learning which often requires a deep understanding of concepts and their application in daily life.

Novelty of this Research: (1) focusing on the elementary school level (class V) which has received less attention in the context of critical thinking skills, more previous research has focused on the middle or upper level; (2) the use of an empirical approach based on direct observation and student perception as data triangulation for teachers' questioning skills; (3) this research integrates questioning skills in the context of IPAS learning, which is thematic and demands connections between science, environment, and society, so that critical thinking becomes a basic need.

These findings also support the idea McNeill & Krajcik (2008; Paul & Elder (2012) that critical thinking can be developed through systematic interventions, including the consistent use of high-level questions in the classroom.

4. Conclusion

The teacher's questioning skills in IPAS learning in class V of SD Inpres Parangbanoa showed good to very good quality. This is shown from the observation results which increased from 77% (good category) in the first meeting to 95% (very good category) in the second meeting. This finding was also strengthened by student perceptions through questionnaires, where the majority of students (92.31%) assessed the teacher's questioning skills to be in the good to very good category.

Students' critical thinking skills have significantly improved after the effective application of questioning skills by teachers. The pretest results show that most students are in the good and poor categories, while the posttest results show a significant increase to the good and excellent categories. There are no more students who are in the underperforming category in posttest results.

The results of the inferential statistical test with the Paired Sample t-Test show that the teacher's questioning skills have a significant effect on students' critical thinking skills. A significance value of < 0.001 less than 0.05 indicates a significant mean difference between pretest and posttest scores.

This research makes a new contribution in the context of basic education, especially in IPAS subjects, by emphasizing the importance of teachers' questioning skills as an effective learning strategy to foster students' critical thinking skills from an early age. This approach can serve as a reference for the development of active learning models based on reflective and analytical questions..

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