

The Effect of Contextual-Based Natural and Social Sciences (IPAS) Instruction on the Curiosity of Fourth-Grade Elementary School Students

Nurafni Aulia Fitri Rustiandi¹, Joko Suprapmanto²

^{1,2}Nusa Putra University, Sukabumi, Indonesia

Email: nurafni.aulia_sd23@nusaputra.ac.id

Abstract

This study aims to determine the effect of contextual-based Natural and Social Sciences (IPAS) instruction on the curiosity of fourth-grade elementary school students. The study employs a quantitative approach with a quasi-experimental design. The research population consists of 252 fourth-grade students. The sample size was determined using Slovin's formula, resulting in 72 students, who were then selected via purposive sampling based on established criteria. Data collection involved the use of observation sheets to assess the implementation of contextual-based instruction and questionnaires to measure student curiosity. Data analysis was conducted using SPSS, encompassing validity, reliability, and normality tests, as well as non-parametric tests, specifically the Wilcoxon and Mann-Whitney tests. The research results indicate that students' curiosity in the experimental group increased significantly after participating in contextual-based IPAS (Natural and Social Sciences) instruction ($Z = -5.149$; $p < 0.001$), whereas the control group showed no significant increase ($Z = -1.354$; $p = 0.177$). Furthermore, Mann-Whitney test results revealed a significant difference in post-test scores between the experimental and control groups ($Z = -3.652$; $p < 0.001$). These findings demonstrate that contextual-based IPAS instruction is effective in enhancing the curiosity of fourth-grade elementary school students. However, this study has limitations regarding sample size and the specific research location; therefore, the results cannot yet be generalized to a broader population.

Keywords: *Contextual Learning, Natural and Social Sciences (IPAS), Curiosity, Elementary School, Quasi-Experiment.*



A. INTRODUCTION

Education is a conscious and planned effort to create an effective learning environment and process. Within this process, learners are given the opportunity to actively develop various attributes, such as religious values, self-control, personality, intelligence, and good character. Through education, learners can also acquire skills that are beneficial for their personal lives as well as for their roles within the community, the nation, and the state.

Education is a crucial objective in developing human potential. According to Article 3 of Law Number 20 of 2003 concerning the National Education System, national education functions to develop capabilities and shape the character and civilization of a dignified nation in order to intellectually enrich the nation's life; it aims to foster the potential of learners so that they become individuals who possess faith and piety toward God Almighty, noble character, good health, knowledge,

competence, creativity, and independence, and who act as democratic and responsible citizens (Indonesia, 2003).

Based on these national educational goals, it is evident that education aims not only to enhance students' academic abilities but also to cultivate good character. Character building is a vital component of the educational process, as it is expected that, through this process, students will demonstrate positive attitudes and behaviors in their daily lives.

One important character trait to cultivate in students is curiosity. Curiosity is an attitude that drives students to actively seek information, ask questions, and strive to understand the material being studied. The strengthening of character education is also mandated by Presidential Regulation of the Republic of Indonesia Number 87 of 2017 concerning Character Education Strengthening; Article 2 states that this initiative aims to develop and equip students—as Indonesia's "Golden Generation" of 2045—with the spirit of Pancasila and strong character, enabling them to navigate the dynamic changes of the future (Peraturan Presiden, 2017).

Based on an interview with a Grade VI teacher at SDN Paledang on March 9, 2026, information was gathered regarding student characteristics, specifically concerning curiosity during the learning process. The teacher explained that approximately 50% of the students still exhibit a low level of curiosity during lessons. This is evident from their lack of active participation in asking questions and minimal initiative to seek additional information. These findings indicate a need for improvement. This aligns with the Regulation of the Minister of Basic and Secondary Education Number 10 of 2025 concerning Graduate Competency Standards; Article 7, letter C, stipulates that students are expected to possess curiosity, the ability to analyze problems and simple ideas, the capacity to present logical arguments, the ability to select relevant information and make appropriate decisions, and the ability to apply literacy and numeracy skills to solve real-life problems (Permendasdikmen, 2021).

One strategy to foster a sense of curiosity is the implementation of contextual learning. Contextual learning is an approach that links subject matter to students' real-life experiences, thereby making the learning process more meaningful. In practice, however, instruction remains largely teacher-dominated, resulting in students who are less active and lack curiosity about the material. This situation leads to low student engagement in the learning process. Nevertheless, Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 22 of 2016 concerning Process Standards for Primary and Secondary Education mandates that the learning process in educational institutions be interactive, inspiring, enjoyable, and challenging; it must motivate students to participate actively and provide sufficient scope for initiative, creativity, and independence, in alignment with students' talents, interests, and physical and developmental stages. This underscores the necessity for the learning process to actively involve students in learning activities (Menteri Pendidikan dan Kebudayaan, 2016).

Hazabi et al. (2026) state that the implementation of a contextual learning model can enhance students' conceptual understanding in the IPAS (Natural and

Social Sciences) subject at the elementary school level. Instruction that links course material to real-life experiences helps learners grasp concepts more deeply and meaningfully. However, the study focused solely on the improvement of conceptual understanding as a cognitive aspect, leaving the impact of contextual learning on students' curiosity unexamined (Hazabi, 2026).

Kiswah and Hamidah (2026) explain that a contextual approach can improve learning outcomes in Natural and Social Sciences (IPAS) for elementary school students. By linking learning to everyday life, students find it easier to grasp the material, ultimately leading to better learning achievements. However, the study assesses learning outcomes solely as an indicator of instructional success and does not address the impact of contextual learning on students' curiosity (Kiswah, 2026).

Meilawati et al. (2023) suggest that the implementation of the contextual learning method can foster curiosity in students during IPAS (Natural and Social Sciences) lessons. Instruction linked to real-life situations encourages students to be more active in asking questions, seeking information, and exploring various learning resources. However, that study was conducted within the context of Social Studies (IPS) using a descriptive-qualitative approach; consequently, it did not examine the impact of contextual IPAS instruction on the curiosity of elementary school students (Meilawati et al., 2023).

Based on the research findings, contextual learning has been shown to positively impact the learning process, specifically by enhancing conceptual understanding, learning outcomes, and students' curiosity. However, research on the application of contextual learning in IPAS (Natural and Social Sciences) has largely focused on cognitive aspects, whereas studies regarding curiosity have generally been conducted in subjects other than IPAS. Consequently, research specifically examining the influence of contextual IPAS learning on students' curiosity remains limited.

Constructivist theory serves as the primary foundation for this research, as it posits that knowledge is not merely acquired through the transmission of information from teacher to student but is actively constructed by students through the learning process. Students act as active agents in comprehending information, connecting it to their existing experiences, and building new understandings. In this process, the teacher functions as a facilitator who provides guidance and assists students in developing their knowledge.

John Dewey held the view that education should be connected to real life and students' experiences. The learning process should provide opportunities for students to engage directly in various activities, including dealing with problems or situations related to everyday life. John Dewey emphasized the importance of experience in the learning process. Knowledge becomes more meaningful when students are actively engaged in learning experiences and connect what they learn to real-life situations. Therefore, learning focuses not only on the reception of material but also on providing opportunities for students to engage in various activities, discover information, and reflect on the experiences they have gained.

This concept aligns with contextual learning, which links instructional material to students' real-life experiences. Direct student engagement in observing and understanding the realities of their surroundings can foster curiosity. When confronted with a problem or a fact that captures their interest, students are motivated to ask questions, seek information, and discover answers to what they do not yet understand (Suryana et al., 2022).

Curiosity is a natural drive within a person to learn new things and seek information about the unknown. Curiosity is the beginning of the formation of knowledge in humans. This is in accordance with Suriasumantri's opinion in (Citra Ningrum et al., 2019), which states that knowledge begins with the desire to know something. Baumgarten in (Haifatudzikroh, 2019), it explains that curiosity is an individual's tendency to understand something more deeply and broadly based on what they see, hear, and learn. According to Mustari, curiosity is an internal drive that naturally motivates a person to seek further information through various activities, such as exploring, investigating, and learning (Asmoro, 2017).

Curiosity according to the Ministry of National Education in (Supinah & Parmi, 2011), is part of the character education values that are important to cultivate in students. The characteristics of curiosity include: 1) actively asking questions, 2) possessing a drive to seek information, 3) not being satisfied with [initial] answers, 4) conducting explorations or experiments, 5) maintaining good attention during learning, and 6) being able to connect existing knowledge with new knowledge. Kashdan in (Rahaja et al., 2022), it is stated that the characteristics of curiosity are: 1) having the drive to seek new information, 2) paying attention to an activity, 3) being able to process information more deeply, 4) possessing better memory, and 5) completing tasks more thoroughly and completely. Zetriuslita in (Selvi et al., 2025), the characteristic of curiosity can be observed through several indicators: 1) a desire to ask questions, 2) an effort to gain a deep understanding of a subject, 3) enthusiasm for learning, 4) actively seeking information from various sources, and 5) striving to find various alternatives for solving problems.

The indicators in this study refer to Mustari opinion in (Asmoro, 2017), namely: 1) active participation in asking questions, 2) the ability to seek information, and 3) an attitude of exploring knowledge. The indicators of curiosity in this study refer to the views of (Rahaja et al., 2022), which includes 1) the desire within students to explore information, 2) the ability of students to search and trace information in more depth, and 3) the courage of students in asking questions during the learning process. The indicators in this study refer to the results of Rahayu and Miterianifa research in (Irwan & Kamarudin, 2021), namely: 1) student activeness in seeking information, 2) the desire to gain deeper understanding, and 3) active involvement in the learning process.

B. METHOD

This study employs a quantitative approach using a quasi-experimental method. The research design applied is the Non-equivalent Control Group Design,

involving two groups: an experimental class and a control class. The experimental class received instruction based on the contextual learning approach, while the control class underwent conventional instruction. To measure students' curiosity, both groups were administered a pre-test prior to the intervention and a post-test after the intervention was completed.

The study population consisted of 252 students. Sample size determination was conducted using Slovin's formula with a 10% margin of error, resulting in a sample of 72 students. The sample was selected using purposive sampling, a technique based on specific considerations and criteria aligned with the research objectives (Subhaktiyasa, 2024). Data collection in this study was conducted using a questionnaire on the trait of curiosity and an observation sheet. The questionnaire was used to gather data regarding students' curiosity, while the observation sheet was used to observe the implementation of contextual-based IPAS (Natural and Social Sciences) instruction. The research instruments were developed based on indicators of curiosity and subsequently tested for validity and reliability to ensure their suitability for data collection.

The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistical analysis was employed to provide an overview of students' curiosity based on mean, maximum, and minimum values, as well as the standard deviation. Subsequently, inferential statistical analysis was used to test the research hypotheses. Prior to hypothesis testing, the data underwent prerequisite testing, specifically normality and homogeneity tests to ensure they met the requirements for further analysis. Once the prerequisite tests were completed, hypothesis testing was conducted using statistical analysis techniques appropriate for the characteristics of the research data. The entire data processing and analysis process was carried out using IBM SPSS Statistics software at a significance level of 5% ($\alpha = 0.05$).

C. RESULT AND DISCUSSION

This study was conducted with fourth-grade students, using SDN Paledang as the experimental class and SDN Cisande 4 as the control class. The total sample consisted of 88 students: 53 in the experimental class and 35 in the control class. The study aimed to determine the effect of contextual-based IPAS (Natural and Social Sciences) instruction on the curiosity of fourth-grade elementary school students. Data were collected using lesson implementation observation sheets, a curiosity character questionnaire administered before (pre-test) and after (post-test) instruction, and documentation gathered throughout the study. The collected data were analyzed using normality tests, the Wilcoxon Signed-Rank Test, and the Mann-Whitney U Test.

Observations made during the learning process indicate that most stages of the contextual-based IPAS (Natural and Social Sciences) lesson were carried out according to the prepared plan. In the introductory phase, the teacher linked the lesson material to experiences familiar to the students. The examples provided included local traditions in Sukabumi Regency, such as end-of-year grade promotion

celebrations and the marching band festivals held to enliven these events. These examples helped students connect the lesson material to their daily lives, making the content easier to understand. During the core activity, the teacher guided students to observe examples from their immediate surroundings and encouraged them to identify various traditions they encounter in their daily lives. The teacher also organized students into groups to work on worksheets that involved observing these traditions. Throughout the discussion, the teacher actively provided guidance to each group and encouraged students to ask questions about any material they did not yet understand. The teacher also gave students the opportunity to explain the material they had studied. However, only one student volunteered to provide a brief explanation in front of the class. The teacher did not ask students to provide a comprehensive interpretation of their observations; instead, the teacher only allowed a few students to mention examples of the traditions they had identified. At the end of the lesson, the teacher guided the students in summarizing the material by explaining the history of the grade-promotion tradition, verifying student understanding through a question-and-answer session, and assessing both the learning process and the outcomes. A final assessment was conducted, although it did not cover all aspects of the prepared lesson plan.

Observation results indicate that the contextual-based IPAS (Natural and Social Sciences) instruction was successfully implemented. Most instructional stages were carried out in accordance with the steps of contextual learning. Although a few indicators were not fully implemented, the overall execution of the instruction aligned with the research design. This demonstrates that the treatment administered to the experimental class proceeded as intended, allowing the research findings to be used to determine the impact of contextual-based IPAS instruction on students' curiosity.

The next step is to conduct a normality test, a prerequisite for hypothesis testing. The normality test aims to determine whether the research data are normally distributed. The test was performed using the Shapiro-Wilk method because the sample size for each group was less than 100 respondents. The results of the normality test are presented in Table 1.

Table 1. Normality Test Results

Group	Variable	N	Sig. (Shapiro-Wilk)	Note
Experimental	Pre-Test	53	0,004	Not Normally Distributed
Experimental	Post-Test	53	0,096	Normally Distributed
Control	Pre-Test	35	0,158	Normally Distributed
Control	Post-Test	35	0,715	Normally Distributed

The normality test results indicate that the significance value for the pretest in the experimental class was 0.004. Since this value is less than 0.05, the pretest data for the experimental class is considered not normally distributed. The significance value for the post-test in the experimental class was 0.096, while the significance values for the pretest and post-test in the control class were 0.158 and 0.715, respectively. These three values exceed 0.05; therefore, the data are considered normally distributed.

Hypothesis testing proceeded using non-parametric tests, specifically the Wilcoxon Signed-Rank Test and the Mann-Whitney U Test.

The Wilcoxon Signed-Rank Test was conducted to determine whether there were significant differences in the characteristics of the sense of taste before and after instruction in each group. The analysis results showed that the experimental class yielded a significance value of < 0.001 , indicating a significant difference between the pretest and post-test results. In contrast, the control class also showed a significant difference between the pretest and post-test results.

Table 2. Wilcoxon Test Results

	Post-Test Experimental-Pre-Test Experimental	Post-Test Control- Pre-Test Control
Z	-5.149	-1.354
Asymp. Sig. (2-tailed)	<.001	.177

The results indicate that contextual-based IPAS instruction brought about a change in the students' curiosity in the experimental class. Meanwhile, the instruction implemented in the control class did not yield a significant change in the students' curiosity.

Table 3. Mann-Whitney Test Results

	Post-Test
Mann-Whitney U	500.000
Wilcoxon W	1130.000
Z	-3.652
Asymp. Sig. (2-tailed)	<.001

The Mann-Whitney test yielded a significance value of < 0.001 . Since this value is less than 0.05, it can be concluded that there is a significant difference in the curiosity trait of students between the experimental and control classes. These results indicate that contextual-based IPAS (Natural and Social Sciences) instruction has a more positive influence on students' curiosity compared to the instruction implemented in the control class.

The research findings demonstrate that contextual-based IPAS instruction was not only carried out according to the planned instructional steps but also positively impacted students' curiosity. Throughout the learning process, students appeared more active in participating, engaging in group discussions, observing the problems presented, and connecting the learning material to real-life situations; the approach also provided opportunities for students to seek information, ask questions, and understand the material in a more meaningful way.

These findings are supported by the Wilcoxon test results, which indicate an increase in curiosity among students in the experimental class following contextual-based IPAS (Natural and Social Sciences) instruction. Mann-Whitney test results also reveal a difference in curiosity levels between the experimental and control classes after the intervention. This demonstrates that contextual-based IPAS instruction is more effective at fostering curiosity than conventional teaching methods.

These results align with previous research showing that contextual-based learning enhances student engagement in the learning process. Instruction that links subject matter to real-life situations provides students with opportunities to observe,

ask questions, engage in discussions, and discover concepts independently. Through this process, students do not merely receive information from the teacher but actively seek, explore, and construct their own understanding, thereby allowing their curiosity to flourish more effectively.

D. CONCLUSION

Based on the research findings, it can be concluded that contextual-based IPAS (Natural and Social Sciences) instruction influences the curiosity of fourth-grade elementary school students. The implementation of contextual-based instruction encourages students to participate more actively in learning activities through processes such as observing, discussing, asking questions, and connecting the material to their everyday experiences. Data analysis reveals an increase in curiosity among students in the experimental class following the implementation of contextual-based IPAS instruction. In contrast, the control class showed no significant change. This difference is further supported by the Mann-Whitney test results, which indicate a significant difference between the experimental and control classes. These findings demonstrate that contextual-based IPAS instruction is more effective at fostering student curiosity than the instruction implemented in the control class.

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