



Enhancing Student Engagement in Elementary Science and Social Studies Through the Contextual Teaching and Learning Approach: Evidence from a Quasi-Experimental Study

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Abstract

Student engagement is one of the key factors contributing to successful learning. However, student engagement in Science and Social Studies (IPAS) continues to face several challenges, resulting in learning outcomes that have not yet reached the expected objectives. One effort to address this issue is the implementation of a student-centered instructional approach. This study aimed to examine the effectiveness of the Contextual Teaching and Learning (CTL) approach in improving student engagement. This study employed a quantitative method using a quasi-experimental design with a Nonequivalent Control Group Design. The participants consisted of 54 fifth-grade students at SDN Srengseng Sawah 15, including 28 students in the experimental group and 26 students in the control group. Data were analyzed using the N-Gain, Shapiro–Wilk normality, and Mann–Whitney U tests. The results showed a Mann–Whitney U significance value of 0.000 ($p < 0.05$), indicating a significant difference in student engagement between the experimental and control groups, with a large effect size ($r = 0.67$). The experimental group achieved a mean N-Gain score of 0.769 (high) with an effectiveness level of 76.92%, whereas the control group obtained a mean N-Gain score of 0.460 (moderate) with an effectiveness level of 45.99%. These findings indicate that the Contextual Teaching and Learning (CTL) approach is effective in improving student engagement in Science and Social Studies (IPAS).

Keywords: *Contextual Teaching and Learning (CTL), elementary school, Science and Social Studies (IPAS), student engagement.*

Peningkatan Keaktifan Belajar Siswa Sekolah Dasar pada Mata Pelajaran IPAS Melalui Pendekatan Contextual Teaching and Learning: Bukti dari Penelitian Kuasi Eksperimen

Abstrak

Keaktifan belajar siswa merupakan salah satu faktor yang mendukung keberhasilan pembelajaran. Namun, keaktifan belajar siswa pada mata pelajaran IPAS masih menghadapi berbagai kendala sehingga capaian pembelajaran yang diharapkan belum dapat tercapai secara optimal. Salah satu upaya yang dapat dilakukan adalah menerapkan pendekatan pembelajaran yang berpusat pada aktivitas siswa. Penelitian ini bertujuan untuk menguji efektivitas pendekatan Contextual Teaching and Learning (CTL) terhadap keaktifan belajar siswa. Penelitian ini menggunakan metode kuantitatif dengan desain quasi-experimental tipe Nonequivalent Control Group Design. Sampel penelitian berjumlah 54 siswa kelas V SDN Srengseng Sawah 15 yang terdiri atas 28 siswa pada kelas eksperimen dan 26 siswa pada kelas kontrol. Analisis data dilakukan menggunakan uji N-Gain, uji normalitas Shapiro–Wilk, dan uji Mann–Whitney U. Hasil penelitian menunjukkan nilai signifikansi uji Mann–Whitney U sebesar 0,000 ($p < 0,05$), yang menunjukkan adanya perbedaan signifikan keaktifan belajar antara kelas eksperimen dan kelas kontrol dengan ukuran efek yang besar ($r = 0,67$). Kelas eksperimen memperoleh rata-rata N-Gain sebesar 0,769 dengan kategori tinggi dan tingkat efektivitas sebesar 76,92%, sedangkan kelas kontrol memperoleh rata-rata N-Gain sebesar 0,460 dengan kategori sedang dan tingkat efektivitas sebesar 45,99%. Hasil penelitian menunjukkan bahwa pendekatan Contextual Teaching and Learning (CTL) efektif dalam meningkatkan keaktifan belajar siswa pada mata pelajaran IPAS.

Kata kunci: *Contextual Teaching and Learning (CTL), sekolah dasar, IPAS, keaktifan belajar.*

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INTRODUCTION

Science and Social Studies (IPAS) is one of the subjects taught in Indonesian elementary schools under the Merdeka Curriculum. This subject integrates concepts from natural and social sciences based on the understanding that elementary school students tend to perceive the world as a unified whole rather than as separate disciplines (Ilham et al., 2024). Through this integrated perspective, students are able to understand the relationships among various concepts and phenomena encountered in everyday life. Therefore, Science and Social Studies learning is intended not only to develop students' conceptual understanding but also to help them connect classroom knowledge with real-life experiences, making learning more meaningful. Accordingly, meaningful learning in Science and Social Studies requires students to actively participate throughout the learning process. Consequently, student engagement plays an important role in creating meaningful learning experiences while supporting students' academic achievement. This integrated approach is also consistent with the objectives of the Merdeka Curriculum, which emphasizes meaningful learning experiences through inquiry, exploration, and the integration of scientific and social perspectives (Suhelayanti et al., 2023).

Student engagement has long been recognized as a multidimensional construct that reflects students' behavioral, emotional, cognitive, and agentic engagement in learning activities (Fredricks et al., 2004; Skinner et al., 2009; Reeve, 2012). This multidimensional perspective continues to be widely adopted in recent studies, including a systematic review conducted by Simon et al. (2026), which examined student engagement in adaptive learning environments using these four dimensions. In addition, a recent meta-analysis further reported that all four dimensions of student engagement were positively associated with students' academic achievement and learning motivation (Reeve et al., 2025). In elementary school settings, student engagement can be observed through students' active participation in asking and answering questions, participating in discussions, and completing learning tasks (Puspita Sari et al., 2022). Through such active participation, students gain more meaningful learning experiences than by passively receiving information. These characteristics indicate that student engagement should be viewed not merely as students' participation in classroom activities but also as a reflection of the quality of the learning process. Therefore, fostering student engagement is essential for creating learning experiences that are both meaningful and sustainable. Sopia et al. (2022) also explained that student engagement enhances creativity as well as effectiveness and efficiency of learning, encouraging students to participate more enthusiastically in classroom activities. From this perspective, student engagement should not merely be viewed as an outcome of the learning process but also as an important indicator reflecting the quality of students' involvement throughout learning. Therefore, an instructional approach that facilitates students' behavioral, emotional, cognitive, and agentic engagement through meaningful learning experiences is needed. Accordingly, instructional approaches that actively involve students in constructing knowledge are expected to facilitate these dimensions of engagement more effectively (Bustomi et al., 2024).

One instructional approach that conceptually facilitates these four dimensions of student engagement is Contextual Teaching and Learning (CTL). This approach is grounded in constructivist theory, which enables students to construct knowledge by connecting learning materials with real-life contexts, thereby creating more meaningful learning experiences (Johnson, 2014). Azmir & Yolanda (2021) also argued that learning becomes more meaningful when students actively experience and apply what they have learned rather than merely memorizing information. Recent research has further demonstrated that constructivist learning environments encourage active participation, collaboration, and meaningful engagement throughout the learning process (Do et al., 2023). Recent international evidence also indicates that contextual teaching supports active learning, collaborative classroom interaction, and meaningful knowledge construction in primary education, thereby strengthening students' engagement during learning activities (Kovačević & Barbir, 2024). Therefore, CTL is considered an appropriate instructional approach for promoting student engagement in Science and Social Studies (IPAS). Rather than positioning students as passive recipients of knowledge, CTL encourages them to become active participants who construct understanding through meaningful interaction with real-life situations. This learning orientation is particularly relevant to Science and Social Studies (IPAS), where conceptual understanding is closely related to students' daily experiences. The effectiveness of CTL is supported by its core components, including constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment, all of which encourage students to actively construct knowledge throughout the learning process (Lestari, 2021).

The theoretical advantages of CTL have also been supported by numerous empirical studies demonstrating its effectiveness in promoting active and meaningful learning environments. Similarly,

Ansori et al. (2022) emphasized that CTL encourages students to actively relate classroom concepts to everyday experiences, thereby increasing both learning engagement and conceptual understanding. Collectively, these studies demonstrate that contextual learning consistently promotes more active classroom participation while providing meaningful learning experiences across various elementary school learning contexts. Previous studies consistently reported that CTL enhanced students' active participation through collaborative discussions, authentic learning experiences, and meaningful classroom activities (Rahayu et al., 2022; Widiasih et al., 2022; Isnaini, 2023). Similar findings were reported by Riza et al. (2024), who found that implementing CTL in elementary science learning increased students' classroom participation and created more meaningful learning experiences through contextual activities. In addition, Putri et al. (2025) found that CTL not only improved student engagement but also enhanced learning outcomes, as reflected by high N-Gain scores. Recent evidence also demonstrated that CTL-based learning media not only improved students' conceptual understanding but also enhanced their motivation and engagement during IPAS learning (Cahya Ningrum et al., 2026).

These findings suggest that CTL has considerable potential to promote active, meaningful, and student-centered learning. However, several important research gaps remain. Most previous studies investigating CTL have employed Classroom Action Research (CAR), which primarily focuses on improving classroom practices rather than providing empirical evidence of the effectiveness of an instructional approach through an experimental design. In addition, previous studies have generally emphasized students' learning outcomes, whereas student engagement, as an important indicator reflecting students' active involvement throughout the learning process, has received relatively limited attention as the primary research variable. Student engagement is a key factor that supports meaningful learning and contributes to students' academic success. Furthermore, studies examining the effectiveness of CTL in improving student engagement in Science and Social Studies (IPAS) within the implementation of the Merdeka Curriculum using a quasi-experimental design at the elementary school level remain limited. Therefore, stronger empirical evidence is still needed to explain the effectiveness of the CTL approach in improving student engagement within this context.

Based on these research gaps, this study aimed to examine the effectiveness of the Contextual Teaching and Learning (CTL) approach in improving student engagement in fifth-grade Science and Social Studies (IPAS) learning using a quasi-experimental design. Although these findings consistently demonstrate the positive contribution of CTL, the existing body of research has not yet provided sufficient empirical evidence regarding its effectiveness in improving student engagement within the context of Science and Social Studies (IPAS) under the Merdeka Curriculum. Unlike most previous studies that primarily emphasized learning outcomes through Classroom Action Research, the present study specifically investigated student engagement as the primary outcome variable within the context of the Merdeka Curriculum. This study is expected to enrich the existing empirical evidence regarding the implementation of CTL in elementary education while providing practical insights for teachers in selecting instructional approaches that promote greater student engagement. Moreover, evidence from quasi-experimental studies examining CTL within the context of Science and Social Studies (IPAS) under the Merdeka Curriculum remains scarce, indicating the need for further empirical investigation.

METHODS

Research Design

This study employed a quantitative approach using a quasi-experimental method with a Nonequivalent Control Group Design. The study was conducted during the second semester of the 2025/2026 academic year at SDN Srengseng Sawah 15. The school was selected because it reflected the research context of this study, particularly regarding student engagement in Science and Social Studies (IPAS). In addition, the school provided institutional support for the implementation of the study. The study involved two intact classes. Class VA served as the experimental group and was taught using the Contextual Teaching and Learning (CTL) approach, whereas Class VB served as the control group and received conventional instruction. Both groups completed a pretest before the intervention to examine their initial level of student engagement and to ensure baseline comparability between the experimental and control groups.

Participants

The participants consisted of 54 fifth-grade students, including 28 students from Class VA as the experimental group and 26 students from Class VB as the control group. Purposive sampling was employed

because the two classes had similar academic characteristics and learning conditions, making them appropriate for comparison as the experimental and control groups.

Research Instrument

The primary instrument used in this study was a student engagement questionnaire, while an observation sheet served as a supporting instrument. The questionnaire consisted of 20 items measured using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The questionnaire was developed based on six indicators of student engagement: asking questions, answering questions, participating in discussions, completing learning tasks, expressing opinions, and collaborating in group activities.

Before data collection, the instrument underwent content validation by an expert in elementary education. The validation process aimed to evaluate the relevance of each item to the measured indicators, the clarity of the wording, and the overall appropriateness of the instrument for data collection. Based on the expert's evaluation, several questionnaire items were revised in accordance with the validator's suggestions, particularly to improve the clarity of the wording, before the instrument was considered appropriate for use. Subsequently, empirical validity testing indicated that all 20 items met the validity criteria and were therefore considered valid for use in the study. Reliability testing using Cronbach's Alpha produced a coefficient of 0.854, indicating good internal consistency and confirming that the instrument was reliable for measuring student engagement.

Data Collection Procedure

The study was conducted over two instructional sessions. During the first session, both groups completed a pretest questionnaire to assess their initial level of student engagement before the intervention. The experimental group then participated in learning activities using the Contextual Teaching and Learning (CTL) approach, whereas the control group received conventional teacher-centered instruction covering the same Science and Social Studies (IPAS) content. During the second session, both groups completed the posttest questionnaire using the same instrument to measure changes in student engagement following the intervention.

In the experimental class, the teacher introduced learning activities by relating the lesson to students' daily experiences and explaining the learning objectives. Students were then organized into small groups to conduct simple science experiments, complete worksheets collaboratively, discuss their findings, present the results of their group work, and participate in classroom reflection. Throughout the lesson, the teacher acted as a facilitator by guiding discussions, encouraging active participation, and providing feedback, whereas students actively explored concepts, collaborated with peers, communicated their ideas, and constructed their understanding through contextual learning experiences. In contrast, the control class received the same learning content through teacher explanations, question-and-answer sessions, and individual exercises without implementing the CTL approach.

Data Analysis

The data were analyzed using descriptive and inferential statistics with IBM SPSS Statistics version 22. Descriptive statistics were used to calculate the mean, standard deviation, minimum score, maximum score, and N-Gain score. Inferential analysis began with the Shapiro-Wilk normality test to examine the distribution of the data. Because the results of the normality test indicated that the data were not normally distributed, differences in student engagement between the experimental and control groups were analyzed using the non-parametric Mann-Whitney U test at a significance level of 0.05. In addition, the effect size (r) was calculated to determine the magnitude of the effect of the Contextual Teaching and Learning (CTL) approach on student engagement.

RESULTS

Descriptive Statistics of the Pretest

Before the intervention, both groups completed a pretest questionnaire to assess their initial level of student engagement. The pretest data were analyzed descriptively using the mean, standard deviation, minimum score, and maximum score. The descriptive statistics of the pretest for the experimental and control groups are presented in Table 1.

Table 1. Descriptive Statistics of the Pretest Results

Group	Mean	Standard Deviation	Minimum	Maximum
Experimental	42.79	3.71	37	52
Control	43.50	7.12	31	60

Table 1 shows that the experimental group obtained a mean pretest score of 42.79, whereas the control group achieved a mean score of 43.50. These results indicate that the initial level of student engagement was relatively similar in both groups before the intervention. This result suggests that both groups started the study under comparable conditions, allowing changes observed after the intervention to be more confidently associated with the instructional approach rather than differences in their initial level of student engagement.

Descriptive Statistics of the Posttest

After the learning intervention, both groups completed a posttest questionnaire to measure students' engagement following the instructional process. The posttest data were analyzed descriptively using the mean, standard deviation, minimum score, and maximum score. The descriptive statistics of the posttest are presented in Table 2.

Table 2. Descriptive Statistics of the Posttest Results

Group	Mean	Standard Deviation	Minimum	Maximum
Experimental	71.25	4.42	66	80
Control	60.69	7.67	42	74

The posttest results presented in Table 2 indicated that the experimental group achieved a higher mean posttest score than the control group. This finding indicates that student engagement improved after the implementation of the Contextual Teaching and Learning (CTL) approach. However, further statistical analysis was conducted to determine whether the observed difference was statistically significant. Although the experimental group obtained a higher mean score than the control group, statistical hypothesis testing was required to verify whether the observed difference reflected the effect of the CTL approach rather than random variation. The higher posttest performance of the experimental group provides preliminary evidence that the CTL approach created learning experiences that encouraged students to become more actively involved during classroom instruction. This improvement indicates that students became increasingly involved in classroom activities after experiencing contextual learning situations that encouraged active participation.

N-Gain Analysis

The N-Gain analysis was conducted to determine the extent of the improvement in student engagement after the intervention in each group. The results of the N-Gain analysis for the experimental and control group are presented in Table 3.

Table 3. N-Gain Analysis

Group	N-Gain Score	Category	N-Gain Percent	Category
Experimental	0.769	High	76.92%	Effective
Control	0.460	Moderate	45.99%	Less Effective

The results presented in Table 3 indicate that the experimental group obtained a mean N-Gain score of 0.769, which was categorized as high, with an effectiveness percentage of 76.92%, which was classified as effective. In contrast, the control group achieved a mean N-Gain score of 0.460, which fell into the moderate category, with an effectiveness percentage of 45.99%, indicating a less effective level. Overall, these results suggest that the Contextual Teaching and Learning (CTL) approach was more effective than conventional instruction in improving student engagement. These findings indicate that students who experienced contextual and meaningful learning activities showed greater improvement in engagement than those who learned through conventional instruction. These results also demonstrate that the improvement was not

merely reflected in students' final scores but also in the extent of their learning progress throughout the intervention, indicating the greater effectiveness of the CTL approach in promoting student engagement.

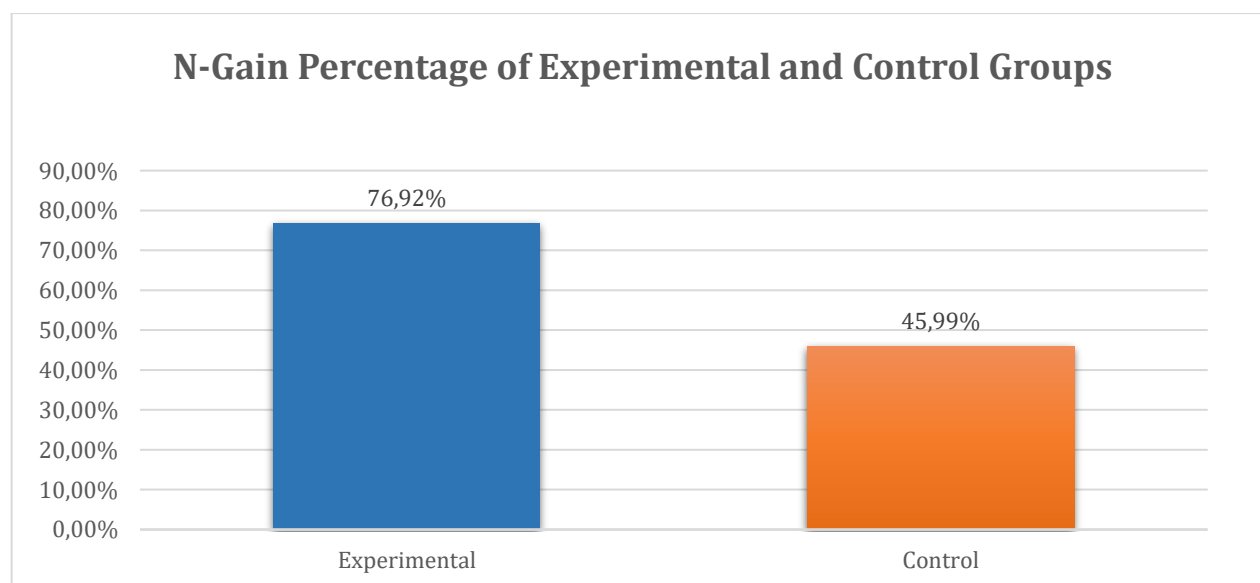


Figure 1. Comparison of N-Gain Scores Between the Experimental and Control Groups

Figure 1 illustrates that the N-Gain percentage of the experimental group was higher than that of the control group. This result indicates that the improvement in student engagement was greater among students who learned through the Contextual Teaching and Learning (CTL) approach than among those who received conventional instruction. The visual comparison further supports the descriptive findings presented in Table 3 by clearly illustrating the substantial difference in learning improvement between the two groups.

Normality Test

Before hypothesis testing, a normality test was conducted to determine whether the data were normally distributed. The Shapiro–Wilk test was performed at a significance level of 0.05. The data were considered normally distributed if the significance value (p) was greater than 0.05. The results of the normality test are presented in Table 4.

Table 4. Shapiro-Wilk Normality Test Results

Group	Sig. Value	Category
Experimental	0.007	Not Normally Distributed
Control	0.040	Not Normally Distributed

Table 4 indicates that the significance values for the experimental and control groups were 0.007 and 0.040, respectively. Since both values were lower than 0.05 ($p < 0.05$), the data in both groups were not normally distributed. Therefore, hypothesis testing was performed using the non-parametric Mann–Whitney U test.

Mann-Whitney U Test

Hypothesis testing was conducted to determine whether there was a significant difference in student engagement between the experimental and control groups after the intervention. Since the data were not normally distributed, the Mann–Whitney U test was used for hypothesis testing. The results are presented in Tables 5 and 6.

Table 5. Mann–Whitney U Test Rank Results

Group	N	Mean Rank	Sum of Ranks
Experimental	28	37.59	1052.50
Control	26	16.63	432.50

The rank analysis presented in Table 5 shows that the experimental group obtained a mean rank of 37.59, whereas the control group obtained a mean rank of 16.63. The higher mean rank of the experimental group indicates a higher level of student engagement than that of the control group. To determine whether this difference was statistically significant, the Mann-Whitney U test was subsequently performed. These rank differences provide an initial indication that students in the experimental group demonstrated higher levels of engagement than those in the control group before statistical significance was formally examined.

Table 6. Mann-Whitney U Test Statistics

Statistics	Value
Mann-Whitney U Test	81.500
Z	-4.895
Sig. (2-tailed)	0.000

The results presented in Table 6 show that the Asymp. Sig. (2-tailed) value was 0.000 ($p < 0.05$). Therefore, the null hypothesis was rejected, indicating a significant difference in student engagement between the experimental and control groups. The calculated effect size was $r = 0.67$, indicating a large effect according to [Cohen's \(1988\)](#) guidelines. These findings suggest that the Contextual Teaching and Learning (CTL) approach had a greater positive impact on student engagement than conventional instruction. Furthermore, the large effect size indicates that the observed difference was not only statistically significant but also educationally meaningful, suggesting that the CTL approach produced a substantial improvement in students' engagement compared with conventional instruction. Taken together, these findings provide strong statistical evidence supporting the effectiveness of the CTL approach in enhancing student engagement among fifth-grade students in Science and Social Studies (IPAS).

DISCUSSION

CTL Improved Student Engagement in Science and Social Studies (IPAS)

The findings of this study indicate that the Contextual Teaching and Learning (CTL) approach successfully promoted higher student engagement than conventional instruction in Science and Social Studies (IPAS). This finding suggests that learning activities designed to connect academic content with students' real-life experiences encourage students to participate more actively throughout the learning process. This finding may be explained by the characteristics of the CTL approach, which encourages students to actively construct knowledge through authentic learning experiences rather than passively receiving information. By engaging students in meaningful classroom activities related to their daily lives, CTL creates learning environments that naturally foster behavioral, cognitive, emotional, and agentic engagement. This interpretation is also supported by recent review evidence indicating that classroom environments characterized by interaction, collaboration, and authentic participation contribute substantially to students' engagement during learning activities ([Ye, 2024](#)). The learning environment created in the present study reflected these characteristics through contextual classroom activities that actively involved students throughout the learning process.

The implementation of the CTL approach in the present study enabled students to construct their understanding through direct learning experiences. Students actively participated in simple experiments, group discussions, worksheet activities, classroom presentations, and collaborative conclusion activities, allowing them to explore concepts and reflect on their understanding. These classroom experiences indicate that students were not merely receiving information from the teacher but were actively constructing knowledge throughout the learning process. This interpretation is consistent with [Johnson \(2014\)](#), who explained that CTL helps students construct meaning by connecting learning materials with real-life contexts. Such learning conditions are also consistent with recent international evidence suggesting that meaningful engagement develops when students are encouraged to participate actively in authentic and collaborative learning experiences ([Quinlan et al., 2025](#)).

Students in the experimental group became more actively engaged because they were encouraged to ask questions, collaborate with their peers, and participate directly in simple science experiments. These classroom experiences created a more interactive learning environment and encouraged students to become actively involved throughout the learning process. This finding supports the constructivist perspective that meaningful learning occurs when students actively construct knowledge through authentic learning experiences. A similar explanation was provided by [Kholid \(2023\)](#), who stated that CTL creates a more enjoyable learning environment because students are encouraged to apply their knowledge through

meaningful learning activities. This explanation is reflected in the present study, where students actively asked questions, participated in group discussions, collaborated with their peers, and conducted simple science experiments. These classroom experiences created opportunities for students to become more actively engaged throughout the learning process. This finding supports the constructivist perspective that meaningful learning occurs when students actively construct knowledge through interaction with authentic learning situations rather than passively receiving information. This finding is also consistent with [Do et al. \(2023\)](#), who argued that constructivist learning environments encourage active participation, collaboration, and meaningful engagement throughout the learning process. This interpretation is further strengthened by recent systematic review evidence demonstrating that students become more engaged when learning environments consistently encourage meaningful participation, collaboration, and active interaction throughout classroom instruction ([Bergdahl et al., 2024](#)). This interpretation is also consistent with recent systematic review evidence showing that student engagement is strengthened when learning activities encourage active participation, collaboration, and meaningful learning experiences throughout the instructional process ([De Bruijn-Smolters & Prinsen, 2024](#)).

Contextual Learning Activities Supported Meaningful Student Engagement

The present study found that the CTL approach encouraged students to become more actively engaged because they were directly involved in meaningful learning activities rather than passively listening to the teacher's explanation. During the learning process, students worked collaboratively to conduct simple science experiments, discuss their observations, complete worksheets, present their findings, and draw conclusions together. These activities encouraged students to interact more frequently with their peers and teacher, express their ideas confidently, and construct their own understanding through direct experiences. As a result, student engagement increased not only in terms of classroom participation but also in students' willingness to collaborate and communicate during learning activities.

The higher level of student engagement observed in the experimental group indicates that the CTL approach successfully created learning experiences that encouraged students to participate more actively throughout the learning process. Rather than relying solely on teacher explanations, students were encouraged to explore concepts independently, exchange ideas with their peers, and construct their understanding through authentic learning experiences. These learning experiences fostered greater confidence, collaboration, and active participation, which contributed to the improvement of student engagement observed in this study.

These findings are consistent with those of [Rahayu et al. \(2022\)](#), [Widiasih et al. \(2022\)](#), [Isnaini \(2023\)](#), and [Putri et al. \(2025\)](#), who also reported that the implementation of CTL promoted higher student engagement. The consistency of these findings across different educational contexts further indicates that contextual learning activities provide meaningful opportunities for students to participate actively, collaborate with peers, and apply their knowledge to real-life situations. This finding suggests that the positive effect of CTL on student engagement extends beyond the present study, providing further support for its implementation in elementary Science and Social Studies (IPAS) classrooms across different instructional contexts. However, unlike most previous studies that employed Classroom Action Research, the present study provides stronger empirical evidence through a quasi-experimental design involving experimental and control groups. Therefore, the findings contribute additional evidence regarding the effectiveness of CTL in improving student engagement in Science and Social Studies (IPAS) learning at the elementary school level.

Practical Implications

The findings of the present study demonstrate that student engagement can be enhanced when teachers design learning activities that actively involve students in constructing knowledge through authentic experiences. During the implementation of the CTL approach, students showed higher engagement when they participated in simple science experiments, collaborative discussions, worksheet activities, classroom presentations, and reflection. These classroom experiences suggest that meaningful participation is more likely to occur when students are given opportunities to interact, collaborate, and relate learning content to real-life situations. Therefore, elementary school teachers may consider integrating these contextual learning activities into Science and Social Studies (IPAS) instruction to promote more active student engagement. These practical implications indicate that meaningful student engagement is more likely to develop when classroom instruction consistently provides opportunities for students to participate actively, collaborate with peers, and relate learning experiences to authentic situations.

These findings are also supported by recent studies showing that integrating contextual instructional strategies with engaging learning media can further enhance students' learning activity and participation in IPAS classrooms (Khazanah et al., 2025). Likewise, Che Mat and Jamaludin (2024) reported that student-centered learning practices in primary schools promote active participation, collaboration, and meaningful learning experiences that contribute to improved student engagement. Taken together, these findings suggest that student engagement can be enhanced through instructional designs that consistently integrate contextual experiences, collaborative learning, and opportunities for active student participation, rather than relying solely on teacher-centered instruction. Therefore, integrating contextual learning activities into Science and Social Studies (IPAS) instruction provides a practical strategy for encouraging students to become more actively engaged in classroom learning.

Limitations and Future Research

Despite these positive findings, this study has several limitations. The intervention was conducted over only two instructional sessions. Therefore, although the findings demonstrate the positive effect of CTL on student engagement, they should be interpreted within the context of these methodological limitations. In addition, the relatively small sample size and the single-school setting may limit the generalizability of the findings. Furthermore, the findings should be interpreted cautiously because student engagement was measured primarily through a self-report questionnaire, which may not fully capture students' actual classroom behaviors. Future research should implement the CTL approach over a longer intervention period and involve larger and more diverse samples to provide a more comprehensive understanding of its effectiveness.

CONCLUSION

This study demonstrated that the Contextual Teaching and Learning (CTL) approach was more effective than conventional instruction in promoting student engagement in Science and Social Studies (IPAS). These findings indicate that CTL can serve as an effective instructional alternative for elementary school teachers to foster active student participation during the learning process. In addition, this study contributes to the growing body of evidence supporting the implementation of CTL to enhance student engagement in elementary education. Future research should involve larger samples and longer intervention periods to provide more comprehensive evidence regarding the effectiveness of the CTL approach.

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