



Implementation Of the Use of Liveworksheets Towards Improving Students' Literacy and Critical Thinking Abilities in The Science Subject of Grade 3 Of State Elementary School

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Abstract

This study investigates the implementation of Liveworksheets as a digital learning medium in the Natural and Social Sciences (IPAS) subject for third-grade students at Elementary School, focusing on both literacy and critical thinking skills. Using a qualitative descriptive design, the participants consisted of the school principal, two classroom teachers, and 25 students. Data were collected through classroom observations, semi-structured interviews, and documentation. The findings reveal that Liveworksheets significantly enhanced students' literacy and motivation; 76% of students showed higher engagement and improved ability to interpret texts and images. Indicators of critical thinking also emerged, such as rechecking answers, comparing information, and discussing with peers before asking for help. Teachers reported that Liveworksheets supported the delivery of diverse tasks and instant feedback, though challenges remained, including limited device availability, unstable internet, and students' difficulty with lengthy analytical questions. These findings suggest that while Liveworksheets can serve as an innovative learning tool, successful implementation requires adequate infrastructure, teacher training, and adaptation of tasks to students' developmental levels. The study recommends that educators integrate Liveworksheets with traditional approaches to strengthen both literacy and higher-order thinking from the early grades.

Keywords: Liveworksheets, literacy, digital learning, IPAS, critical thinking

Introduction

Education is a fundamental right guaranteed by the 1945 Constitution of the Republic of Indonesia, Article 31 paragraph (1), which states that every citizen has the right to education. This emphasizes that education is not only the responsibility of the government but also of families and communities who together play a role in creating a conducive learning environment. At the elementary level, education becomes the foundation of intellectual, social, and emotional development. One of the essential subjects is Natural and Social Sciences (IPAS), which aims to foster students' observation, exploration, and reasoning skills.

According to Melmambessy Moses (2012) in Mulyah et al. (2020), education is a structured process of delivering knowledge from one individual to another based on established standards, with the expectation of bringing changes in attitudes, behavior, thinking skills, and personality development, whether in formal or informal contexts. From an Islamic perspective, education is considered a pathway to achieving well-being in both the world and the hereafter, as reflected in the Qur'an, Surah Al-'Alaq verses 1–5, which emphasize the importance of reading, learning, and seeking knowledge.

At the elementary school level, education functions as the foundation for students' intellectual and social development. One of the key subjects is Natural and Social Sciences (IPAS), designed to foster critical thinking through observation, exploration, and problem-solving. Critical thinking is one of the most essential 21st-century skills needed to face global challenges. Putra (2015) in Elsabrina et al. (2022) explains that critical thinking is a process that allows individuals to evaluate evidence, assumptions, and the logic underlying others' ideas, thus enabling discovery-based learning. Similarly, Ennis (2002) in Rahman et al. (2022) defines critical thinking as rational and reflective thinking aimed at deciding what to believe or do, which involves grouping, organizing, recalling, and analyzing information.

Nevertheless, classroom realities indicate that students' critical thinking skills remain low. Observations in the third grade of Elementary School revealed that students struggle to understand, explain, analyze, and evaluate information. This problem is partly due to conventional teaching methods that are less interactive and rarely integrate technology, making it difficult for students to engage in higher-order thinking. This situation calls for innovation in teaching strategies, particularly through the integration of digital technology that aligns with the learning style of today's generation.

One innovation that can be adopted is Liveworksheet, a web-based platform that provides interactive worksheets enriched with images, audio, and videos. Khikmiyah (2021) emphasizes that Liveworksheet offers a technology-based learning medium that supports teachers and students with engaging features. Similarly, Lisnuriyani (2021) in Firtsanianta & Khofifah (2022) highlights that Liveworksheet makes it easier for teachers to design online-based learning tools

with user-friendly interfaces.

Although previous studies have explored the use of digital learning media, they mostly focus on aspects such as motivation and conceptual understanding, with limited emphasis on the integration of Liveworksheet in science learning (IPAS) at the elementary school level. Very few studies specifically investigate how Liveworksheet contributes to the development of critical thinking skills among lower-grade elementary students. This gap is crucial because at this stage, students are developing their foundational cognitive skills, and appropriate learning strategies are needed to nurture these abilities.

Based on the analysis above, the research question proposed is: How can the implementation of Liveworksheet enhance the critical thinking skills of third-grade students in the IPAS subject? The objective of this study is to analyze the impact of Liveworksheet on students' ability to evaluate, interpret, and solve problems critically. The novelty of this research lies in its focus on integrating Liveworksheet into elementary IPAS learning, providing a new perspective on the role of digital evaluation tools in fostering critical thinking skills, which has not been widely explored in previous studies.

Method

This research employed a descriptive qualitative approach aimed at gaining an in-depth understanding of the implementation of Liveworksheet in enhancing the critical thinking skills of third-grade students in the IPAS subject at Elementary School. The choice of grade 3 students was based on the consideration that at this stage, students are beginning to develop and demonstrate their critical thinking abilities, making it a crucial period for intervention. The research subjects included the school principal, classroom teachers, and students.

These participants were selected purposively to ensure that the data collected reflected the perspectives of school leaders, educators, and learners as the primary stakeholders in the teaching and learning process. Data collection was carried out through multiple techniques, namely observation, in-depth interviews, and documentation. Classroom observations four sessions (2x 35 minutes each) in which Liveworksheet was integrated into IPAS lessons. Semi-structured interviews approximately 30 minutes with 10-15 guiding questions, conducted with teachers and selected students.

Documentation analysis of lesson plans (RPP), student worksheets, and learning outcomes. Implementation of Liveworksheet activities focused on text interpretation, classification tasks, and problem-solving exercises. Ethical considerations approval was obtained from the school administration, and informed consent was provided by teachers and parents. Data were analyzed using an interactive model consisting of three stages: data reduction, data display and conclusion drawing. Validity was maintained through triangulation of source and peer discussions.

Results and Discussion

The findings revealed that most students experienced improvements in literacy and critical thinking after using Liveworksheets. Out of 25 students, 19 students showed better literacy skills, particularly in interpreting texts and images, while 15 students demonstrated critical thinking behaviors such as reviewing answers, comparing results with peers, and correcting mistakes after receiving feedback. Teachers also observed that students became more motivated, describing the activities as enjoyable and “game-like.”

1. Critical thinking skills of grade 3 students of Elementary School

In general, the critical thinking skills of third-grade students at Elementary School are beginning to emerge. This can be observed in their ability to recognize the significance of readings or images in the IPAS subject, compare two simple phenomena such as changes in the shape of objects and their causes, pose additional questions, and improve their answers after receiving feedback. These findings align with the definition of critical thinking as involving processes such as interpreting, explaining, disseminating, drawing conclusions, clarifying, and self-regulating.

Facione (2020) explains that critical thinking is a systematic process that includes interpretation, analysis, evaluation, inference, and self-regulation. This framework is particularly suitable for describing the early stages of elementary students' development, as it provides observable steps, such as the ability to explain simple reasons and refine answers after receiving teacher input. In line with this, Fitriadi et al. (2024) highlight effective elementary teaching methods that foster critical thinking, including Problem-Based Learning, Project-Based Learning, and Case-Based Learning, which emphasize relevant tasks, collaboration, and supportive feedback.

These findings are reinforced by Azmi (2025), who studied the application of CBL in elementary education, and by the West Science Journal (2024), which documented practical strategies for cultivating critical thinking at the primary school level. In the context of IPAS, various studies in Indonesia during 2024–2025 show that teaching tools and structured practice can strengthen students' critical skills. Lentera (2024) reported that IPAS worksheets were effective in improving interpretation, analysis, and inference abilities. Similarly, a qualitative study in Jakarta (Fadiyah, 2024) and an analysis of fifth-grade IPAS learning at SDN 2 Batur (Diatmika & Sudirman, 2024) demonstrated that rich questioning methods, the use of visual media, and direct feedback play an important role in reinforcing reasoning and drawing conclusions.

At the international level, Encabo-Fernández et al. (2023) also found that elementary students' levels of critical thinking vary but can be significantly improved through explicit scaffolding and formative assessment. The interviews

revealed that the use of Liveworksheet in IPAS lessons made students more active and confident in presenting their reasoning. Teachers observed an improvement in students' habits of comparing answers, identifying relevant information in images or diagrams, and revising responses after receiving feedback.

Students stated that interactive exercises encouraged them to retry until they reached the correct answers and stimulated their curiosity to ask why. Classroom observations confirmed these indicators: students were able to classify examples and non-examples based on IPAS content, provide simple reasons when distinguishing between two events, and revise answers during group discussions. These patterns reflect the early stages of critical thinking development, consistent with Facione's (2020) framework and recent studies on IPAS learning at the elementary level.

Several supporting factors were identified, including clear learning objectives with simple rubrics, immediate feedback from teachers or digital media, and the use of real-life contexts such as images or small experiments that triggered inquiry. However, challenges were also noted. Limited access to devices and unstable internet connections disrupted the learning process, while overly long texts sometimes caused cognitive overload. In addition, heuristic habits, such as guessing without examining reasons, were frequently observed among young learners. Dwyer (2023) emphasizes that these barriers are common in developing critical thinking and should be addressed with explicit scaffolding.

In conclusion, the critical thinking skills of third-grade students at Elementary School in IPAS learning show promising signs of growth. Both interview and classroom data reveal progress in understanding, analyzing, and self-correcting, as well as the early development of reasoning and conclusion-making. These results are consistent with theory and field evidence, demonstrating that students are beginning to show positive critical thinking abilities, supported by effective teacher facilitation and collaborative learning.

With increased scaffolding and better management of technical challenges, students' critical thinking skills are expected to continue to develop alongside their growing learning experiences.

2. Use of live worksheets in science learning for grade 3 students of Elementary School

Digital-based learning, particularly through platforms such as Liveworksheet, has become increasingly popular in elementary education as an innovative tool to capture students' attention and enhance their engagement. Liveworksheet provides interactive exercises such as multiple-choice questions, fill-in-the-blank tasks, and matching activities, which not only make the learning process more enjoyable but also enable teachers to deliver direct and instant feedback. Budiman, Haryani, and Suminar (2024) found that worksheets designed with Multiple

Intelligences in a Guided Inquiry model significantly improved the critical thinking skills of elementary students, as shown by the increase in average scores and N-gain in large-scale trials.

Similarly, Muskita, Subali, and Djukri (2020) emphasized that worksheets with high levels of inquiry can enhance both critical and creative thinking skills among learners. In addition, Tressyalina et al. (2023) underlined the importance of e-worksheets developed based on local wisdom to strengthen critical thinking skills through contexts that are relevant to students, so that they are not just ordinary digital media, but also have appropriate meaning and context. Findings from the implementation of Liveworksheet in IPAS classes at Elementary School revealed a positive impact on student engagement and the potential to foster critical thinking skills.

From the teachers' perspective, Liveworksheet was considered highly supportive in presenting a variety of interactive question types. Teachers reported that students appeared more enthusiastic when working on Liveworksheet tasks, particularly when images or matching exercises were included. They don't get bored as quickly as if they were just working on problems in a notebook. This aligns with Hernanto's (2023) findings, which state that using Liveworksheets increases student learning motivation because it combines evaluation and interactivity.

From the students' perspective, most expressed enjoyment in using Liveworksheet. One student remarked, "I really like it because it feels like playing a game. When the answer is correct, there is a check mark, so it motivates me to keep going." Another student added, "If it's difficult, I try first, and if I'm still confused, then I ask the teacher." Such statements demonstrate the early signs of developing critical thinking skills, as students begin to adopt independent problem-solving strategies.

This finding is supported by Maharani (2022), who stated that HOTS-based e-worksheets have proven effective in developing students' critical thinking skills starting in elementary school. Classroom observations further showed that students were not only completing tasks routinely but also began comparing their answers, questioning why certain answers were right or wrong, and reviewing their responses after receiving automatic feedback from the application.

This aligns with the study by Song et al. (2024), which highlighted that interactive learning environments can play a key role in developing critical thinking when students are given the opportunity to evaluate their own choices. However, this study also identified several challenges. From the students' side, they reported difficulties with limited devices and unstable internet access. One student explained, "When the internet is slow, it's hard to open Liveworksheet, sometimes I can't even log in."

Teachers confirmed these challenges, noting that additional time was often required to prepare materials and ensure all students could access the necessary devices. These findings are in line with Syar (2023), which highlights the digital

access gap as a major challenge in implementing e-worksheets in elementary schools. Thus, the use of Liveworksheets in science learning at Elementary School provides a more engaging learning experience, increases students' enthusiasm for learning, and fosters the development of early critical thinking skills.

Thus, the use of Liveworksheet in IPAS classes at Elementary School has provided a more engaging learning experience, boosted student motivation, and supported the initial development of critical thinking skills. Nevertheless, technical barriers such as limited device availability and unstable internet connections must be addressed to optimize the process. As emphasized by Dermawan, Jannah, and Munawarah (2025), the success of e-modules or digital worksheets can only be achieved when supported good accessibility and question designs that are appropriate to the level of students' cognitive development.

3. Constraints in the use of liveworksheets on the critical thinking skills of grade 3 students at Elementary School

In the use of digital learning media, every innovation inevitably presents both opportunities and challenges. The same applies to the integration of the Liveworksheet application in IPAS learning for third-grade students at Elementary School. Based on interviews with teachers and students, as well as classroom observations, two patterns emerged. On the one hand, the use of Liveworksheet created a more engaging learning experience and provided interactive exercises that encouraged students to try different approaches and logical reasoning, allowing the initial signs of critical thinking to emerge.

On the other hand, several constraints limited the full potential of Liveworksheet in fostering critical thinking among third-grade students. Hernanto (2023) found that the use of Liveworksheet can increase students' enthusiasm for learning, yet technical obstacles often reduce its effectiveness. Similarly, Syar (2023) emphasized the importance of infrastructure support and teacher guidance to overcome disparities in access to digital learning tools. In addition, Dermawan, Jannah, and Munawarah (2025) explained that students' critical thinking skills may grow through the use of interactive worksheets, but technical limitations and insufficient digital literacy among students may hinder the process.

These findings indicate that the challenges associated with Liveworksheet should not be seen merely as technical issues, but also as factors that can affect the overall quality of learning and the development of students' critical thinking. Interviews revealed several recurring difficulties, such as the limited availability of devices at home or school, problems with low battery power, and unstable or insufficient internet access. These issues often disrupted the learning process, preventing students from accessing learning materials when needed.

Such barriers not only reduced students' motivation but also limited their opportunities to consistently practice critical thinking. Student interviews also highlighted difficulties with long questions, complex language, and open-ended

tasks that were often confusing. In these cases, students tended to guess answers or stop trying altogether. For third graders, whose reading and writing skills are still developing, the design of digital questions needs to be carefully adapted to their level of comprehension.

Some students also reported eye strain and difficulty focusing after staring at screens for extended periods. Moreover, home environments—such as sharing devices with siblings or being distracted by household conditions—made it harder for them to concentrate. Prolonged screen exposure also appeared to affect students' ability to reflect and analyze, which are both central to critical thinking. Teachers noted that preparing high-quality Liveworksheet materials required considerable time and specific skills, which posed additional challenges.

Nevertheless, data from classroom observations and interviews revealed early indicators of critical thinking. Students were beginning to compare two possible answers, provide simple explanations for their choices, and attempt alternative approaches when their responses were corrected. In summary, the main challenges in using Liveworksheet to enhance third graders' critical thinking skills are related to technical limitations such as device access and internet connectivity, poorly adapted task design, eye fatigue caused by extended screen use, and limited teacher readiness.

However, the evidence suggests that critical thinking skills can be meaningfully developed if these barriers are addressed through improved task design, stronger infrastructure support, and adequate teacher training.

Conclusion

This study concludes that Liveworksheets is an effective tool for enhancing literacy and critical thinking in third-grade IPAS learning. Students demonstrated increased motivation and early indicators of critical thinking, such as checking answers, comparing information, and engaging in independent problem-solving. However, challenges related to device availability, internet stability, and task complexity remain obstacles to optimal implementation. Therefore, teachers are encouraged to combine Liveworksheets with traditional learning strategies, adjust tasks to students' developmental levels, and participate in continuous professional training.

Future research should involve larger samples and examine the long-term effects of Liveworksheets integration in diverse educational contexts. In conclusion, this study demonstrates that Liveworksheet can serve as an innovative and relevant learning medium for the digital era, provided its implementation is supported by teachers' guidance, adequate infrastructure, and continuous mentoring.

References

- Apriani, N. S. (2024). The development of Liveworksheets-Assisted Discovery Learning Model to improve critical thinking. *Jurnal Inovasi dan Pembelajaran*.
- Dermawan, D. D., Jannah, M., & Munawarah. (2025). Improving critical thinking ability in elementary schools with interactive e-modules. *Online Journal of Communication and Media Technologies*, 15(1).
- Diatmika, I. P., & Sudirman, I. N. (2024). Analisis kemampuan berpikir kritis siswa dalam pembelajaran IPAS di Sekolah Dasar Kelas V SDN 2 Batur. *Pentagon: Jurnal MIPA*, 2(4), 108–117. <https://doi.org/10.62383/pentagon.v2i4.295>
- Dwyer, C. P. (2023). An evaluative review of barriers to critical thinking in real-world settings. *Journal of Intelligence*, 11(6), 117.
- Elsabrina, U. R., Hanggara, G. S., & Sancaya, S. A. (2022). Peningkatan Kemampuan Berfikir Kritis Siswa Melalui Layanan Bimbingan Kelompok Dengan Teknik Creative Problem Solving. *Seminar Nasional Dalam Jaringan Konseling Kearifan Nusantara*, 502–513.
- Encabo-Fernández, E., Sánchez-Iglesias, I., & Hernández-Franco, V. (2023). Evaluative research on the critical thinking of primary school students. *Discover Education*.
- Facione, P. A. (2020). *Critical Thinking: What It Is and Why It Counts* (2020 update).
- Fadiah, P. (2024). Analisis kemampuan berpikir kritis siswa kelas V SDN Rambutan 03 Pagi dalam pembelajaran IPA. *Pendas: Jurnal Ilmiah Pendidikan Dasar*.
- Firtsanianta, H., & Khofifah, I. (2022). Efektivitas E-LKPD Berbantuan Liveworksheets Untuk Meningkatkan Hasil Belajar Peserta Didik. *Conference of Elementary Studies*, 140–147.
- Fitriadi, F., Herpratiwi, H., Yulianti, D., Setiyadi, A. B., Hariri, H., Sunyono, S., Haenilah, E. Y., & Mukhlis, H. (2024). Enhancing critical thinking in elementary education: A systematic review of effective learning models. *Multidisciplinary Reviews*, 8(6), 2025157. <https://doi.org/10.31893/multirev.2025157>
- Hernanto, M. D. (2023). Liveworksheets analysis as an online student worksheet. *Advances in Social Science, Education and Humanities Research*, 701. Atlantis Press.
- Ismayanti, D., Said, Y. R., Usman, N., & Nur, M. I. (2024). The Students Ability in Translating Newspaper Headlines into English A Case Study. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 12(1), 108-131.
- Khikmiyah, F. (2021). Implementasi Web Live Worksheet Berbasis Problem Based Learning Dalam Pembelajaran Matematika. *Pedagogy: Jurnal Pendidikan Matematika*, 6(1), 1–12.
- Lentera Editorial Team. (2024). Efektifitas LKPD IPAS untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Lentera: Jurnal Ilmiah Kependidikan*, 17(1), 81–88.
- Masruddin, M., & Nasriandi, N. (2022). Lexical and Syntactical Errors Performed by

- Junior High School Student in Writing Descriptive Text. IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature, 10(1), 1094-1100.
- Maharani, S. D. (2022). Integrating HOTS-based student electronic worksheet. Journal of Educational Technology, 6(3).
- Pipit Mulyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, T. (2020). Journal GEEJ, 7(2), 1-33.
- Rahman, A., Munandar, S. A., Fitriani, A., Karlina, Y., & Yumriani. (2022). Pengertian Pendidikan, Ilmu Pendidikan dan Unsur-Unsur Pendidikan. Al Urwatul Wutsqa: Kajian Pendidikan Islam, 2(1), 1-8.
- Sari, G. I., & kolega. (2024). Strengthening digital literacy in Indonesia: Collaboration. ScienceDirect.
- Song, H., et al. (2024). Interactive learning environment as a source of critical thinking. Frontiers in Psychology.
- Song, H., et al. (2024). Interactive learning environment as a source of critical thinking. PLOS/PMC.
- Susanto, R. (2024). Improving Primary School Students' Critical Thinking Through Online Media. Journal of Educational and Social Research.
- Syar, N. I. (2023). Students' local wisdom-based e-worksheets assisted with Liveworksheets.com. International Journal of Interactive Mobile Technologies, 17(4).