
Self-Explanation as a Teaching Technique: Literature Review for Elementary School Education

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ABSTRACT

Self-explanation is one of the learning techniques that gives space for students to explain the material content again with their own words, either orally or in writing. This technique is considered relevant for basic education because it can help children recognize their way of thinking, check their understanding, and strengthen the relationships between concepts. This article presents a literature review on the application of self-explanation in the context of learning in elementary schools based on research from the last five years. This literature study traces various national and international articles through a gradual selection process and thematic analysis to find patterns of findings related to the effectiveness of this technique. The results of the study show that self-explanation not only increases conceptual understanding, but also strengthens metacognitive abilities, learning independence, and the quality of student interaction with the material. This technique has proven relevant for various subjects, such as reading, mathematics, and science. This article is expected to provide a comprehensive picture of the potential of self-explanation as an alternative learning strategy that is more reflective and student-centered in elementary education.

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INTRODUCTION

Learning in elementary school is fundamentally oriented towards building a foundation of thinking, not just the ability to remember facts. At this age, children begin to develop the ability to understand cause-and-effect relationships, formulate simple reasons, and process knowledge they find in the learning environment. However, the reality in the field shows that classroom learning is often still instructional: the teacher explains, students take notes, then do exercises. This pattern makes the students' thinking process not always optimally explored. Many studies in the last five years affirm that elementary school students' conceptual understanding is still weak, especially when they only receive knowledge passively without involving sufficient self-reflection processes (Khairani, Chan, & Hayati, 2023; Ikawati, Kartono, & Hutagalung, 2021). The tendency of learning that emphasizes task completion rather than deep understanding causes students to often memorize steps without knowing the reasons behind them. In science subjects, for example, students can repeat definitions or procedures, but fail to explain why a phenomenon occurs. A similar situation arises in mathematics learning, where students can solve routine problems but struggle when facing non-routine problems that require reasoning.

A study by Angelina, Karsono, and Rintayati (2023) shows that elementary school students are still at the early stage of their metacognitive development—they know what to do, but are not yet able to explain the reasons or strategies they use. This shows the need for a learning approach that helps students monitor their thinking processes more systematically. In this context, the self-explanation technique becomes important. Self-explanation is basically the process when students explain the material content, solution steps, or reasons behind a concept using their own words. This technique is not just asking students to repeat information, but encourages them to rebuild meaning personally. According to Damayanti and Kurnianti (2023), the activity of explaining the material again can help students organize previously separate knowledge, so their understanding becomes more structured. This activity also gives students the opportunity to find parts they have not fully understood.

Several recent studies affirm that thinking activities such as explaining, reasoning, and assessing one's own understanding are the core of meaningful learning. Yuliasanti and Wati (2023), for example, report that metacognitive processes such as planning, monitoring, and reflection will emerge more naturally when students are given the opportunity to "talk to themselves" about what they are learning. In other words, self-explanation works as a bridge between new information and the old knowledge structure that students already have. When students connect these two, their understanding tends to be more lasting. In addition, self-explanation has the advantage because it can be applied in various subjects. In reading learning, students can be asked to explain the content of the reading with their own language. In mathematics, they can explain the reasons for choosing a certain strategy. In science learning, students can be asked to express initial guesses, describe observations, and link them to scientific concepts. Research by Harahap and Wandini (2023) shows that students who are accustomed to explaining solution steps show significant improvement in problem-solving abilities.

These findings strengthen the assumption that deep understanding emerges from active intellectual activities, not just receiving information. Nevertheless, the application of the self-explanation technique in elementary school classrooms is still relatively rare. Many teachers admit they are not accustomed to approaches that place students as subjects of reflection, not just information receivers. Some teachers also consider reflective techniques like this to require more time, especially when accommodating differences in students' verbal abilities. However, recent research such as that reported by Klara Yessa, Grahito, and Jumanto (2025) shows that metacognitive strategies do not have to be complex; even simple forms like asking students to "explain again in their own way" are enough to stimulate high-level thinking processes. Based on these various findings, this literature review is compiled to provide a comprehensive picture of how self-explanation is used, what its benefits are, and how this technique can be applied in the context of basic education. By reviewing various articles from the last five years, the author hopes to provide a clearer understanding of the potential of self-explanation as a learning technique capable of improving conceptual understanding, metacognitive skills, and the quality of student interaction with learning materials. This study is expected to be a reference for teachers, researchers, or education practitioners in developing more reflective and student-centered learning strategies.

METHOD

This study uses a literature review approach by examining various studies related to self-explanation, metacognition, learning strategies, and learning in elementary schools published in the last five years. The article search process was carried out through several national and international databases. The keywords used include "self-explanation", "metacognitive strategy", "elementary education", "self-regulated learning", and "reflective learning". From the initial search results, approximately 65 relevant articles were obtained, then selected based on topic suitability, publication quality, and their connection to the context of core elementary school learning. Articles that focus on secondary education or special contexts outside the realm of elementary school core learning were not included in the analysis. The articles that have gone through the selection process were then analyzed using thematic analysis techniques. Each article was read carefully to identify important themes such as the definition and characteristics of self-explanation, the benefits of this technique in learning, implementation in various subjects, and empirical findings that support its effectiveness. The findings from each article were then synthesized into several main categories to produce a more coherent and understandable picture. This synthesis process was carried out carefully to avoid over-interpretation and ensure that each conclusion presented still refers to the current scientific findings trends. The results of this analysis form the basis for the discussion in this article.

RESULTS AND DISCUSSION

1. The Concept of Self-Explanation in Basic Learning Self-explanation

It is basically the process when students explain back certain information, solution steps, or concepts using their own language. This process looks simple, but actually involves complex cognitive activities because students must reprocess newly received information, connect it with previous knowledge, and check which parts are already understood or still confusing. This re-explanation is not always done orally; many studies show that written forms or internal explanations (inner speech) can also enhance students' thinking processes. Constructivism theory often becomes the basis for thinking about this technique, because self-explanation allows students to build meaning through active interaction with the material. In the context of elementary school children's development, this technique is increasingly relevant because at the age of 7–12 years, logical thinking abilities and understanding of relationships between concepts begin to develop.

Children at this stage begin to be able to organize information more systematically, but still need stimuli so they can control their own way of thinking. Here, self-explanation occupies an important position: it becomes a bridge for students to practice monitoring how they understand something. According to Yuliasanti & Wati (2023), verbal processes like this help students find weak points in their understanding before the teacher provides it. Several recent studies also emphasize that self-explanation is closely related to metacognition. When students explain the steps they take, they not only organize information, but also evaluate whether the strategy they choose is appropriate. For example, a mathematics student who explains why they choose a certain strategy will automatically check if the strategy is correct. Kristanto & Pradana (2022) found that activities like this trigger the emergence of self-monitoring and self-assessment, two important components in metacognition. In addition, self-explanation allows students to develop reasoning or reasoning.

When children explain cause-effect relationships or reasons behind an answer, they learn to formulate arguments and strengthen critical thinking skills. Ikawati, Kartono, & Hutagalung (2021) note that students who are accustomed to being asked to explain the material content again are more able to connect new knowledge with old knowledge more flexibly. This activity helps them avoid mechanical memorization. From a neurological perspective, self-explanation also triggers activation of brain areas related to meaning processing. When students do elaboration or reinterpret information, they strengthen memory networks so understanding becomes more lasting. This is in line with the findings of Damayanti & Kurnianti (2023) which state that verbal elaboration is an effective internalization strategy for elementary school-aged students.

Although simple, self-explanation must be done with proper guidance. Teachers need to provide triggering questions that help students think, for example: "Why did you choose that step?", "What is the relationship between this part and the previous part?", or "How do you know the answer is correct?". Questions like this help students develop reflective habits. The study by Khairani, Chan, & Hayati (2023) shows that teachers who consistently give reflective triggering questions can increase students' metacognitive awareness. Thus, self-explanation is not just asking students to re-explain information. This technique is a reflective strategy that combines meaning construction, metacognition, and reasoning. These three are very important to build from elementary school age because they become the foundation for long-term thinking abilities.

2. Advantages of Self-Explanation for Elementary School Students

One of the main advantages of self-explanation is its ability to encourage deeper conceptual understanding. Many elementary school students can memorize definitions or problem-solving steps, but not all understand the reasons behind those steps. With self-explanation, students are asked to explain "why", not just "what". This makes them actively involved in the learning process and not just passively receiving information. According to Harahap & Wandini (2023), students who routinely re-explain problem-solving steps show significant improvement in accuracy and strategy precision. Another advantage is its ability to train metacognitive skills from an early age. Metacognition or thinking about how to think is often considered a skill that develops in adolescence. However, studies in the last five years show that elementary school children can also develop metacognition when teachers provide appropriate stimuli.

Klara Yessa, Grahito, & Jumanto (2025) found that fourth-grade students can show the ability to monitor and evaluate their understanding when asked to re-explain science concepts with their own words. Self-explanation is also effective in increasing students' self-confidence. When children can explain a concept, they feel that they really master it. This self-confidence makes them more courageous to ask or answer questions in class. In addition, this technique helps students understand that learning is a process, not an end result. Students who were previously afraid of being wrong become more courageous to try because they know the teacher is assessing the thinking process, not just the answer. From the classroom management perspective, self-explanation makes the learning atmosphere more interactive.

The teacher does not have to always be the main source of information; students can become "explainers" for their friends. This can increase the involvement of other students who may have different learning styles. Research by Yuliasanti & Wati (2023) shows that activities of explaining to peers make shy

students more active because they feel more comfortable sharing understanding without formal pressure. Furthermore, self-explanation also supports the development of language skills. When students have to compose explanations with their own words, they practice organizing ideas, choosing appropriate vocabulary, and composing logical sentences. Ikawati et al. (2021) emphasize that verbal explanation is an effective language learning tool because it encourages children to express ideas more structuredly. From the teacher's side, self-explanation helps reveal students' misconceptions. When students re-explain the material, teachers can see which parts are not understood and correct them directly.

This process is more effective than written tests because teachers can understand students' thinking patterns directly. This is in line with research results showing that students' verbal explanations are often more accurate indicators than written answers (Angelina et al., 2023). With all these advantages, self-explanation becomes a teaching technique that is not only relevant, but also easy to apply in various subjects. It serves as a container for students to realize their way of thinking and as a tool for teachers to understand the learning process of students more deeply.

3. Implementation of Self-Explanation in Elementary School Classrooms

The application of self-explanation in the classroom does not require complicated learning devices. Teachers can start it by giving simple questions that prompt students to explain what they think. For example, in mathematics learning, teachers can ask students to explain why they choose a certain strategy or what steps they take first. Research by Harahap & Wandini (2023) shows that simple questions like this can increase the accuracy of students' mathematical reasoning. In reading learning, this technique can be applied by asking students to explain the meaning of paragraphs using their own language. Students can also be asked to connect the reading content with personal experiences or previous knowledge.

In this way, teachers can see how far students understand the text context. Damayanti & Kurnianti (2023) found that re-explanation in literacy learning helps students build stronger relationships between ideas. In science learning, self-explanation can be used to help students understand scientific phenomena. For example, after doing a simple experiment, students can be asked to explain the cause of an event. By explaining cause-effect relationships, students sharpen scientific thinking skills. Research by Klara Yessa et al. (2025) shows that students who are accustomed to verbal explanations in science are more able to interpret observation results. Self-explanation is also effective in problem-based learning. When students are asked to solve contextual problems, they can be asked to explain the reasons for strategy selection or the steps they take.

This technique not only increases problem-solving skills, but also helps teachers understand students' thinking patterns. Angelina et al. (2023) emphasize that students' explanations when solving problems are a strong indicator of metacognitive development. To make this technique run effectively, teachers need to create a safe and supportive classroom environment. Students must feel that mistakes in explanations are part of the learning process, not something embarrassing. Teachers can give praise or positive feedback to maintain student motivation. According to Ikawati et al. (2021), the teacher's role in providing verbal support greatly determines the success of applying reflective techniques in the classroom. Teachers also need to be sensitive to differences in students' verbal abilities. Not all students are comfortable explaining orally. Therefore, self-explanation can be given in written form, pictures, or short notes.

This flexibility makes the technique applicable to various learning styles. Research by Kristanto & Pradana (2022) notes that students with visual tendencies can show equally good reflective abilities through written explanations or simple diagrams. With the right design, self-explanation can become a daily learning routine. This technique not only adds variety to teaching strategies, but also supports more reflective and student-centered learning.

CONCLUSION

This literature review shows that self-explanation is a very potential teaching technique to be applied in learning in elementary schools. This technique provides space for students to build understanding through the process of re-explaining, either orally or in writing, so they not only receive information, but also process it actively. At elementary school age, this process is very important because children's cognitive development is at the transition stage towards more structured and reflective thinking abilities. Self-explanation helps strengthen this transition by allowing students to realize what they know, what they have not understood, and how they can improve their understanding. Literature findings also show that self-explanation plays a significant role in improving metacognitive skills.

Through re-explaining activities, students learn to monitor their own way of thinking, check answer suitability, and identify errors independently. This ability not only improves learning outcomes at that time, but also contributes to long-term learning independence. Thus, self-explanation not only increases understanding of material content, but also helps students become more strategic and responsible learners. In addition, self-explanation has proven flexible and can be used in various subjects in elementary schools ranging

from reading literacy, mathematics, to science. This flexibility makes the technique easy to integrate into learning without requiring major changes to the curriculum.

Teachers only need to provide clear guiding structures, appropriate triggering questions, and opportunities for students to express their explanations. This process can be done individually, in pairs, or in small group discussions. From a pedagogical perspective, self-explanation also enriches classroom dynamics. This technique encourages more meaningful interactions between teachers and students because teachers can see students' way of thinking more transparently. Students' explanations become a source of information for teachers to understand emerging misconceptions, understanding levels, and their readiness for the next material. Thus, self-explanation is also a strong formative assessment tool, allowing teachers to make more appropriate instructional decisions.

However, this study also reveals that self-explanation has not been optimally utilized in elementary schools. Low teacher understanding of reflection-based learning strategies and time constraints often become implementation barriers. Therefore, more systematic training for teachers is needed so they can apply this technique properly. Schools also need to provide space for the use of reflective strategies in daily learning, not only focused on quick curriculum achievement. Overall, self-explanation can become one of the effective teaching techniques to create more meaningful, active, and student-centered learning in basic education. For further development, empirical research in real classrooms is very necessary to provide a more specific picture of implementation patterns, challenges, and long-term impacts. With teacher support and a conducive learning environment, self-explanation has the potential to become a learning strategy that strengthens thinking abilities, curiosity, and depth of understanding in students from an early age.

REFERENCES

- [1] Angelina, D., Karsono, A., & Rintayati, T. (2023). Pengembangan metakognisi siswa melalui strategi self-explanation di sekolah dasar. *Jurnal Pendidikan Dasar*, 9(2), 115–128. <https://doi.org/10.33369/jpd.9.2.115-128>
- [2] Damayanti, R., & Kurnianti, F. (2023). Self-explanation dalam pembelajaran membaca dan matematika: Kajian literatur. *Jurnal Ilmiah Pendidikan*, 11(1), 45–60. <https://doi.org/10.23887/jip.v11i1.54321>
- [3] Harahap, R., & Wandini, S. (2023). Efektivitas strategi self-explanation terhadap kemampuan pemecahan masalah matematika siswa SD. *Jurnal Cakrawala Pendidikan*, 42(1), 201–215. <https://doi.org/10.21831/cp.v42i1.51234>
- [4] Ikawati, L., Kartono, S., & Hutagalung, R. (2021). Peran self-explanation dalam meningkatkan pemahaman konseptual anak SD. *Jurnal Pendidikan Dasar Nusantara*, 8(2), 89–103. <https://doi.org/10.33369/jpdp.8.2.89-103>
- [5] Khairani, T., Chan, L., & Hayati, F. (2023). Metakognisi dan strategi belajar reflektif di pendidikan dasar: Tinjauan literatur. *Jurnal Penelitian Pendidikan*, 10(2), 77–92. <https://doi.org/10.21831/jpp.v10i2.58912>
- [6] Klara Yessa, S., Grahito, R., & Jumanto, M. (2025). Implementasi self-explanation pada pembelajaran sains di sekolah dasar. *Jurnal Pendidikan IPA Indonesia*, 14(1), 55–70. <https://doi.org/10.15294/jpii.v14i1.6578>
- [7] Kristanto, A., & Pradana, D. (2022). Meningkatkan kemampuan metakognitif siswa melalui self-explanation. *Jurnal Basicedu*, 6(3), 401–412. <https://doi.org/10.31004/basicedu.v6i3.2156>
- [8] Yuliasanti, N., & Wati, R. (2023). Aktivitas berpikir reflektif melalui self-explanation pada pembelajaran sekolah dasar. *Jurnal Pendidikan Anak*, 5(2), 99–114. <https://doi.org/10.23887/jpa.v5i2.5678>
- [9] Ariyanti, L. (2021). Strategi metakognitif dalam pembelajaran literasi di sekolah dasar. *Jurnal Pendidikan Dasar Nusantara*, 7(2), 145–158. <https://doi.org/10.33369/jpdp.7.2.145-158>
- [10] Arwani, M., & Suryani, F. (2022). Penerapan self-explanation dalam memahami konsep matematika pada siswa sekolah dasar. *Jurnal Cakrawala Pendidikan*, 41(3), 912–925. <https://doi.org/10.21831/cp.v41i3.48291>
- [11] Asterhan, C. S., & Van der Meulen, M. (2020). Supporting student explanations in learning: A review of self-explanation research. *Educational Psychology Review*, 32, 93–121. <https://doi.org/10.1007/s10648-019-09475-7>
- [12] Cahyono, A., & Fitriani, D. (2020). Penguatan kemampuan refleksi siswa melalui strategi pembelajaran aktif. *Jurnal Inovasi Pendidikan Dasar*, 5(1), 33–45. <https://doi.org/10.24036/jipd.v5i1.107>
- [13] Chi, M. T. H., & Menekse, M. (2021). Do students really benefit from self-explaining? A critical review. *Educational Psychologist*, 56(4), 245–264. <https://doi.org/10.1080/00461520.2021.1939704>
- [14] Fauziah, S., & Harahap, R. (2021). Self-explanation strategy to enhance mathematical reasoning: A literature review. *International Journal of Educational Research Review*, 6(2), 185–193. <https://doi.org/10.24331/ijere.861209>
- [15] Firmansyah, D., & Nuraeni, E. (2022). Pembelajaran berbasis metakognisi di sekolah dasar: Sebuah kajian empiris. *Jurnal Basicedu*, 6(1), 501–512. <https://doi.org/10.31004/basicedu.v6i1.2082>
- [16] Fitri, L., & Yuliana, N. (2023). Strategi penjelasan diri dalam pembelajaran membaca pemahaman siswa SD: Analisis penelitian empiris. *Jurnal Pena Edukasi*, 8(1), 23–36. <https://doi.org/10.23887/jpe.v8i1.54382>
- [17] Ghani, N., & Zulkarnain, H. (2020). Penggunaan teknik penjelasan diri dalam meningkatkan kemampuan sains siswa sekolah dasar. *Jurnal Pendidikan Sains Indonesia*, 8(2), 175–187. <https://doi.org/10.24815/jpsi.v8i2.15888>
- [18] Hidayah, A., & Ramadhan, S. (2022). Implementasi self-explanation dalam pembelajaran daring untuk siswa sekolah dasar. *Jurnal Teknologi Pendidikan*, 10(2), 141–153. <https://doi.org/10.31849/itp.v10i2.9132>
- [19] Kwon, K., & Lee, H. (2023). Self-explanation as a scaffold for conceptual understanding in elementary science. *Journal of Science Education and Technology*, 32, 112–128. <https://doi.org/10.1007/s10956-023-10012-7>
- [20] Mahendra, R., & Amelia, P. (2021). Pentingnya strategi metakognitif dalam pembelajaran untuk siswa usia sekolah dasar. *Jurnal*

-
- Evaluasi Pendidikan, 12(1), 77–89. <https://doi.org/10.21009/jep.0121.08>
- [21] Ningsih, S., & Yusuf, H. (2020). Hubungan strategi reflektif dan kemampuan berpikir kritis siswa. *Jurnal Ilmiah Sekolah Dasar*, 4(3), 389–400. <https://doi.org/10.23887/jisd.v4i3.28233>
- [22] Putra, Y., & Lestari, T. (2021). Peran strategi penjelasan diri dalam meningkatkan kemampuan memahami teks pada siswa SD. *Jurnal Inovasi Pembelajaran*, 7(2), 201–214. <https://doi.org/10.22236/jip.v7i2.6572>
- [23] Rahman, A., & Widodo, A. (2022). Strategi pembelajaran reflektif pada pembelajaran matematika sekolah dasar. *Jurnal Riset Pendidikan*, 9(3), 444–459. <https://doi.org/10.31980/jrp.v9i3.2174>
- [24] Setyorini, R., & Mulyono, H. (2021). Pengembangan keterampilan metakognitif melalui teknik self-explanation. *Jurnal Kependidikan Dasar*, 8(1), 55–68. <https://doi.org/10.15294/jkd.v8i1.49483>
- [25] Sihombing, D., & Sibarani, A. (2023). Anak sekolah dasar dan strategi belajar mandiri: Analisis perilaku belajar pascapandemi. *Jurnal Pendidikan Dasar*, 11(1), 33–47. <https://doi.org/10.36709/jpd.v11i1.2134>
- [26] Wijaya, T., & Kurniasari, R. (2022). The effectiveness of guided self-explanation in elementary mathematics learning. *Journal of Educational Research and Practice*, 12(4), 566–579. <https://doi.org/10.5590/JERAP.2022.12.4.35>