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Implementation of the SAVI learning model in improving students' critical thinking abilities in elementary schools

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Abstract: Critical thinking skills are important competencies that need to be developed, especially at the elementary school level. However, developing these skills remains a challenge in mathematics learning. The purpose of this study is to examine the effect of the SAVI learning model on the development of primary school students' critical thinking skills. The SAVI (Somatic, Auditory, Visual, Intellectual) learning model is an approach that involves physical activity, listening, visual observation, and intellectual engagement in the learning process. This study used a quantitative approach with a quasi-experimental nonequivalent control group design. The subjects consisted of two classes: an experimental class treated with the SAVI model and a control class using conventional learning. The instruments were a pretest and a posttest. Data were analyzed using the Shapiro-Wilk normality test, Levene's test for homogeneity, and hypothesis testing. Improvement in students' critical thinking skills was measured using n-Gain to determine improvement categories in each class. The results showed that improvements in students' critical thinking skills in both groups were in the moderate range, with n-Gain scores of 0.68 in the experimental class and 0.70 in the control class. Statistical analysis using the Mann–Whitney test indicated no significant difference between the two groups ($p > 0.05$), with a very small effect size ($r = 0.003$). This finding indicates that implementing the SAVI learning model did not yield a greater impact than conventional learning. This result is influenced by several factors, including limited learning time, low student participation, decreased concentration, classroom environment, and students' readiness for higher-order thinking.
Keywords: SAVI learning model; critical thinking skills; mathematics; elementary school

Penerapan model pembelajaran SAVI dalam meningkatkan kemampuan berpikir kritis siswa di sekolah dasar.

Abstrak: Kemampuan berpikir kritis merupakan kompetensi penting yang perlu dikembangkan, terutama di tingkat sekolah dasar. Namun, pengembangan kemampuan ini masih menjadi tantangan dalam pembelajaran matematika. Tujuan penelitian ini adalah untuk menguji pengaruh model pembelajaran SAVI terhadap pengembangan kemampuan berpikir kritis siswa sekolah dasar. Model pembelajaran SAVI (Somatik, Auditori, Visual, Intelektual) adalah pendekatan yang melibatkan aktivitas fisik, mendengarkan, observasi visual, dan keterlibatan intelektual dalam proses pembelajaran. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kelompok kontrol non-ekuivalen kuasi-eksperimental. Subjek penelitian terdiri dari dua kelas: kelas eksperimen yang diberi model SAVI dan kelas kontrol yang menggunakan pembelajaran konvensional. Instrumen yang digunakan adalah pretest dan posttest. Data dianalisis menggunakan uji normalitas Shapiro-Wilk, uji homogenitas Levene, dan pengujian hipotesis. Peningkatan kemampuan berpikir kritis siswa diukur menggunakan n-Gain untuk menentukan kategori peningkatan di setiap kelas. Hasil penelitian menunjukkan

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bahwa peningkatan kemampuan berpikir kritis siswa di kedua kelompok berada pada kisaran sedang, dengan skor n-Gain sebesar 0,68 di kelas eksperimen dan 0,70 di kelas kontrol. Analisis statistik menggunakan uji Mann-Whitney menunjukkan tidak ada perbedaan signifikan antara kedua kelompok (p > 0,05), dengan ukuran efek yang sangat kecil (r = 0,003). Temuan ini menunjukkan bahwa penerapan model pembelajaran SAVI tidak memberikan dampak yang lebih besar daripada pembelajaran konvensional. Hasil ini dipengaruhi oleh beberapa faktor, termasuk keterbatasan waktu belajar, partisipasi siswa yang rendah, penurunan konsentrasi, lingkungan kelas, dan kesiapan siswa untuk berpikir tingkat tinggi.
Kata kunci: model pembelajaran SAVI; keterampilan berpikir kritis; matematika; sekolah dasar

INTRODUCTION

21st-century skills are currently very important for everyone to adapt to the times (Imawati & Prasaja, 2024). In education, many efforts have been made to develop 21st-century skills (Fitriyah & Ramadani, 2021). These efforts include (1) the use of digital technology in education, (2) the application of project-based learning models, (3) the strengthening of professional learning communities, and (4) ethical digital literacy Rahmaini & Ogylva Chandra (2024). These various efforts emphasize that the role of teachers is no longer merely that of conveyors of material but of learning facilitators who can stimulate students' critical thinking skills in responding to ever-evolving global challenges (Whindayati et al., 2025). Therefore, in this context, the development of 21st-century skills in education does not solely depend on the implementation of various strategies such as digital technology, project-based learning, professional communities, or ethical digital literacy, but prioritizes the transformation of the teacher's role into that of a facilitator capable of activating students' critical thinking in addressing global dynamics.

Students' critical thinking skills are a fundamental issue in mathematics learning at the elementary school level. In the current learning context, students are required not only to understand mathematical concepts procedurally, but also to be skilled in analyzing information, reasoning logically, and solving problems independently. Manurung et al. (2023) argue that critical thinking is the application of cognitive abilities that serves to improve student learning outcomes. Kurniati et al. (2025) add that this ability serves as a foundation in preparing the younger generation to become wise information processors and evaluators. Suhartini et al. (2025) also emphasize that critical thinking skills are crucial in facing the challenges of globalization and Industry 4.0. However, Anggraeni et al. (2022) remind us that this skill cannot be acquired instantly but must be instilled and practiced from an early age. This is in line with Ariadila et al. (2023) who stated that students who have this ability will be better able to master concepts, solve problems in learning, and apply these concepts to real-life situations. Therefore, it can be said that critical thinking is a fundamental competency that is not instantaneous, it must be instilled from an early age, so that students not only master learning concepts but are also able to apply them wisely in real life, especially in facing the challenges of globalization and Industry 4.0.

Although current learning demands mastery of critical thinking skills as a foundation for facing globalization, the reality on the ground shows a still worrying situation. Currently, students' critical thinking skills in Indonesia have not developed optimally. This is reflected in data from the Trends in International Mathematics and Science Study (TIMSS), which shows that Indonesia ranks 72nd out of 77 participating countries. Indonesia scored only 397 points in solving cognitive-level problems related to critical thinking skills. This result is well below the international average of 500 points (Pamungkas et al., 2023). This situation aligns with initial findings from field research. Based on interviews with classroom teachers, students generally simply accept information without questioning the rationale behind it and rarely ask in-depth questions. When solving problems, they rely on examples from teachers and struggle with new situations that require reasoning.

Furthermore, students are not yet able to connect information, analyze problems systematically, and provide logical reasons. When expressing opinions, their answers are generally short and lack clear argumentation. The low levels of students' critical thinking skills in Indonesia are also supported by other research, including Purwaningsih & Harjono (2023), who reported an average score of 56 out of 100. Similar results were also reported by Winarti et al. (2022), who found that students obtained an average score of 55 out of 100 on a critical thinking test, thus falling short of the required completion criterion of 80. This low level of critical thinking skills is also inseparable from the teacher-dominated learning process, leading to a lack of active student engagement.

To address these issues, targeted efforts are needed through the selection of appropriate learning models. This is because the choice of learning model plays a crucial role in developing students' critical thinking skills. An effective model not only delivers material but also encourages active student involvement in the learning process (Anggraeni et al., 2022). This means that learning needs to be designed in a varied and engaging manner. Monotonous learning tends to make students passive, merely acting as recipients of information (Mustamiroh et al., 2023). This can hinder the development of students' critical thinking skills (Firdany, 2022; Susanti et al., 2024).

This situation indicates the need for improvements to learning models that actively engage students and support the development of critical thinking skills. Evaluation of the learning models or methods used by teachers is necessary to ensure that the learning process provides sufficient opportunities for students to participate and actively express their ideas (Sari et al., 2026). Furthermore, this evaluation allows teachers to adapt the learning model to align with student characteristics and needs. Through these adjustments, students are expected to be more actively involved in learning, exploring, and independently constructing knowledge, and collaborating in problem-solving activities, ultimately leading to improved learning outcomes (Pangadongan & Kurniati, 2025). Thus, developing students' critical thinking skills requires not only careful selection but also continuous evaluation of learning models that are engaging, diverse, and responsive to students' needs, shifting the learning paradigm from a teacher-centered approach to a student-centered approach that emphasizes active participation, conceptual exploration, and collaborative learning.

One learning model considered relevant for this purpose is the SAVI learning model, as it integrates somatic, auditory, visual, and intellectual activities into the learning process. This model is considered attractive because it can motivate students to play an active role in class (Sophian et al., 2025). In addition, this model is also able to encourage them to use all their senses through sight, hearing, observation, and thinking so that learning objectives can be achieved more effectively (Sagala et al., 2024). Various activities in the SAVI model, such as expressing thoughts, asking questions, and providing rational justification, make learning more meaningful and student-centered (Rahmawati & Kasriman, 2022). Furthermore, learning will also be more efficient in supporting the development of critical thinking skills (Nurhasanah et al., 2024). Laili (2025) also stated that this model has the potential to improve critical thinking skills, and similar findings were confirmed by (Primadani et al., 2023) and (Purnama & Purwati, 2025), who found a positive impact of the SAVI model on elementary school students' critical thinking skills. Based on the description, the SAVI learning model has consistently been proven to have a positive impact and strong potential as an alternative model in mathematics learning in elementary schools, because it integrates somatic, auditory, visual, and intellectual activities that encourage students to be physically involved, listen actively, observe, and think deeply during the problem-solving process.

Interestingly, amid these numerous positive findings, Nuha et al. (2023) found that implementing the SAVI model did not yield significant differences in students' critical thinking skills compared with conventional learning in elementary schools. These contradictory findings indicate that SAVI's effectiveness is not always guaranteed and may be influenced by certain contextual factors. Therefore, this study aims to analyze in greater depth whether the SAVI learning model has a significant impact on students' critical thinking skills and to identify factors that may contribute to its ineffectiveness in the classroom.

Based on this gap, this study aims to empirically test whether the implementation of the SAVI learning model can significantly improve the critical thinking skills of fifth-grade elementary school students. Therefore, the uniqueness of this study lies in its attempt to verify the effectiveness of the SAVI learning model in elementary mathematics learning in a context where previous findings are still inconsistent, which only tend to emphasize the positive effects of SAVI. This study provides additional empirical evidence by examining whether SAVI actually produces a greater effect than conventional learning in improving students' critical thinking skills. In addition, this study highlights contextual factors that can influence the success of SAVI implementation, so its contribution is not only practical but also conceptual in clarifying the limitations of SAVI's effectiveness in elementary school settings. The results of this study can be a reference for teachers and education practitioners in selecting and implementing more effective learning models, as well as contributing to the development of educational studies, particularly those related to mathematics learning in elementary schools. Furthermore, it has the potential to become a basis for studies that seek to more comprehensively examine the correlation between the SAVI model and critical thinking skills, including various situational factors that contribute to its effectiveness at the elementary school level.

METHOD

The researcher's approach was quantitative because the data obtained were numerical and analyzed using statistical techniques to test the research hypothesis. The quantitative approach was chosen to objectively assess whether applying the SAVI learning model improved students' critical thinking skills. There are four stages in the SAVI learning model: 1) preparation, 2) presentation, 3) practice, and 4) demonstration of results. The research design used was a quasi-experimental nonequivalent control group design.

This study was conducted among fifth-grade students at an elementary school located in Samarinda City. The study population consisted of 104 fifth-grade students divided into four classes, namely classes V.A to V.D, in the 2026 school year. The sampling technique used in this study was purposive sampling. This was because the sample selection was based on specific considerations aligned with the research objectives, such as ensuring a similar number of students, comparable academic ability levels, and the suitability of the instructional materials. The research sample involved two classes: an experimental class that received instruction using the SAVI model and a control class that received conventional instruction. Classes V.A and V.B were selected as the research sample, each comprising 25 students. Additionally, the selection of classes took into account recommendations from the school administration to ensure the research could be conducted effectively without disrupting teaching and learning.

This study used the SAVI learning model as the independent variable and students' critical thinking skills as the dependent variable. The researchers obtained research data through test sheets (pretest and posttest), interviews, and documentation. The test sheet used in this study was a critical-thinking skills test containing five essay questions about flat shapes. The five questions were designed to measure five indicators of critical thinking skills: 1) providing easy-to-understand explanations, 2) developing basic skills, 3) providing conclusions, 4) providing more detailed explanations, and 5) determining effective strategies and methods (Setiana et al., 2021).

To ensure the instrument's quality and alignment with the five established critical thinking indicators, expert validation was conducted. This validation involved three lecturers with expertise in mathematics and one fifth-grade teacher with competencies in language and mathematics. This process aimed to ensure that each question aligned with the critical thinking indicators being measured, used clear language, was systematically structured, and was relevant to the research objectives.

The critical thinking test instrument was analyzed for validity, reliability, discrimination power, and difficulty index before being used in the study. Validity testing was conducted using the Pearson Product-Moment correlation. The analysis showed that the calculated r value for each item exceeded the tabulated r value at the 0.05 significance level. Therefore, all items were declared valid and eligible for use in collecting research data. Next, reliability testing was conducted using Cronbach's Alpha formula. Based on the calculation results, a reliability coefficient of 0.817 was obtained. This value indicates that the test instrument is highly consistent, making it a reliable tool for assessing students' critical thinking skills. In addition, an analysis was also conducted based on the level of difficulty and discriminating power of each item. The results of the difficulty level analysis showed that items 1 and 4 were in the easy category, items 2 and 3 were in the moderate category, while item 5 was in the difficult category. The results of the discrimination analysis show that items 1, 2, and 4 are in the good category, while items 3 and 5 are in the fair category. This indicates that most items can adequately distinguish between students with high and low abilities. Hence, the critical thinking ability test sheet meets the criteria for use as a research instrument.

In general, this research consists of eleven stages, including: (1) a preliminary study was conducted to examine the initial conditions of various problems that arise in elementary school students. After going through an in-depth analysis process, the results showed that one of the identified problems was the low critical thinking skills of students; (2) further identification of specific aspects of the problem of low critical thinking skills of students; (3) determining the population and research sample; (4) designing data collection instruments consisting of critical thinking skills test instruments and interview sheets; (5) compiling learning tools tailored to the learning material to be discussed, namely the perimeter of flat shapes; (6) validating the test sheets as data collection instruments with experts to ensure their suitability before being used in the field; (7) conducting a trial of the instrument on grade 6 students. The data from the trial were then analyzed using validity, reliability, discrimination power, and difficulty index tests to determine the quality of the test items; (8) conducting a pretest in both classes, the experimental class and the control class. The pretest results showed no significant difference in initial critical thinking skills between the two classes. Thus, both classes were declared to have equal initial conditions and were suitable for use as research subjects; (9) implementing the learning application, namely in the experimental class using the SAVI learning model and in the control class using the conventional learning model; (10) the posttest was then given to students in both classes to measure the increase in students' critical thinking skills after being given the treatment; and (11) After the pretest and posttest data were collected, an analysis was carried out to determine the increase in students' critical thinking skills in the class using the SAVI model and conventional learning. The increase was calculated using normalized gain (N-gain) and then compared to determine which class showed greater improvement.

RESULT AND DISCUSSION

As a first step, the researchers conducted a preliminary analysis to ensure that there were no significant differences in initial abilities between the two classes before the learning process. To confirm this, a mean-difference test was conducted on the pretest data from both classes. Before conducting the mean difference test, a normality test (Shapiro-Wilk) and a homogeneity test were first conducted. The results of the normality test for the critical thinking ability pretest are shown in Table 1.

Table 1. Pretest normality test with the Shapiro-Wilk

Learning Model	Sig.	H_0
SAVI	0,002	Reject
Conventional	0,001	Reject

Based on Table 1, the Asymp. Sig. The values for both classes are less than 0.05, so the pretest data are not normally distributed. Because the assumption of normality is violated, parametric tests cannot be used, and the test for equality of students' initial abilities is the nonparametric Mann–Whitney test. The results of the Mann-Whitney test are shown in Table 2.

Table 2. Test results of the difference in the average pretest data

	Sig.	H_0
Asymp. Sig. (2-tailed)	0.898	Accepted

The Mann-Whitney test yields a p-value of 0.898, which exceeds the significance threshold of α = 0.05. Therefore, the null hypothesis (H_0) is accepted, meaning that there is no statistically significant difference between the two groups. This indicates that the initial critical thinking abilities of students in the experimental and control classes were comparable before any treatment was administered.

After ensuring that the initial abilities of both classes were equal, the learning treatment was administered. The experimental class used the SAVI model, while the control class used the conventional model. The SAVI learning model was implemented in three meetings, focusing on the topic of the perimeter of plane figures. The learning process followed the four stages of the SAVI model: 1) preparation, 2) delivery, 3) training, and 4) presentation of results. In the preparation phase, students are introduced to the learning objectives and motivated through contextual questions related to everyday life situations. In this phase, the teacher will invite students to prepare for learning activities, such as arranging seating and preparing stationery to be used in the lesson. Then, in the delivery phase, the teacher begins interacting with students by asking about various plane figures in the surrounding environment and continues explaining the material on the perimeters of plane figures. The material is delivered using audiovisual aids such as PowerPoint presentations, learning videos, and oral explanations to address both visual and auditory needs. Then, in the training phase, students engage in direct learning activities, such as working on individual problems and conducting group problem-solving discussions, which encourage both somatic and intellectual engagement. In this phase, the group assignments involve observing plane figures in the environment outside the school, followed by activities to measure and calculate their perimeters. Finally, in the presentation phase, students are asked to present the results of their problem-solving to the class with their group members.

Meanwhile, in the control class, there were differences in the delivery and training stages. In the delivery stage, all material was delivered with complete explanations from the teacher. Then, in the training stage, students were given similar group assignments: observing various plane figures around them, then measuring and calculating the perimeters of the figures they found. However, the scope of the observations was limited to the classroom environment. Learning activities in the experimental class and control class can be seen in Figure 1 and Figure 2.

Figure 1. Learning Delivery in the Experimental Class

Figure 2. Learning Delivery in the Control Class

The SAVI learning model has been implemented according to the established syntax and stages, and has followed the plan outlined in the teaching module. However, several obstacles were encountered during its implementation, such as low student participation in discussions and poor student concentration during the learning process. These conditions also impacted the optimal implementation of each stage of the SAVI model.

After the learning process is completed, the pretest and posttest data are collected, and then the next step is to calculate the mean of the N-gain score. In terms of students' critical thinking skills, both the experimental and control classes showed improvement from pretest to posttest scores.

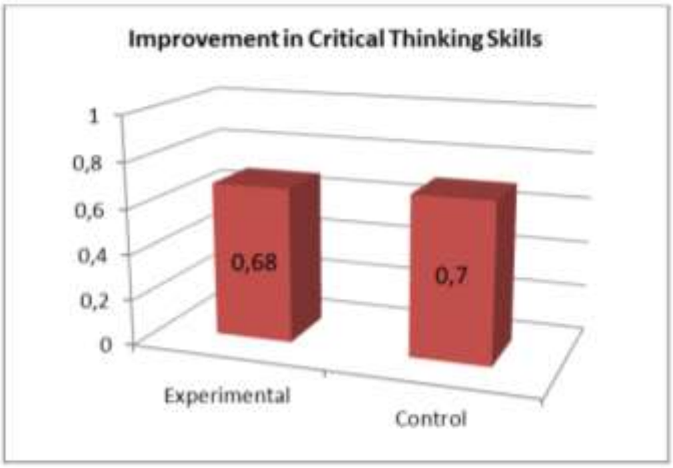

Figure 3. The Improvement in Critical Thinking Skills In the Experimental and Control Classes

Figure 3 shows that the improvement in the control class was slightly greater than in the experimental class. The analysis shows that the average n-Gain score increased by 0.68 for the experimental class and by 0.70 for the control class. It can be observed that both classes experienced moderate improvements in students' critical thinking skills. However, the control class achieved a slightly higher average n-Gain score compared to the experimental class.

To determine the difference in critical thinking skills between the experimental and control classes, simply comparing the mean (average) N-gain scores is not sufficient. Further statistical testing is needed to determine whether the difference is statistically significant or simply due to chance. Therefore, a test for differences in the average N-gain. Before conducting the mean difference test, a normality test (Shapiro-Wilk) and a homogeneity test were first conducted. The results of the normality test for the N-gain data are shown in Table 3.

Table 3. Normality Test on n-Gain

Learning Model	Sig.	H_0
SAVI	0,134	Accepted
Conventional	0,02	Reject

Based on Table 3, the Sig. The value for the class that received learning using the SAVI model is greater than 0.05. This means that the data is normally distributed. Meanwhile, in the class that received conventional learning, the value is less than 0.05. This means that the data is not normally distributed. Because one of the classes does not meet the assumption of normality, the analysis of the difference in critical thinking skills between the two classes cannot use a parametric test. Thus, the test was continued using the Mann–Whitney

nonparametric test. The test results are presented in Table 4.

Table 4. Mann-Whitney Test on *n-Gain*

	Sig.	H_0
Asymp. Sig. (2-tailed)	0,984	Accepted

Table 4 shows an Asymp. Sig. (2-tailed) value of 0.984, which is greater than 0.05. Therefore, H_0 is accepted, indicating that there is no significant difference in the improvement of critical thinking skills between students who received SAVI-based instruction and those who received conventional instruction.

Furthermore, to test the significance of the difference in critical thinking skills between the experimental and control classes, the r value obtained from the Mann-Whitney test was used. The calculation showed an r value of 0.003, indicating that the difference in improvement in critical thinking skills between the two groups was very small. This may be because conventional learning is more aligned with students' learning habits and features a more structured presentation of material, making it easier for them to understand.

Upon analysis, these findings align with previous research by Nuha et al. (2023), which reported a two-tailed significance level > 0.05 (specifically 0.903), indicating no effect of the SAVI learning model on students' critical thinking skills, especially when learning conditions are not optimal. This means the finding contradicts several previous studies reporting the effectiveness of the SAVI model in improving learning outcomes and critical thinking skills. The difference between theoretical expectations and this study's findings indicates that the effectiveness of the SAVI model is highly dependent on the conditions under which it is implemented.

Researchers found factors that can influence the results of this study, namely: first, limited learning time. Muhammad et al. (2020) stated that learning time is one of the most important factors determining whether the learning process yields optimal results. When implementing the SAVI model in the experimental class, the learning time did not align with the plan outlined in the teaching module. The learning time should have been 90 minutes, but in reality, it was only 60 minutes. This was because the class schedule did not match the available lesson schedule. The written lesson schedule stated that class would start at 07:15 WITA, but in reality, the bell only rang at 07:30 WITA. In the experimental class, this was exacerbated by the students' habit of arriving late to school. When the bell rang, many students in the experimental class had not yet entered the classroom, so the research only began at 07:45 WITA. Meanwhile, in the conventional learning class, although the lesson started at 07:30 WITA, all students were already in the classroom so that the lesson could begin immediately.

Restalillah (2025) states that limited implementation time can affect research results. If learning is conducted with sufficient time, students will easily understand and master the material presented, leading to improved learning outcomes (Pratiwi et al., 2024). This is emphasized by Zahra et al. (2023), who note that if the learning time is appropriate and sufficient, students' skills and abilities will increase. Therefore, effective and appropriate implementation of learning has a very positive impact on students' understanding, mastery of the material, learning outcomes, and skills and abilities.

The second factor was the lack of student engagement in learning with the SAVI model. In the experimental class, when the material on the perimeter of flat shapes was explained, several students did not pay attention. Some students were chatting, busy with their stationery, or just looking out the classroom window. Student activity in the experimental class was also low. When the teacher asked questions, most students remained silent, waiting for their friends to answer. When the teacher instructed the students in that class to come to the front and work on the assigned questions, most looked anxious and afraid of giving the wrong answer. This was in contrast to the conditions in the class that received conventional learning. The students in that class paid close attention to the lesson. They also showed enthusiasm during the learning activities. Students responded to every question the teacher asked and, when asked to come to the front of the class, bravely answered. This finding is consistent with previous studies indicating that low student participation remains a major challenge in classroom learning. Nurhasanah et al. (2024) reported that students who actively contribute to the learning process can improve learning outcomes. Similarly, Rahmawati & Kasriman (2022) found that low student participation can reduce the effectiveness of SAVI-based instruction.

Arlianti & Pangestika (2021) states that learning is optimal when students are actively engaged. Students who actively participate in learning generally demonstrate a deeper understanding because they are directly involved in the thinking process and integrate new insights with relevant experiences (Anggraini et al., 2025). However, in reality, even in experimental classes that apply the SAVI learning model, many students still do not participate actively. This is because students lack confidence, which ultimately leads to anxiety, nervousness, and fear when participating in learning (Yuniar, 2021).

Furthermore, the third factor that influences learning is the decline in student concentration during the learning process. Concentration during learning is one of the main challenges students face (Abubakar et al., 2024). In any learning situation, students must concentrate fully on their studies (Mardiana et al., 2024). If someone has difficulty concentrating, the learning process will not be optimal (Riinawati, 2021). In fact, during learning activities in the experimental class, students tended to experience a decline in attention and concentration. Interviews with five students in the experimental class revealed that they felt tired because the learning activities required them to think deeply. They wanted to finish the learning activity quickly and take a break, so their concentration on the lesson decreased. This contrasted with the learning activities in the control class. Based on observations during the learning process, students in the control class tended to have a relatively stable level of concentration from the beginning to the end of the lesson.

Then, the fourth factor is influenced by the environment. The educational environment is one of the external factors that plays a crucial role in the success of the learning process (Kautsar & Nirmalasari, 2025). This causes distractions from outside the classroom, such as other classes studying outside the room. This situation also causes students to lose focus on their learning. Meanwhile, in the control class, the classroom is located midway between two other classrooms. Hence, the learning environment is relatively more conducive and less affected by disturbances outside the classroom. Sofiyah et al. (2025) stated that a positive school environment can foster students' enthusiasm for learning. This statement is also supported by Ritonga et al. (2025), who stated that a conducive learning environment enables students to be fully involved in learning activities, thereby improving learning outcomes.

Finally, the last factor is students' readiness to engage in learning that requires higher-order thinking skills. During the experimental class, students were still accustomed to teacher-centered learning, where information was conveyed directly by the teacher. This affected independent exploration. When given questions requiring deeper analysis and reasoning, some students tended to wait for the teacher's directions or explanations; they did not take the initiative to solve the problems themselves. This condition shows that the process of adapting to learning that requires critical thinking takes time and practice. This is different from the learning activities in the control class. When students in that class were given instructions to work on problems requiring deeper analysis and reasoning, they immediately worked on them carefully and effectively. They took the initiative themselves and tried to solve the problems they faced.

Cahyaningtyas et al. (2024) state that when students enter a new learning environment and must think critically, they require time to adjust. This is also supported by the statement of Arifin et al. (2025) that adapting to new learning cannot occur instantly, so at the learning stage, students need to adjust their mindset. This is because adjustment enables students to achieve success in learning (Sutyaningsih et al., 2025). In other words, students need time to adjust when entering a new learning environment or facing the demands of critical thinking, because this adjustment is a crucial factor in students' success in learning.

The findings of this study indicate that SAVI does not always produce a higher impact than conventional learning. This result differs from (Laili, 2025; Primadani et al., 2023; Purnama & Purwati, 2025), who reported a positive effect of SAVI on critical thinking skills, but is consistent with Nuha et al. (2023) who also found that SAVI did not provide a significant difference compared to conventional learning. This difference in results indicates that the effectiveness of SAVI is strongly influenced by implementation conditions, particularly time constraints, low student engagement, and student readiness to face higher-order thinking tasks. Thus, the results of this study remain important because they demonstrate that the success of SAVI is not automatic, but rather contextual.

CONCLUSION

This study shows that the SAVI model has no greater impact than conventional learning in improving elementary school students' critical thinking skills. Although both classes experienced moderate improvement, the difference was not statistically significant. This finding suggests that the effectiveness of SAVI is highly dependent on the learning implementation conditions, specifically time, student participation, concentration, the learning environment, and students' readiness for higher-order thinking demands. Therefore, SAVI implementation needs to be accompanied by more supportive classroom management and learning strategies for optimal results.

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