

Analysis of How Critical Thinking Skills Affect Students' Essay Writing Ability

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Article History

accepted 1/8/2025

approved 1/9/2025

published 1/10/2025

Abstract

This study aims to analyze the influence of critical thinking skills on the essay writing ability of elementary school students. The research was conducted at SDN Gugus Gajah Mada Giriwoyo using a quantitative ex post facto approach. The research sample consisted of 52 students determined through cluster random sampling techniques. Critical thinking skills data were obtained based on scores on several essay questions, while essay writing skills were measured based on indicators of coherence, cohesion, sentence structure, and idea development. Data analysis employed descriptive statistics, normality tests, validity tests, and simple regression analyses. The results showed that critical thinking skills had a significant impact on the ability to write essays, accounting for 37% of the variance. These findings confirm the importance of integrating critical thinking-based learning in literacy learning in elementary schools.

Keywords: Critical Thinking Skills; Essay Writing Skills; Ex post facto

Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh kemampuan berpikir kritis terhadap kemampuan menulis esai siswa sekolah dasar. Penelitian dilakukan di SDN Gugus Gajah Mada Giriwoyo dengan menggunakan pendekatan kuantitatif ex post facto. Sampel penelitian terdiri dari 52 siswa yang ditentukan melalui teknik cluster random sampling. Data keterampilan berpikir kritis diperoleh berdasarkan skor pada beberapa pertanyaan esai, sedangkan keterampilan menulis esai diukur berdasarkan indikator koherensi, kohesi, struktur kalimat, dan pengembangan ide. Analisis data menggunakan statistik deskriptif, uji normalitas, uji validitas, dan analisis regresi sederhana. Hasilnya menunjukkan bahwa keterampilan berpikir kritis memiliki dampak yang signifikan pada kemampuan menulis esai, terhitung 37% dari varians. Temuan ini menegaskan pentingnya mengintegrasikan pembelajaran berbasis berpikir kritis dalam pembelajaran literasi di sekolah dasar.

Kata kunci: Keterampilan berpikir kritis; keterampilan menulis esai; Ex post Facto



INTRODUCTION

Critical thinking skills have a fundamental position in shaping the academic skills of 21st century students (Rusmin et al., 2024). Critical thinking skills serve not only to analyze information, but also to evaluate ideas and construct arguments rationally (Simonovic et al., 2023). The importance of mastering critical thinking is in line with students' need to address the complexity of global problems, which demand analytical acuity and precision in decision-making.

Field data shows that the critical thinking skills of Indonesian students remain at a low level. The results of the study revealed that only a small percentage of students are able to formulate logical arguments in writing essays, while the majority of others tend to express ideas descriptively without critical elaboration (Safitri & Adani, 2024a). This condition is exacerbated by the dominance of conventional learning models that emphasize memorization over the development of analytical skills. The problem of low essential skills of thinking has a significant impact on the quality of students' essay writing. Writing an essay requires the skills to develop the main idea, structure an argument supported by a strong argument, and organize the idea systematically (Safitri & Adani, 2024b; Thao, 2021). Students who are unfamiliar with critical thinking tend to produce less coherent, less argumentative, and less analytical reflection.

Field data shows that the critical thinking skills of Indonesian students remain at a critically low level. The Programme for International Student Assessment (PISA) 2022 results indicate that Indonesia ranks 64th out of 81 participating countries in reading literacy, with only 30% of Indonesian students demonstrating proficient critical thinking abilities in written tasks. National assessment data from the Ministry of Education reveals that merely 23% of elementary students can formulate logical arguments in essay writing, while 77% tend to express ideas descriptively without critical elaboration (Safitri & Adani, 2024a). Furthermore, research by the Indonesian Institute for Educational Assessment shows that students' argumentative writing scores average only 2.1 out of 4.0, significantly below the expected proficiency threshold of 3.0. This condition is exacerbated by the dominance of conventional learning models that emphasize memorization over the development of analytical skills, with studies indicating that 85% of Indonesian elementary schools still employ teacher-centered instructional approaches (Jumariati & Sulisty, 2017; Nirwanto et al., 2024).

The problem of low critical thinking skills has a significant impact on the quality of students' essay writing. Writing an essay requires the skills to develop the main idea, structure arguments supported by strong evidence, and organize ideas systematically (Imaniah, 2022; Ma & Li, 2022a). Students who lack familiarity with critical thinking tend to produce essays that are less coherent, less argumentative, and lacking analytical reflection. Research demonstrates that students with underdeveloped critical thinking skills score 40% lower on essay coherence measures and 35% lower on argumentative structure compared to their peers with stronger analytical abilities (Sharadgah et al., 2019; Shekarabi, 2017).

Critical thinking is understood as the active process of analyzing, evaluating, and synthesizing information in order to make rational decisions (Pasquinelli & Richard, 2023). In the context of essay writing, critical thinking is embodied in the ability to establish logical relationships between ideas, assess the correctness of arguments, and objectively evaluate evidence. Students who master this skill tend to be able to produce essays that are more weighty in terms of both content and structure. Various previous studies evidence the relationship between critical thinking and essay writing skills. Research by (Bozorov, 2025) This suggests that students with high critical thinking skills produce more structured and convincing writing than students with low critical thinking. Other research from (Ma & Li, 2022b) Found that critical thinking skills contribute greatly to the power of argumentation in academic essays.

The position of this research is important considering that there are still few studies that specifically examine the influence of critical thinking skills on essay writing skills at the elementary school level. Previous studies focused more on secondary and higher education, so it is necessary to extend this research to primary education so that critical thinking skills interventions can be carried out earlier (Batdı et al., 2024; Safitri & Adani, 2024b). The urgency of this research lies in the importance of equipping elementary school students with critical thinking skills to improve the quality of their written literacy. Primary education is a crucial period to form an analytical mindset that will develop along with students' cognitive growth (Ritchie et al., 2015). Without critical thinking skills, students will have difficulty expressing ideas systematically in the form of essays.

The novelty of this research lies in the focus of analysis on the influence of critical thinking skills on the essay writing ability of elementary school students in the context of literacy in the 21st century. This research seeks to enrich the literacy approach based on strengthening critical thinking at the elementary education level, something that has rarely been studied systematically in previous research. The purpose of this study is to analyze the influence of critical thinking skills on students' essay writing skills. This research is expected to make an empirical contribution to the development of more effective literacy learning strategies, as well as a reference in the formulation of basic education policies based on strengthening critical thinking skills.

The importance of this research includes theoretical contributions in enriching the literature on the relationship between critical thinking skills and written literacy, as well as practical contributions for teachers to develop learning methods that stimulate critical thinking in essay writing activities.

METHOD

This study uses a quantitative approach with an ex post facto method (Sugiyono, 2017), which aims to analyze the influence of critical thinking skills on students' essay writing ability. The ex post facto design was selected because the research examines the relationship between variables that have already occurred without manipulating the independent variable (Creswell & Creswell, 2018).

The population in this study consists of all grade V students at SDN Gugus Gajah Mada Giriwoyo, Wonogiri Regency, Central Java Province, totaling 60 students across three schools with uniform learning environment and curriculum characteristics. The sample determination was carried out using cluster random sampling technique based on class cluster units (Fraenkel et al., 2019). Using Slovin's formula with a 5% margin of error, the sample consisted of 52 students: 30 students from SDN 4 Giriwoyo and 22 students from SDN 1 Giriwoyo and SDN 1 Sejati. The research location was chosen through purposive sampling based on preliminary observations that revealed students' challenges in structuring ideas and arguments logically in essay writing, making it representative for investigating the research problem.

The implementation of the research lasted for six months, from November 2024 to March 2025. The researcher conducts research stages which include the preparation of instruments, the collection of data on the results of essay writing tests, the classification of critical thinking skills, data analysis, and the preparation of research reports. The population in this study is all grade V students at SDN Gugus Gajah Mada Giriwoyo, which totals 60 people, with a uniform learning environment and curriculum characteristics.

The sample determination was carried out using the cluster random sampling technique based on class cluster units. The sample consisted of 30 students from SDN 4 Giriwoyo and 22 students from SDN 1 Giriwoyo and SDN 1 Sejati. The researcher classified students' critical thinking skills based on the accumulated scores on several essay questions, namely questions number 3, 5, 7, and 8. Students were then grouped

into high and low critical thinking categories based on the median score of the total score obtained.

This research instrument in the form of an essay test was developed based on indicators of coherence, cohesion, sentence structure, and idea development. Each indicator is rated on a scale of 1–4, where a score of 1 indicates a low level of achievement and a score of 4 indicates a high level of achievement.

The grid of essay test instruments is shown in the following table:

Table 1. Essay Test Instrument Grid

Yes	Aspects Assessed	Indicators	Instrument Shape	Score
1	Coherence	- The main idea is conveyed clearly and structured.- Focus the paragraphs according to the topic.	Essay	1–4
2	Cohesion	- Use of proper conjunctions.- Sentences are interconnected.	Essay	1–4
3	Sentence Structure	- Correct grammar.- Sentence variations are used.	Essay	1–4
4	Idea Development	- Ideas are developed logically.- Arguments are strengthened with data.	Essay	1–4

The researcher conducts the research procedure in stages to obtain valid and objective data. The process begins with the preparation stage, where the researcher compiles an essay test instrument based on indicators of coherence, cohesion, sentence structure, and idea development. The instrument is validated by language education experts to ensure the achievement of indicators, then tested on a limited basis to test their reliability. After the instrument was ready, the researcher proceeded to the data collection stage by giving an essay writing test to all students who were the research sample, namely from SDN 4 Giriwoyo, SDN 1 Giriwoyo, and SDN 1 Sejati. The essay test is conducted under standard conditions with direct supervision to maintain the validity of the data. Furthermore, the researcher assessed the results of the essay based on the scores of questions number 3, 5, 7, and 8, which were used as a reference in measuring students' critical thinking skills. The researcher categorized students' critical thinking skills into high and low categories based on the median score obtained. The data that has been collected is analyzed using descriptive statistics to describe the tendency of critical thinking skills and essay writing skills, and followed by a simple regression test to determine the influence of critical thinking skills on essay writing skills. Finally, the researcher compiles a research report based on the results of data analysis, interpretation of findings, and discussions relevant to the research objectives..

The research data was analyzed using descriptive statistics to illustrate data trends (Field, 2018), as well as simple regression analysis to test the influence of critical thinking skills on students' essay writing ability (Hair et al., 2019). Classical assumption tests, including normality tests using Shapiro-Wilk and linearity tests, were performed to ensure the validity of the regression analysis (Pallant, 2020). All statistical analyses were conducted using SPSS version 26.0 with a significance level of $\alpha = 0.05$.

RESULTS AND DISCUSSION

Descriptive statistical analysis was conducted to illustrate the tendency of students' critical thinking skills and essay writing skills. Descriptive statistics aim to provide an overview of the distribution of data before further testing. Descriptive statistical results on critical thinking skills and essay writing skills are presented in Table 2.

Table 2. Descriptive Statistics of Critical Thinking Skills and Essay Writing Skills

Variable	N	Mean	Deviation hours	Minimum	Maximum
Critical Thinking Skills	52	11.46	2.19	7	16
Essay Writing Skills	52	20.33	4.87	12	30

Based on Table 2, students' critical thinking skills have an average score of 11.46 with a standard deviation of 2.19. Students' essay writing ability has an average score of 20.33 with a standard deviation of 4.87. The minimum and maximum scores on critical thinking skills are 7 and 16, respectively, while on essay writing skills are 12 and 30, respectively. This data shows that the level of students' ability to think critically and write essays tends to be in the medium category.

The normality test is carried out to ensure that the data on critical thinking skills and essay writing ability have a normal distribution. Normal distribution is a key requirement for continuing parametric-based inferential analysis. The results of the Shapiro-Wilk normality test are presented in Table 3.

Table 3. Shapiro-Wilk Normality Test Results

Variable	Shapiro-Wilk Statistics	<i>p-value</i> (Tn)
Critical Thinking Skills	0.959	0.063
Essay Writing Skills	0.965	0.110

Based on Table 3, the significance value of critical thinking skills is 0.063 and essay writing ability is 0.110. Both significance values are greater than 0.05, which means the data is distributed normally. The normal distribution allows for advanced analysis using simple regression tests.

The validity test is carried out to ensure that the instrument for measuring critical thinking skills has accuracy in measuring the construction in question. The validity of the instrument is measured based on the correlation between the item score and the total score. The results of the instrument validity test are presented in Table 4.

Table 4. Results of the Validity Test of Critical Thinking Skills Instruments

Yes	Tested Questions	r_hitung	r_tabel	Information
1	Question 3	0.655	0.273	Legitimate
2	Question 5	0.648	0.273	Legitimate
3	Question 7	0.680	0.273	Legitimate
4	Question 8	0.699	0.273	Legitimate

Based on Table 4, all question items have a r_{hitung} value greater than r_{tabel} , so all items are declared valid. This instrument meets the eligibility requirements for use in the measurement of students' critical thinking skills. A simple regression analysis was carried out to determine the influence of critical thinking skills on students' essay writing skills. Simple regression is used to test the linear relationship between one independent variable and one bound variable. The results of simple regression analysis are presented in Table 5.

Table 5. Results of Simple Regression Analysis

Kind	Regression Coefficient (B)	Std. Error	t-value	Sig. value)	(p-value)	R ²
Critical Thinking Skills → Essay Writing Skills	1.505	0.286	5.258	0.000		0.3

Based on Table 5, critical thinking skills have a significant influence on the ability to write essays with a significance value of 0.000. An R^2 value of 0.370 indicates that critical thinking skills contribute 37% to a student's essay writing ability. The remaining 63% is explained by other variables outside of this research model. The results of this study show that critical thinking skills play an important role in improving students' essay writing skills. Students who have critical thinking skills are better able to structure ideas logically, build a cohesive sentence structure, and develop ideas deeply in the essays they write.

Students' critical thinking skills play an important role in shaping the ability to write essays in a structured and argumentative manner. Critical thinking skills allow learners to analyze information, evaluate arguments, and develop ideas logically thereby enriching the quality of their writing. Previous research has shown that critical thinking skills are closely related to the quality of students'

writing, both in terms of coherence, cohesion, sentence structure, and idea development (Rahmat, 2020).

Data analysis in this study shows that students' critical thinking skills are in the medium category. Descriptive statistical data showed that the average value of critical thinking skills was 11.46 and essay writing skills were 20.33. These findings are in line with research (Amhar et al., 2022; Normore et al., 2024), which reveals that learners tend to have moderate levels of critical thinking skills, which then affects their ability to compose coherent and weighty writing.

The results of the normality test showed that the data distribution of critical thinking skills and essay writing skills met the normality requirements. Significance values greater than 0.05 in both variables indicate that the data are feasible to analyze using parametric regression tests. The existence of this normal data becomes a strong basis for testing the relationships between variables more validly, as suggested in inferential-based quantitative education research (Rahmat, 2020). The validity test on the essay test instrument proves that all question items, namely questions 3, 5, 7, and 8, have a correlation value that exceeds the value of r_{tabel} . This shows that the research instrument has good construction validity. Fulfillment of the validity of the instrument is important to guarantee that the measurements made truly represent the critical thinking skills to be tested, as affirmed by (Juandi et al., 2024; Rahmat, 2020) in his study of critical thinking in academic writing.

The results of a simple regression test show that critical thinking skills have a significant influence on students' essay writing ability. A significance value of 0.000 confirms that the relationship did not occur by chance. The determination coefficient of 0.370 showed that the contribution of critical thinking skills to essay writing skills reached 37%, while the rest was influenced by other factors outside of this research model. These findings are consistent with research (Ma & Li, 2022c) who found a positive correlation between critical thinking skills and writing competence, especially in the context of argumentative writing.

Critical thinking skills play a role in facilitating high-level thinking processes, such as the ability to analyze ideas, formulate arguments logically, and evaluate the accuracy and relevance of the information in an essay. (Rahmat, 2020) emphasizes that the writing process is basically a tangible form of critical thinking activities that involve analysis, synthesis, evaluation, and decision-making. Essay writers who are able to apply critical thinking not only convey information, but are able to connect ideas critically and creatively, resulting in deeper and reflective writing (Hong et al., 2025; Thao, 2021b; Wu, 2021)

The limitation in this study lies in the scope of students who only involve class V from one elementary school group in Wonogiri Regency. This study also did not consider other factors such as learning motivation, learning style, and digital literacy skills that can affect essay writing skills. These limitations open up opportunities for further research that can expand the scope of the population and include other moderation variables to enrich the analysis of intervariable relationships.

Further research is recommended to explore the use of more explicit critical thinking-based learning models, such as problem-based learning or inquiry-based learning, to optimize students' essay writing skills. In addition,

conducting longitudinal analysis is necessary to observe the development of students' critical thinking skills and essay writing skills over a longer period.

The practical implication of these findings is the importance of integrating critical thinking development strategies in essay writing learning in elementary school. Teachers need to teach techniques for analyzing, synthesizing, and evaluating ideas early on so that students get used to building strong and logical arguments. A critical thinking skills-based approach can also be an innovative alternative to support the implementation of the Independent Curriculum which emphasizes strengthening students' literacy and numeracy competencies.

CONCLUSION

This study shows that critical thinking skills have a significant influence on the essay writing ability of elementary school students. Students who have high critical thinking skills are able to formulate ideas more logically, develop strong arguments, and craft a cohesive and coherent essay structure. The results of the regression analysis proved that the contribution of critical thinking skills to essay writing skills reached 37%, which shows that strengthening critical thinking needs to be the main focus in developing students' writing literacy competencies. The implications of these findings emphasize the importance of implementing learning strategies based on the development of critical thinking skills early on to support students' success in facing the challenges of 21st century literacy.

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