

How emotional intelligence and self-regulated learning shape fifth-grade students' critical thinking?

Fridyana Klise Hermiati*, Puri Selfi Cholifah, and Ni Luh Sakinah Nuraini

Universitas Negeri Malang, Indonesia

*Email: fridyanaklisehermiati@gmail.com

Abstract: This research is aimed at examine the associations that can elucidate the concurrent impact of emotional intelligence and self-regulated learning on critical thinking skills in fifth-grade students. This research uses a quantitative approach with an ex post facto method. The population is 151 fifth graders from SDN Ciketingudik I and SDN Ciketingudik IV, with a final sample of 86 students selected through purposive sampling. Data was collected using questionnaires and tests with multiple regression analysis techniques. The research results show that the obtained F_{count} is $21.606 > F_{\text{table}} 3.106$, and the sig. value is $0.000 < 0.05$ with an R^2 value of 0.342. The data indicates a positive correlation between emotional intelligence, self-regulated learning, and critical thinking abilities among fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV, amounting to 34%.

Keywords: *emotional intelligence, self-regulated learning, critical thinking*

How to cite (APA 7th Style): Hermiati, F. K., Cholifah, P. S., & Nuraini, N. L. S. (2024). How emotional intelligence and self-regulated learning shape fifth-grade students' critical thinking? *Jurnal Kependidikan*, 8(2), 247-260. <http://dx.doi.org/10.21831/jk.v8i2.75064>.

INTRODUCTION

In the 21st century, individuals are required to possess a range of skills known as 21st century skills to confront the increasingly intricate challenges of the current globalized era and beyond. These skills, which include critical thinking abilities, are essential for individuals to thrive and excel in a competitive global environment (Trilling & Fadel, 2009). Critical thinking skills are crucial in 21st century learning because critical thinking can solve complex problems that often arise in everyday life. By thinking critically, a person can develop a deeper understanding of the meaning of a problem or event and effective and appropriate solutions (Nuraini, Cholifah, Mahanani, & Meidin, 2020). Critical thinking allows individuals to see the surface of a problem and dig deeper into a problem. By engaging in critical thinking, it is possible to discover original and efficient conclusions and answers to problems that can be justified. Success in critical thinking, according to Ennis (2011), can be seen in a person's ability to provide basic clarification, basic support, inference, advanced clarification, strategy, and tactics.

Success in critical thinking depends not only on one aspect but is the result of various factors. This is also supported by the cognitive learning theory introduced by Piaget. According to Piaget's theory, the progression of children's cognitive abilities is impacted by six factors, specifically heredity, environment, maturation, education, interest and talent, and freedom (Marinda, 2020). A person's talent in controlling their mood and controlling themselves when facing a problem so that they can empathize and motivate themselves is

emotional intelligence (Goleman, 2019). The concept of emotional intelligence pertains to the ebb and flow of emotions that impact an individual's cognitive processes. A high level of emotional intelligence can enhance children's cognitive abilities, enabling them to effectively learn and adapt to various daily tasks (Lantieri & Goleman, 2008). Furthermore, academic research has established a direct correlation between emotional intelligence and critical thinking abilities in elementary (Nurhayati, Maula, & Nurasiah, 2021), high school (Azizah, Sudiarditha, & Pratama, 2022), and college students (Sk & Halder, 2020). The existing research indicates that emotional intelligence and critical thinking are closely linked, as they are interrelated and mutually influence each other. However, Octaviasari (2029) and Hasanpour, Bagheri, and Heidari (2018) found that emotional intelligence did not significantly influence critical thinking abilities.

According to Piaget, talent and interest influence cognitive development (Marinda, 2020). Interest is an action towards a goal and is an encouragement to do more actively and better (Marinda, 2020). This definition explains that interest is an impulse that directs a person to do certain activities. The encouragement from students to be focused and active in gaining knowledge and skills without depending on other people for decision-making when studying to achieve predetermined learning goals is called self-regulated learning (Atmojo, Ardiansyah, & Lestari, 2024; Patimah & Sumartini, 2022). During self-regulated learning, receiving direct assistance when encountering challenges is essential. Furthermore, self-regulated learning fosters the development of a more analytical, inferential, explanatory, and evaluative thinking pattern, signifying the cultivation of critical thinking skills (Ardiyanto, Chasanah, & Hendrastuti, 2021). Thus, self-regulated learning increases efficiency in acquiring knowledge and improves students' critical thinking skills (Dimas, 2023; Rachamatika et al., 2021).

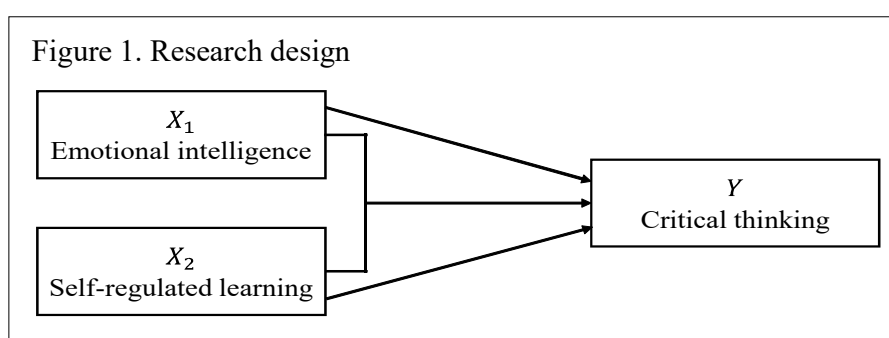
Academics have proven the correlation between self-regulated learning and critical thinking skills at junior high school, and a strong correlation was found, with a percentage of 72% (Fitriyani & Fitri, 2023). Meanwhile, a relatively small influence was found at the high school level, namely <30% (Aji, 2023; Dimas, 2023; Farliana, Setiaji, & Muktiningsih, 2021). However, different things were found in the study of Maya, Sholikhah, and Sundaygara (2020), who found there is no significant difference between the critical thinking abilities of students with high independence and those with low independence. According to the findings from interviews conducted with multiple fifth-grade teachers at SDN Ciketingudik I and SDN Ciketingudik IV, it was noted that within a single classroom, students demonstrated varying levels of proficiency in critical thinking. Of the three teachers interviewed, all of them explained that students who have high critical thinking skills can be seen from their self-regulated learning, such as students having the initiative to practice questions even though their teacher has not asked them to do so, and vice versa. Students also self-regulate their emotions, which is also good during learning. However, differences were found during observation. It was found that some students were still fighting even though the teacher was present, such as arguing and throwing stationery at each other. This raises debate as to whether emotional intelligence and self-regulated learning are determining factors in students' critical thinking skills.

The many research gaps in previous research indicate that the education sector continues to change. This phenomenon is important to investigate further, considering that critical thinking skills are a necessary ability to face the 21st century. Based on the provided background, this research explores the correlation between emotional intelligence and critical

thinking skills among fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV. Additionally, it aims to examine the correlation between self-regulated learning and critical thinking skills in the same group of students. Furthermore, the research investigates the correlation between fifth-grade students' emotional intelligence with self-regulated learning to critical thinking skills at SDN Ciketingudik I and SDN Ciketingudik IV.

METHOD

The research employs a quantitative method with a correlation research type. Quantitative research methods are selected based on identifying variables from the object of study and using instruments to measure these variables. This study falls under ex-post facto research as it examines variables that have occurred in the past. Figure 1 shows the research design correlation in this research.



The research population was all fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV for the 2023/2024 academic year. The total population was 151 students with 5 study groups: V A, V B, and V C at SDN Ciketingudik 1 and V A and V B at SDN Ciketingudik 4. The samples used in this research were classes V A and V C at SDN Ciketingudik I and class V B at SDN Ciketingudik IV, with 86 students. The sample was selected using purposive sampling based on observations and consultations with the head of school at SDN Ciketingudik I and SDN Ciketingudik 4.

The hypotheses used in this research include the null hypothesis (H_0), namely that there is no significant correlation between emotional intelligence and self-regulated learning and the critical thinking abilities of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV, and the alternative hypothesis (H_a), namely that there is a significant correlation between emotional intelligence and self-regulated learning and the critical thinking skills of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV. Multiple regression is used to test this hypothesis. Multiple regression analysis can be carried out through partial correlation tests with the t-test, simultaneous or multiple correlation tests with the F-test, and multiple regression tests. Hypothesis testing was carried out with the help of JASP 0.18.1 software for Windows with a significance level of 5% or 0.05. To make the description more accessible, in this study, the scores for each variable were categorized into three groups: low, medium, and high. This categorization is done by determining the interval distance and comparing the ideal mean (M_i) and ideal standard deviation (SD_i). The calculation of the formula for determining categorization is summarized in Table 1 (Saifuddin, 2020).

Table 1
Categories of research variables

Formula	Category
$X > M_i + 0.66 SD_i$	High
$M_i - 0.66 SD_i \leq X \leq M_i + 0.66 SD_i$	Medium
$X < M_i - 0.66 SD_i$	Low

The research instruments used in this research were questionnaires and tests. The emotional intelligence instrument used in this research adopted the *Alat Ukur Kecerdasan Emosi* developed by Idriyani (2020), which was measured as valid and reliable for each indicator. The results of the expression of emotion were Chi-Square = 60.90, df = 45, P value = 0.5707, RMSEA = 0.040, and $t_{value} > 1.96$ for each item. The results of the regulation of emotions indicator were Chi-Square = 31.03, df = 26, P value = 0.22709, RMSEA = 0.030, and $t_{value} > 1.96$ for each item. On the indicator of utilization of emotion use were Chi-Square = 36.99, df = 27, P value = 0.09535, RMSEA = 0.041, and $t_{value} > 1.96$ for each item. The self-regulated learning instrument used in this research adopted the *Instrumen Kemandirian Belajar untuk Siswa Sekolah Dasar* developed by Audhiha, Vebrianto, Habibi, Febliza, and Afdal (2022), which has been tested as valid and reliable with validity results in the content aspect obtaining a percentage score of 85%, in the construct aspect there are 37 valid items with $r_{count} > r_{table}$ and three invalid items with $r_{count} < r_{table}$, and each construct has a Cronbach's alpha value > 0.90. The critical thinking skill instrument used in this research adopted the *Instrumen Kemampuan Berpikir Kritis Peserta Didik Sekolah Dasar* developed by Kowiyah, Marini, and Wihardjo (2020), which has been measured as valid and reliable with the results of construct validation in the content feasibility aspect, has an average value of 3.27 with a percentage of 82% and is categorized as very feasible, all items have a high Point Measure correlation value, and a Cronbach Alpha value of 0.98. Indicators of the three variables are presented in Table 2.

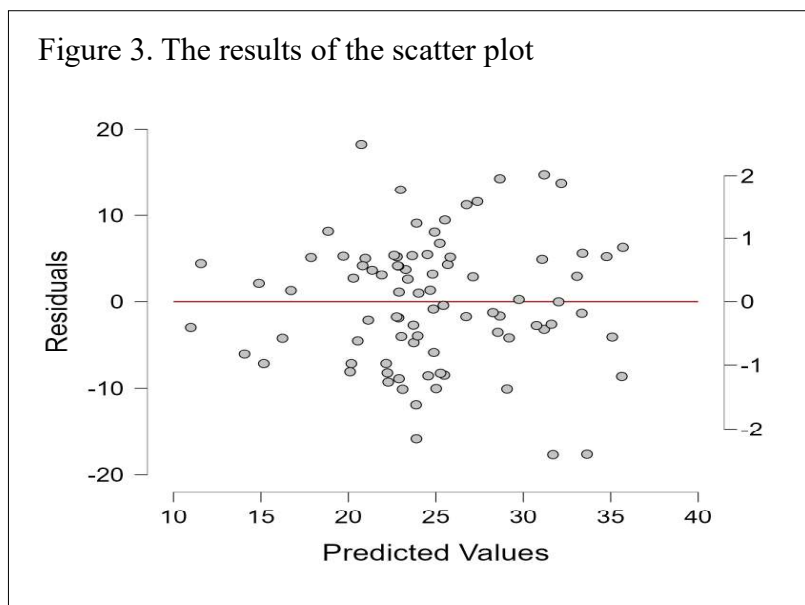
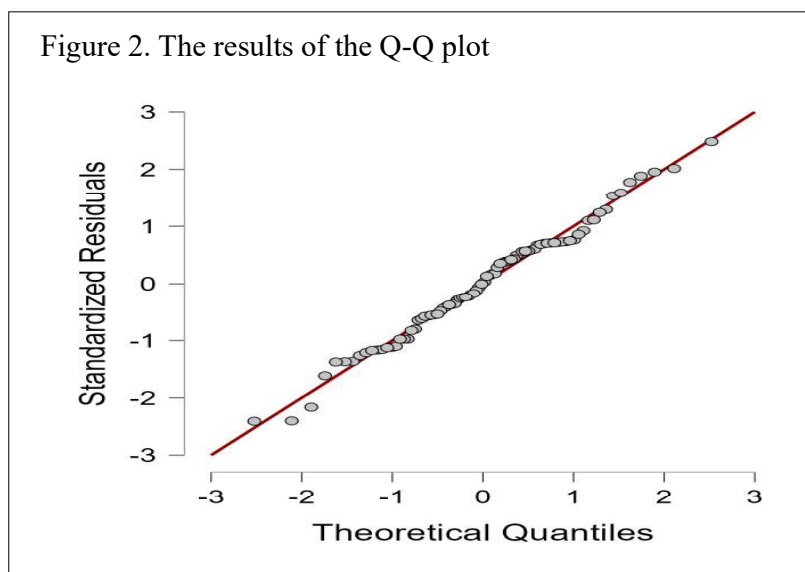
Table 2
Indicators of research variables

Variables	Indicators
Emotional intelligence	Expression of emotion
	Regulation of emotion
	Utilization of emotion
Self-regulated learning	Initiative
	Self-confident
	Responsibility
	Problem solving
	Self-control
Critical thinking	Basic clarification
	Basic support
	Inference
	Strategy and tactics
	Advanced clarification

FINDINGS AND DISCUSSION

Research data needs to be compiled and synthesized to make conclusions that are easy to understand. Hypothesis testing in this research uses multiple regression analysis. Before testing the hypothesis, it is essential to conduct prerequisite tests such as assessing data distribution normality, linearity, homoscedasticity, and multicollinearity. A method for assessing normality and linearity in regression analysis is to examine the Q-Q plot shown in Figure 2 and infer that the collected data demonstrates a normal and positive linear correlation.

The homoscedasticity test in this study was carried out by looking at the scatter plot shown in Figure 3, which suggests that the data exhibits homoscedasticity based on the test results. As per the findings of the multicollinearity test displayed in Table 3, the tolerance value is $0.855 > 0.5$, and the variance inflation factor (VIF) is $1.169 < 10$. Consequently,



these findings indicate the absence of a correlation between the emotional intelligence variable and the self-regulated learning variable as an independent variable or affirm that the multicollinearity assumption is satisfied. After the prerequisite tests have been fulfilled, hypothesis testing and data description are carried out for each variable: emotional intelligence as variable X_1 , self-regulated learning as variable X_2 , and critical thinking skill as variable Y. Table 4 summarizes the data distribution on the emotional intelligence results of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV.

Table 3
Results of the multicollinearity test

Model	Colinearity Statistics	
	Tolerance	VIF
H1 (Intercept)		
Emotional Intelligence	0.855	1.169
Self-regulated learning	0.855	1.169

Table 4
Distribution of emotional intelligence categories

Intervals	Category	Frequency	Frequency percentage (%)
99 – 132	High	36	42
66 – 98	Medium	49	57
33 – 65	Low	1	1
Total		86	100

Based on the findings from the category distribution data provided, it is evident that the emotional intelligence levels of fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV are as follows: 36 students (42%) fall within the high category, 49 students (57%) fall within the medium category, and one student (1%) falls within the low category. From the results of the data distribution based on categories in Table 4, we obtained a distribution of data based on indicators of emotional intelligence for fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV, shown in Table 5.

Table 5
Comparison of percentage of emotional intelligence indicators

Indicators	Total score	Score max	Percentage (%)
Expression of emotion	3169	4472	71
Regulation of emotion	2694	3440	78
Utilization of emotion	2462	3440	72

Thus, the results showed that the regulation of emotion indicator had the highest percentage of achievement, 78%. The regulation of emotion emerges as the primary dimension

influencing the emotional intelligence of fifth-grade students at both SDN Ciketingudik I and SDN Ciketingudik IV. Table 6 summarizes the data distribution on the self-regulated learning results of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV.

Table 6
Distribution of self-regulated learning categories

Intervals	Category	Frequency	Frequency percentage (%)
111 – 148	High	9	10
74 – 110	Medium	77	90
37 – 73	Low	0	0
Total		86	100

From the results of the distribution of categories above, self-regulated learning in fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV shows the high category with nine students (10%), the medium category totalling 77 students (90%). There are no students in the category low (0%). From the results of the distribution of data based on categories in Table 6, we obtained a distribution of data based on indicators of self-regulated learning for fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV, shown in Table 7.

Table 7
Comparison of percentage of self-regulated learning indicators

Indicators	Total score	Score max	Percentage (%)
Initiative	1764	2752	64
Self-confident	1688	2408	70
Responsibility	1679	2408	70
Problem solving	1725	2752	63
Self-control	1586	2408	66

The findings revealed that the indicators of self-confident and responsibility exhibited the highest achievement rate at 70%. Consequently, it can be inferred that self-confident and responsibility are the primary factors influencing the self-regulated learning of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV. Table 8 summarizes the data distribution on the critical thinking skills results of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV.

From the results of the distribution of criteria as above, it can be seen that the critical thinking skills of fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV showed that there were no students who got the high category (0%), the medium category amounted to 50 students (58%), and students who 36 students (42%) got the low category. From the results of the distribution of data based on categories in Table 8, we obtained a distribution of data based on indicators of self-regulated learning for fifth-grade

elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV, summarized in Table 9.

Table 8
Distribution of critical thinking categories

Intervals	Category	Frequency	Frequency percentage (%)
50 – 75	High	0	0
25 – 49	Medium	50	58
0 – 24	Low	36	42
Total		86	100

Table 9
Comparison of percentage of critical thinking indicators

Indicators	Total score	Score max	Percentage (%)
Basic clarification	1764	2752	64
Basic support	1688	2408	70
Inference	1679	2408	70
Strategy and tactics	1725	2752	63
Advanced clarification	1586	2408	66

The findings revealed that the indicator for building essential skills showed the highest level of accomplishment, at 19%, followed by the indicator for giving simple explanations, at 16%. Building essential skills emerged as the most significant factor influencing the critical thinking skills of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV.

During the research, a partial or t-test was conducted to assess the potential influence or correlation between each independent variable and the dependent variable individually. This involved testing the emotional intelligence variable as the independent variable (X_1) and its correlation with critical thinking skills as the dependent variable (Y), as well as assessing the correlation between self-regulated learning as the independent variable (X_2) and critical thinking skills as the dependent variable (Y). The findings of these tests are presented in Table 10.

Table 10
Results of the t-test

Variables	t_{count}	t_{table}	p-value
Emotional intelligence	2.225	1.988	0.029
Self-regulated learning	4.875	1.988	< .001

In Table 10, it is evident that the emotional intelligence variable t_{count} (2.225) > t_{table} (1.988), with a p-value of $0.029 < 0.05$, indicates a significant correlation between emotional

intelligence and critical thinking skills. Similarly, the self-regulated learning variable showed a $t_{count} (4.875) > t_{table} (1.988)$, with a p-value of $0.000 < 0.05$, signifying a correlation between self-regulated learning and critical thinking abilities. A multiple correlation test, also known as an F-test, is conducted to ascertain the presence of a correlation or influence between two or more independent variables and the dependent variable. In this research, emotional intelligence and self-regulated learning are the independent variables (X_1 and X_2), and critical thinking skills are the dependent variable (Y).

The results of simultaneous testing (F test) show $F_{count} (21.606) > F_{table} (3.106)$, and the significance value is $0.000 < 0.05$. Research suggests a correlation between emotional intelligence and self-regulated learning, both individually and in conjunction with critical thinking skills. In this way, the predicted magnitude of critical thinking skill is obtained using multiple regression testing and analysis of the coefficient of determination, which is summarized in Table 11.

Table 11
Results of the multiple regression analysis

Model		Unstandardized	Standard Error	Standardized	T	P
H1	(Intercept)	-40.043	10.153		-3.994	< .001
	Emotional intelligence	0.206	0.093	0.214	2.225	0.029
	Self-regulated learning	0.457	0.094	0.469	4.875	< .001

According to the findings presented in Table 11 from the multiple regression analysis, the equation for multiple linear regression is determined as follows:

$$Y = -40.043 + 0.206X_1 + 0.457X_2$$

From the regression equation, it is interpreted that the constant in the equation model is -40.043; thus, if the emotional intelligence (X_1) and self-regulated learning (X_2) variables have a value of zero, then the critical thinking skill variable (Y) will have a value of -40.043. The value of -40.043 does not indicate a negative direction of correlation because, in this study, the value of emotional intelligence and learning independence will not be zero. In this study, the minimum value of the emotional intelligence variable is 33, and the learning independence variable is 37. The regression coefficient for each independent variable shows a positive number, meaning there is a positive relationship between emotional intelligence, learning independence, and critical thinking abilities.

Results of determination coefficient analysis shows that R^2 is 0.342 or 34%. This means that the independent variables, emotional intelligence and self-regulated learning, provide almost all the information needed to predict the dependent variable, critical thinking skills, of 34%, while the remaining 66% (100-34%) is influenced or explained by other variables not included in the regression model.

Statistical analysis yielded partial support for the hypothesis of a relationship between emotional intelligence and critical thinking skills. The T_{test} results indicated a calculated t_{count} of 2.225, exceeding the critical t_{table} of 1.988. Additionally, the sig. value is $0.029 <$

0.05, further corroborating a partial association. Students with high emotional intelligence may possess superior critical thinking skills, and conversely. Evidence regarding emotional intelligence and self-regulated learning related to critical thinking skills is supported by the theory of cognitive development introduced by Piaget, which states that talent and interests are determining factors in the level of cognition (Marinda, 2020). Emotional intelligence is a person's talent in controlling their mood and controlling themselves when facing a problem so that they can empathize and motivate themselves (Goleman, 2019). This suggests that emotional intelligence encompasses emotions' dynamic interplay and subsequent influence an individual's thinking process.

Emotional intelligence is formed based on three primary constructs: expression of emotion, regulation of emotion, and utilization of emotion (Salovey & Mayer, 1990). Expression of emotion refers to the ability to identify and express emotions students and others feel. Analyzing the data shown it was determined that the indicator for expression of emotion showed a student achievement rate of 71%. This indicates that fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV can assess their emotions and express them verbally and non-verbally. Also, students can assess or feel people's emotional perceptions verbally or non-verbally. Expressing emotions wisely indicates that students dare to explore new ideas and recognize emotional bias, which indicates that students can consider credible ideas, clarify them, and organize strategies to make more objective decisions, which is an indirect part of critical thinking skills. This is also supported by Lombard, Schneider, Merminod, and Weiss (2020), who state that critical thinking formation includes the ability to understand and consider one's emotional reactions and those around oneself. Moreover, Sk and Halder (2020) revealed that students who are good at recognizing and understanding emotions consider others' opinions and diverse possibilities of situations or issues.

Analyzing the data shown it was determined that the indicator for regulation of emotion showed a student achievement rate of 78%. This indicates that class V students at SDN Ciketingudik I and SDN Ciketingudik IV have good abilities in monitoring, evaluating and regulating emotions in themselves and others. When students can regulate their emotions well, they can process information effectively, which will help them understand problems thoroughly before making decisions or drawing inferences. This is also supported by Nurhayati et al. (2021) that students who can regulate their emotions tend to make logical arguments better, consider the consequences of various actions, and make decisions based on in-depth analysis. In addition, emotional regulation helps reduce anxiety and stress, which often become obstacles in the critical thinking process (Sk & Halder, 2020). By reducing the negative impact of uncontrolled emotions, students can focus more on problem-solving and critical thinking (Noviyanti, El-Yunusi, & Darmawan, 2024).

Upon analyzing the data, it was determined that the indicator for utilization of emotion showed a student achievement rate of 72%. This denotes that fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV exhibit proficient emotional abilities. Effective utilization of emotions indicates that students can sustain mental clarity when confronted with challenges that demand critical thinking. This enables them to integrate emotion and logic in their cognitive processes harmoniously. Students who adeptly utilize their emotions can self-regulate during information processing and leverage this information to effectively manage their emotions while facing problems or challenges (Suryati & Salehudin, 2021; Tambaip, Riyanto, Rediani, & Syahrudin, 2022). Hence, emotional intelligence empowers

students to recognize, manage, and apply their emotions in their thought processes, ultimately reflecting on their actions and behaviours. Consequently, emotional intelligence and critical thinking skills are intricately linked, forming a robust foundation.

Emotional intelligence is widely acknowledged as a pertinent element in academic environments as it nurtures students' cognitive and social development (Costa & Faria, 2020). The findings of this research are corroborated by neuroscientist Damasio (2005), who posited that emotions constitute a pivotal and fundamental component in the rational thought process. On the other hand, Psychology Professor Pinker (1999) contended that emotions drive reasoning. In line with these experts, Goleman (2019) underscored that emotions and thoughts should not be viewed as distinct concepts since emotions form the basis of thoughts. Brookfield (1987) asserts that emotions are at the core of critical thinking skills, hence establishing the link between emotional intelligence and critical thinking skills. This reaffirms that emotional intelligence, particularly in the psychoaffective domain of education, influences cognitive performance and contributes to higher academic attainment (Taherkhani & Moradi, 2022; Tambaip et al., 2022). This is also substantiated by a study conducted by Nurhayati et al. (2021), which revealed a positive correlation between emotional intelligence and critical thinking skills, reaching a correlation coefficient of 0.411, falling within the moderate category.

Based on the results of hypothesis testing, it shows that self-regulated learning is partially related to critical thinking skills with the results of the T test $t_{\text{count}} (4.875) > t_{\text{table}} (1.988)$ and a significance value of $0.000 < 0.05$. The text underscores the correlation between self-regulated learning and robust critical thinking skills, indicating a mutually beneficial association. It also mentions the impact of interest on cognitive development, drawing from Piaget's theory of cognitive development (Marinda, 2020). According to this perspective, interest catalyzes cognitive growth, motivating individuals to engage more actively and perform better. The encouragement from within to carry out learning activities with focus and activity to gain knowledge and skills to achieve the learning goals that have been set is called self-regulated learning (Atmojo et al., 2024). Self-regulated learning is the behaviour of students who have a sense of initiative, self-confidence and responsibility to start learning and finish it, can solve problems without the help of others, and have good self-control when facing learning difficulties (Audhiha et al., 2022).

According to the results of the data analysis, it was determined that student achievement in terms of self-confidence and responsibility indicators was at 70%, followed by the initiative indicator at 64%. This suggests that fifth-grade students at both SDN Ciketingudik I and SDN Ciketingudik IV demonstrate good self-confidence and a strong sense of responsibility toward their learning activities. This confidence and sense of responsibility will empower students to unlock their full potential, which is crucial for developing their skills. This finding is corroborated by Maya et al. (2020), who stated that students with self-regulated learning are more likely to take initiative and confidently tackle challenges, thereby realizing their inherent potential and mastering the skills they are learning. Moreover, students' sense of responsibility will motivate them to offer evidence-based clarifications and thoughtfully plan their strategies. Furthermore, Kumar et al. (2023) give an example of critical thinking, namely, when students can explain the meaning of what is observed and conclude arguments according to the facts to justify them.

Not only a sense of self-confidence and responsibility, data analysis shows that students have a good sense of initiative to learn without being ordered by others. A sense of initiative

in learning activities encourages students to start learning activities independently and creatively. When students have the initiative to set clear learning goals plan and control learning activities, it indicates that students are involved in setting strategies and techniques for problem-solving. When these activities are carried out consistently, they will improve students' critical thinking skills (Arisoy & Aybek, 2021; Rahmawati & Alaydrus, 2021; Sholikhan & Kusnadi, 2021). Agreeing with this, Ennis (2011) stated that thinking reasonedly and reflectively by emphasizing making decisions about what to believe or do is called critical thinking. Thus, a sense of initiative, responsibility, and self-confidence correlates with critical thinking.

Based on the results of data analysis, it was found that student achievement in the problem-solving indicator was 63%, followed by the self-control indicator at 66%. This indicates that students have sufficient ability to overcome the obstacles encountered during learning. Problem-solving and self-control, part of self-regulated learning, are critical thinking skills (Ennis, 2011; Facionne & Gittens, 2016). Self-regulated learning indicates that students can organize themselves in problem-solving, including critical thinking skills, a form of cognitive activity (Balashov, Pasichnyk, & Kalamazh, 2021). This is also supported by the theory of thinking introduced by John Dewey that reflective thinking involves two things: firstly, a state of doubt, confusion, mental difficulty, where thoughts come from, and secondly, an act of searching, hunting, asking, to find material that can solve doubts-doubts, resolving and eliminating confusion (Bugg & Dewey, 1934). This means that self-control and problem-solving abilities are needed for critical thinking.

Self-regulated learning has been proven to help students set learning goals that will influence the overall learning experience (Mirlanda, Nindiasari, & Syamsuri, 2019). Consistent with the results of this study, which found that self-regulated learning is related to critical thinking, recent research by Thooyibah, Anggraini, and Marhayati (2024) found the same thing, that students with higher self-regulated learning demonstrate superior critical thinking skills due to their exceptional analytical sharpness and precision. Conversely, students with low levels of self-regulated learning exhibit inferior critical thinking skills due to challenges in recognizing, leading to inaccuracies and incorrect conclusions. Additionally, research from Dimas (2023) found that self-regulated learning positively affected the critical thinking skills of class XI students, with a coefficient of determination of 28%.

The analysis of the research data demonstrates a positive correlation between fifth-grade students' emotional intelligence with self-regulated learning to critical thinking skills at SDN Ciketingudik I and SDN Ciketingudik IV. The results of simultaneous testing (F_{test}) show that $F_{\text{count}} (21.606) > F_{\text{table}} (3.106)$, and the significance value is $0.000 < 0.05$, with the correlation coefficient value being positive. Furthermore, the coefficient of determination shows that emotional intelligence and self-regulated learning contribute 34% to developing critical thinking skills, while other factors influence the remaining 66%. This is also supported by Sk and Halder (2020), that with good emotional regulation, students can learn independently because negative thoughts, feelings of frustration and stress can limit students' ability to think critically. Students who can express, regulate and utilize their emotions well will have high curiosity and self-confidence in new experiences, so students have more significant potential to become independent learners who are responsible and proactive in solving problems, thereby triggering the development of critical thinking skills (Suryati & Salehudin, 2021; Tambaip et al., 2022). Agreeing with this, Karlen, Hirt, Liska, and Stebner (2021) stated

that self-regulated learning requires regulating oneself, including regulating emotions. This ability allows students to continue to focus on learning and develop critical thinking skills without being easily hampered by obstacles.

Based on the information provided earlier, emotional intelligence and self-regulated learning play vital roles in cultivating students' critical thinking skills. Students' ability to regulate themselves both emotionally and learning terms will enable students to analyze their experiences by seeking explanations, building skills, organizing strategies, and reflecting on them in the form of conclusions. These research results align with previous research that shows that emotions can build creativity, collaboration, initiative, and transformation. At the same time, self-regulated learning forms a more analytical, inferential, explanatory and evaluative mindset, which is included in the indicators of critical thinking skills (Ardiyanto et al., 2021; Lee & Kim, 2021). Emotional intelligence is crucial in helping students effectively manage their emotions, enabling them to learn autonomously and enhance their critical thinking skills. Fostering self-regulated learning enables students to persevere in advancing their critical thinking skills, even when confronted with challenges. Research findings indicate that there is support for the notion that emotional intelligence and self-regulated learning jointly impact students' critical thinking skills by 85% (Fitriyani & Fitri, 2023).

CONCLUSION

Based on the results of hypothesis testing, it shows that emotional intelligence partially has a relationship with the critical thinking skills of fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV. Not only that, but there is also a correlation between self-regulated learning and the critical thinking skills of fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV. Meanwhile, simultaneously, there is a correlation between emotional intelligence and self-regulated learning with the critical thinking skills of fifth-grade elementary school students at SDN Ciketingudik I and SDN Ciketingudik IV. So, it can be said that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. There is a substantial association between the emotional intelligence and self-regulated learning of critical thinking skills of fifth-grade students at SDN Ciketingudik I and SDN Ciketingudik IV. These results indicate that the better the student's emotional intelligence and self-regulated learning, the higher their critical thinking skills.

The researcher suggests that students focus on regulating positive and negative emotions and improving self-regulated learning. This is important as it can positively impact their critical thinking skills. Teachers should explore various learning methods based on the affective domain to develop emotional intelligence, self-regulated learning and critical thinking skills together. Furthermore, the findings of this research can also influence the development of elementary school education curriculum. The curriculum should focus more on nurturing emotional regulation from an early age, as well as accommodating diverse learning styles that necessitate self-regulated learning in students.

Although this research provides new insights into emotional intelligence and self-regulated learning as they relate to critical thinking skills at the elementary school level, it also has limitations that need to be acknowledged. First, the limited sample size and the diversity of students' geographic locations may affect the generalizability of research findings. Consider expanding future research efforts to include a more significant number

of schools and classrooms to ensure a more representative sample. This research does not consider other factors that can influence emotional intelligence or self-regulated learning, so additional research could be undertaken to conduct a comprehensive analysis or incorporate moderating variables into the discussion. This approach would contribute to a more thorough understanding of the subject matter. By overcoming these limitations, further research can provide more comprehensive results in efforts to improve critical thinking skills.

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