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The Interplay of Motivation, Self-Efficacy, and Critical Thinking in Predicting Reading Literacy: A Multivariate Analysis of Indonesian Elementary Students

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Abstract: The Interplay of Motivation, Self-Efficacy, and Critical Thinking in Predicting Reading Literacy: A Multivariate Analysis of Indonesian Elementary Students. The poor performance of Indonesian students in international tests such as PISA underscores the imperative of improving early reading competency. **Objectives:** This study evaluates the impact of motivation, self-efficacy, and critical thinking on reading literacy among elementary school students. Reading literacy is a fundamental skill for improving educational attainment and social performance. At the same time, motivation, self-efficacy, and critical thinking are identified as the fundamental psychological and cognitive factors influencing students' reading success. **Methods:** The study used a quantitative, descriptive-correlational design. The students in the population were selected using stratified random sampling to ensure the sample was as balanced as possible among the fifth-grade elementary school students who participated in the study. Standardized questionnaires assessing motivation and self-efficacy, as well as structured tests assessing critical thinking and reading literacy, were used to collect data. Data were analyzed using Pearson's correlation test and multiple regression to examine the combined and partial effects of the predictors on reading literacy scores. **Findings:** Motivation, self-efficacy, and critical thinking concurrently accounted for 65% of the variance in students' academic performance, indicating a strong impact on reading literacy. Partial influence was found to have the greatest impact on self-efficacy (Beta=0.40), followed by motivation (Beta=0.35) and critical thinking (Beta=0.30). The results suggest that self-confidence, motivation, and critical thinking skills are associated with better literacy performance, as students are more likely to meet the minimum reading literacy level. **Conclusion:** The research also underscores the importance of integrating motivation, self-efficacy, and critical thinking into literacy instruction. Educators and curriculum developers should develop curricula and design learning programs that, through instruction, improve students' confidence, intrinsic motivation, and analytical thinking. These efforts will help strengthen reading literacy at the elementary school level, address literacy challenges that continue to plague Indonesia, and, in the long term, prepare students for academic and social success.

Keywords: self-efficacy, critical thinking, Motivation, reading literacy.

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INTRODUCTION

Reading literacy is widely recognized as a fundamental competence in the digital era, serving not only as a foundation for academic achievement but also as a prerequisite for individuals' ability to engage critically with information and participate actively in contemporary society (Rosado-Castellano & Martín-Sánchez, 2023;

Araújo & Costa, 2023). Proficiency in reading literacy enables students to understand, evaluate, and use information effectively, which, in turn, supports access to other domains of knowledge. In addition, critical reading literacy is increasingly essential for preparing learners to meet the challenges of rapid information flow and complex societal demands.

Reading literacy is essential for education, especially at the primary school level, where it helps communicate and access various other areas of knowledge. Good reading literacy allows students to understand, evaluate, and use information effectively (Rosado-Castellano & Martín-Sánchez, 2023). Despite its importance, Indonesia continues to face a reading literacy crisis

Moreover, critical reading literacy is required to deal with the challenges faced by modern society (Araújo & Costa, 2023). In many countries, including Indonesia, students demonstrate lower reading proficiency than the international average (Elvisto & Siska, 2022). The most updated PISA report indicated that many students have difficulty understanding complex texts and drawing meaning from the information presented to them (Alagumalai & Buchdahl, 2021; Hwang, Choi, Bae, & Shin, 2018). This indicates that further research is needed to identify components that may facilitate the development of reading literacy skills at the primary school level (Gómez-Fernández & Francisco-Albert, 2022).

According to the Programme for International Student Assessment (PISA) 2022 study conducted by the Organization for Economic Cooperation and Development (OECD), Indonesia scored lower in reading literacy (Dong & Kula, 2023). As a result, the PISA 2022 score fell by an average of 12–13 points in reading, mathematics, and science compared with 2018 (Perry et al., 2022). In general, the proportion of students with the highest scores (in at least one area) in PISA 2022 decreased from 0.6% to 0.1% (Rosado-Castellano & Martín-Sánchez, 2023; Kuzu & Uras, 2018; Zhu, 2022). However, the proportion of students with the lowest scores increased from 51.7% in 2018 to 59% in 2022. The PISA 2022 results also showed that only 25% of Indonesian students achieved level 2 or higher in reading, which means the ability to identify the main idea in a text is moderate. In fact, the average student in OECD member countries is 74% able to exceed it. While 7% of students in OECD member countries can understand extensive texts and distinguish between fact and opinion, almost no students reach level 5 (Ferri et al., 2023).

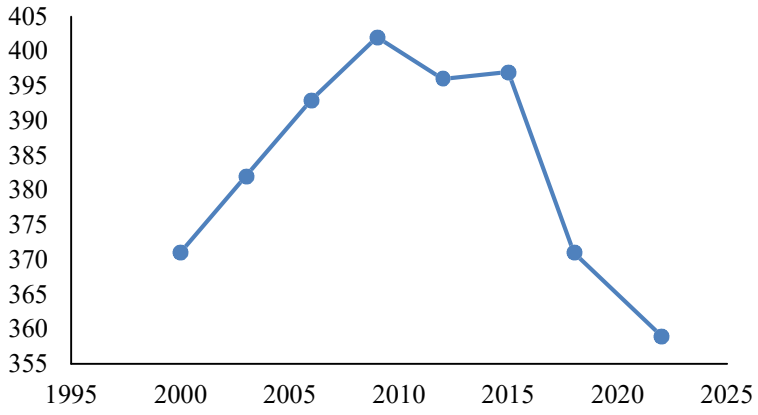

Figure 1. Indonesian students' reading literacy scores (organization for economic cooperation and development)

Figure 1 illustrates the trend in Indonesian students' reading literacy scores from PISA results from 2000 to 2022. A notable increase is observed from a score of 371 in 2000 to 402 in 2009, indicating a substantial improvement in students' reading literacy during this period (Govorova et al., 2020). The PISA 2022 score declined significantly from prior years, revealing a disparity between the anticipated reading literacy level and the actual performance of elementary school students in Indonesia (Cairns & Areepattamannil, 2019). Although reading literacy is essential for successful learning, numerous students do not attain the necessary proficiency.

Previous studies emphasized the importance of motivation, self-efficacy, and critical thinking for enhancing reading literacy. However, there have been few studies on the overall effects of these three factors in promoting reading literacy. Several determinants of reading literacy have been identified by previous researchers, spanning social and (school) contextual background, as well as psychological and cognitive aspects of learners; however, among these, motivation, self-efficacy, and critical thinking have been consistently emphasized as important. Motivation impacts students' participation in reading sessions (Wigfield & Guthrie, 2000), self-efficacy helps increase confidence to face up to reading activities (Bandura, 1997; Schunk & DiBenedetto, 2021), and critical thinking provides students with the skills required for interpreting and evaluating intricate texts (Araújo & Costa, 2023). Although earlier research has recognized the importance of these variables, previous studies have first explored each one alone, for example, only motivation and self-efficacy, while excluding their combined influence on reading literacy (Cheng & Tsai, 2020; Gunèaga, Csachová, & Tkaèik, 2024).

The motivation for reading literacy is a crucial factor that affects students' reading engagement and success. Research by Wigfield and Guthrie indicates that intrinsic motivation, driven by interest and satisfaction in reading, significantly impacts the frequency and scope of reading activities more than extrinsic motivation, which is influenced by external rewards or pressures (Araújo & Costa, 2023).

Although previous studies have already brought some valuable understandings about reading literacy determinants, most analyses can be considered as partial ones, since at least one factor has been analyzed separately (e.g., motivation and literacy achievement relation; Wigfield & Guthrie, 2000; Cheng & Tsai's, 2020) or the importance of critical thinking to read comprehension performance (Araújo & Costa's work on the year of 2023). Moreover, self-efficacy research has tended to focus heavily on the direct effects of reading outcomes, without exploring interactions with other psychological or cognitive variables (Schunk & DiBenedetto, 2021). In this sense, multivariate models combining Motivation, self-efficacy, and critical thinking in the same line are already rare, even when localized to Indonesian elementary school students. This is the gap this study aims to fill using a hierarchical analytical framework that not only examines the separate effects of these factors but also tests their joint power in explaining reading literacy. In doing so, this study contributes to previous work by providing fuller explanations of the mechanisms of literacy development and context-specific evidence that can be useful for designing more effective interventions to support literacy in Indonesia.

Badura et al. (2020) and Schunk & DiBenedetto (2021) found that intrinsic motivation in third grade was associated with reading comprehension. In contrast, extrinsic motivation began to potentiate the following year in fourth grade (Gunèaga, Csachová, & Tkaèik, 2024). Cheng & Tsai (2020) found that motivation-based interventions that include goal setting and self-efficacy promotion could enhance students'

reading outcomes, especially for those at risk of reading deficits (Krejsler, 2019). While motivation and self-efficacy play an important role in reading literacy, the home literacy environment and parental involvement should not be underestimated. These variables are particularly influential for reading performance; however, their influence on achievement may vary across contexts (Rao, Lee, Fdilat, Bouziane, & Dressman, 2024; Liu, Chen, & Liu, 2022)

As previously mentioned, although a part of normal human culture, intrinsic motivation appears beneficial. However, across different cultural and educational contexts, its outcomes may differ: Teachers may believe that children can grow through self-directed learning, or some women may contend that an emotional response is always necessary but more or less permissible (Kuzu & Uras, 2018). Understanding these subtleties is crucial to developing literacy programs that cater to students' varied needs (van der Weel & Mangen, 2022). To understand the interactions among these psychological and cognitive elements in primary education, further research is needed (Fointuna, Kaluge, & Fernandez, 2020).

The purpose of this article is to plan for the development of more successful and coherent ways of working together as teachers for students with specialist reading literacy needs. They call for "complete interaction testing" to be conducted and that "…motivational research can move beyond a univariate approach to analyses as it seeks to develop more multifaceted models" (p. 170). Significantly, as found in these studies, they tend to raise the possibility of refined analysis but then persist with single-factor interpretations or leave multiple factors untested where interactions might add needed insight. Though prior work has tended to conduct its investigations along the line of referring one factor directly to reading literacy, such as motivation, this paper takes a stride by showing the extent of relationships among various psychological and cognitive factors. It finds implications for a multi-factored understanding of reading. In contrast, the elementary level is concerned (Brustein, 2004). Very few empirical studies have investigated the combination of motivation, self-efficacy, and critical thinking in reading literacy , especially within the educational context of Indonesia (Fiontuna, Kaluge, & Fernandez, 2020). The objective of the current study is to fill this gap by elaborately explaining how these factors interact to support school-aged students' reading literacy in primary schooling and thereby support their development. This paper hopes to investigate the association between motivation, self-efficacy, and critical thinking and third-grade children's reading literacy. This article examines these factors in isolation and assesses the extent of the assistance they provide to schoolchildren's reading ability.

This study aims to reveal the complex relations among these three components and to provide insights as a mechanism for promoting reading literacy. In such a report, motivation, self-efficacy, and critical thinking are intertwined in the framework to identify reading literacy. Its thinking comes from simply looking at things in different ways, or insight. This study is significant because it could contribute to transforming reading as a literacy skill for Indonesian children at the primary level, an area where this has been virtually destroyed. The present study provides a theoretical foundation for specific educational ideas, a conceptual plan of action that rarely fits within traditional subject-matter divisions, and contributes to the fields of educational psychology research and literacy literature. The hypotheses of the research are:

H1: There is a significant relationship between students' motivation and their reading literacy.
H2: There is a significant relationship between students' self-efficacy and their reading literacy.

H3: There is a significant relationship between students' critical thinking toward reading and their literacy performance.

Without such an integrated analysis, research in this area has suffered significant knowledge gaps. This is particularly true in Indonesia, where elementary school students struggle to assimilate basic reading skills. This study, therefore, attempts to overcome such neglect by addressing the effects that something has on another thing, or gives rise to, between motivation, self-efficacy, and critical thinking in elementary school students' reading. This research is expected to provide two contributions: (1) In a theoretical sense, the different factors that influence reading literacy in either the psychological or cognitive field will become better understood collectively. (2) Practical, the evidence provided can be used as a stimulus for creating successful strategies of teaching literacy to increase children's abilities in Indonesia.

METHOD

Participants

These students came from ten public elementary schools in Pekanbaru. To ensure fairness in representation from different school grades and student populations, a stratified random sampling technique was applied. These students came from ten public elementary schools in Pekanbaru. To ensure fairness in representation from different school grades and student populations, a stratified random sampling technique was used. Stratification was based on the school's accreditation levels (A, B, C), a good indicator of institutional quality, and on course resources. A total of 354 students were sampled using the Slovin formula, with a 5% margin of error. This method ensures that the study's outcomes accurately reflect the population.

Research Design and Procedures

This study relied heavily on numerical methods and a descriptive correlational approach to examine how thinking skills, motivation, self-efficacy, and reading literacy in students are interdependent. The reason for choosing this method is that it systematically clarifies the relations among variables and provides quantitative estimates of each variable's effect on reading skills. A model of that kind allows researchers to examine psychological and cognitive influences on how students learn. It does not need an experimental study. Given the correlational design, the researcher's research questions must be considered first.

Although particular interventions were out on their own, the purpose was to map connections and create a picture, for example, relationships between critical thinking skills and reading skill motivation. This mapping provides a needed empirical basis for determining the most critical among the many potential predictors. Such practical interventions can subsequently be more deliberately focused, more effective, and more context-relevant in future research. In other words, the correlational design affords the possibility of this initial step before efforts to more accurately formulate hypotheses based on what has been discovered to date become possible. Provides a reading literacy test for elementary school students. To ensure the reliability of each measure, its content is validated, and a study is conducted to determine the instrument's Cronbach's Alpha coefficients, which reflect consistency across measurement occasions. The research procedure was broken down and developed into multiple phases. The first stage was the development and validation of the research instrument. At the second stage, the researcher used questionnaires for the students to complete on motivation and self-efficacy. Then, in the third and final setting, students took critical thinking and reading literacy tests while their teacher was with them the entire time. The results of their research were collected in SPSS statistical software, where they both processed and analyzed the data through input and output.

Data collection was conducted in a single day during regular class hours to ensure controlled conditions across all participants. Before the session, the researcher coordinated with the school and provided a brief explanation to the teacher regarding the procedure and non-evaluation nature of the study. The next step was the administration of motivation and self-efficacy questionnaires in counterbalanced order. For example, if a class received motivation first, then one would receive self-efficacy questionnaires first in another class. In the third stage of data collection, the students involved in this study were also given critical thinking tasks and a reading literacy test, again administered to overcome bias caused by exhaustion: throughout all sessions, both the researcher and teacher observed individually for each student, with no conversation to interrupt, and guidance was collected from another person (the teacher) and immediately collected all completed instruments. The data is afterwards coded.

Instruments

The instrument was tested on 30 students. Validity and reliability testing were conducted during the pilot test using a separate sample from the main study sample. In effect, the Vertices of the study: Intrinsic motivation to read (which can result from self-interest or external pressure). Extrinsic motivation to read (such as bribes). Self-efficacy in reading for students refers not only to confidence in their own abilities but also to an understanding of the challenges they face during remedial reading. Critical thinking refers to students' comprehensive understanding and analytical judgment of texts. Reading literacy is the dependent variable in the study, which means how well a student understands, appraises, and uses information from the texts he reads. The research used the Reading Motivation Questionnaire as the data collection instrument. The Reading Motivation Survey (MRQ), the Self-Efficacy Questionnaire with the General Self-Efficacy Scale (GSES), and the Critical Thinking Test at the elementary school level.

Watkins & Coffey (2004) designed the Motivational Design Questionnaire (MRQ) to measure reading motivation into two major categories: intrinsic and extrinsic motivational orientations. Intrinsic motivation refers to internal factors driving students in the direction of reading for pleasure or fascination, including curiosity (the thirst to gain new knowledge without any direct reward in mind), absorption(the enjoyment of becoming totally absorbed in one's reading), and challenge(the willingness to tackle ever harder texts for one's own satisfaction). By contrast, extrinsic motivation is encouragement from outside whether for reward, recognition, or social comparison, with sub-dimensions such as appreciation (the urge to read under praise or admiration), achievement/competition (reading motivation aimed at high scores or gaining physical rewards that are then outdone elsewhere) and authority(submission in reading because it is required by teachers or rules).

This method begins with the General Self-Efficacy Scale and develops it into a Self-Efficacy Questionnaire. Wuryaningsih et al. (2025) developed a tool to measure how a person thinks about themselves in a variety of stressful situations, including, for example, the problems faced by those entering university. The GSES was created out of items that reflect confidence in problem-solving, persistence in the face of difficulties, and the ability to overcome obstacles through effort and determination. This scale captures a general sense of perceived self-efficacy rather than task-specific confidence, making it widely applicable across educational and psychological research contexts to assess how individuals perceive their competence in achieving goals and managing challenges.

Table 1. Reliability (cronbach's alpha) and validity (item–total correlation) of instruments

Instrument	Number of items	Indicators (Construct Dimensions)	α (Cronbach's Alpha)	Item–Total Correlation (r)
Motivation for Reading Questionnaire (MRQ)	25	(1) Intrinsic Motivation (2) Extrinsic Motivation (3) Reading Engagement	0.86	.41 – .72
General Self-Efficacy Scale (GSES)	25	(1) Problem-solving confidence (2) Persistence in difficulty (3) Belief in the ability to complete tasks	0.88	.39 – .70
Critical Thinking Test (Ennis adapted)	25	(1) Inductive reasoning (2) Deductive reasoning (3) Evaluating claims & evidence (4) Decision-making and justification	0.82	.36 – .68
Reading Literacy Test	50	(1) Word comprehension (2) Text comprehension (3) Inferential interpretation (4) Evaluating readings	0.85	.43 – .74

The Motivation for Reading Questionnaire (MRQ) consists of 25 items measuring three key components of students' reading motivation. Intrinsic motivation is the first dimension, reflecting students' internal aspiration to read for pleasure and personal fulfillment. Some examples could be "I read because I get pleasure from learning something new in a narrative" or "I feel satisfied after I finish a challenging literary work." The second dimension, extrinsic motivation, includes reading driven by external incentives or expectations, as in the items "I read to reach high grades for my academic endeavors" and "I read when my teachers or guardians prompt me to." The third dimension, reading engagement, measures the extent to which students become engaged in reading practices, exemplified through items such as "When I am engrossed in an interesting text, I lose track of time" and "I read more books if I have an interest."

The General Self-Efficacy Scale (GSES) includes 25 statements that measure a student's beliefs in his ability to engage with and address problems. The core component of the question, problem-solving confidence, includes items such as "I have confidence in my ability to solve problems when faced with a difficult problem" and "I can typically develop many ways to solve a problem." Persistence in difficulty, the next component, measures students' ability to persist when difficult problems arise, with statements including "When I am stuck in the middle of a complex task, I persist until I hit its target" and "I do not readily concede defeat, even when the undertaking requires considerable time." The third element, belief in being capable of accomplishing tasks, evaluates students' belief that they can accomplish a task, with sentences such as "I believe I can do a task, even one that seems too hard" and "I believe that if I come up with a plan and work on it, I can actually do it."

The Critical Thinking Test, adapted from Gumala et al. (2024), comprised 25 items assessing four higher-order thinking dimensions. The inductive reasoning part presents short scenes for students to infer from, e.g., deciding what can be inferred from the fact that plants tend to grow faster under sunlight. The deductive reasoning

section presents logical utterances, such as "All mammals breathe; dolphins are mammals," in which students need to identify the factual statements or conclusions. The claims and evidence component measures students' ability to evaluate the truth of information (i.e., to identify which bits of evidence are more effectively used to support a company statement).

Finally, the decision-making and justification component involves real-life situations in which the test asks students to identify a solution and then express their rationale. The Reading Literacy Test is composed of 50 items designed to test four important areas of reading skill. The word comprehension section measures word understanding through tasks such as selecting the appropriate meaning or synonym for a given word. The text comprehension section evaluates understanding by asking about paragraphs and sections of text, by determining what main ideas are being presented, and what the author's intent may be. The inferential interpretation section measures students' ability to draw logical inferences, such asinferring a character's emotions or drawing conclusions from textual clues.

Data Analysis

The data were analyzed using a multi-stage process. This included: Pearson's Correlation Test, which examined the relationship between independent and dependent variables. Multiple Regression Analysis sought to measure both simultaneous effects and individual impacts of motivation, self-efficacy, and critical thinking on students' reading literacy.

■ RESULT AND DISCUSSION

The purpose of this study was to see how motivation, self-efficacy, and critical thinking correlate with students' reading literacy in elementary schools. The analysis was conducted using the Pearson Correlation Test and Multiple Regression.

Relationship Between Students' Motivation and Their Reading Literacy

To evaluate Hypothesis 1, a correlation and regression analysis was conducted to determine whether motivation significantly influences students' reading literacy. The summary of the statistical results is presented in the table below.

Table 2. Correlation and regresion result of students' motivation on reading literacy

Predictor Variable	Outcome Variable	*r*	*β*	*t*	R^2	*p*
Motivation	Reading literacy	0.68	0.45	6.12	0.35	< .001

Note: r = Pearson correlation coefficient; *â* = standardized regression coefficient; *t* = t-value; R^2 = coefficient of determination; *p* = significance level.

The results indicated a strong and statistically significant positive correlation between students' motivation and reading literacy ($r = .68, p < .001$). Furthermore, the regression analysis revealed that motivation significantly predicted reading literacy ($â = .45, t = 6.12, p < .001$), explaining 35% of the variance in students' reading literacy ($R^2 = .35$). These findings support the proposed hypothesis that students' motivation significantly influences reading literacy. This is evidence that student motivation plays a pivotal role in improving reading literacy. Motivation and reading literacy of students are complex yet fundamental constructs for the development of literacy. Wigfield et al., (2016) Intrinsic and extrinsic motivation is crucial for influencing the students in how they approach the reading task; influencing not only their willingness to read but also their ability to comprehend and construct meaning from texts Intrinsic motivation, defined

as a desire or desire to read due to enjoyment or interest in the source(s), is the most potent predictor of reading literacy than extrinsic motivation. (Nevo et al., 2020; van der Sande et al., 2023).

This is also reinforced by evidence that is evident in studies indicating that the extent to which student's intrinsic motivation positively affects reading comprehension shows that intrinsic motivation levels are higher than extrinsic motivation which has been illustrated by higher reading comprehension of 11th-grade readers with a correlation coefficient of 0.62 (Becker et al., 2010; Quirk et al., 2009; Troyer et al., 2019). Longitudinal work that supports this trend also shows that increasing intrinsic motivation over time is associated with higher reading levels (Becker et al., 2010).

Extrinsic motivation is significantly associated with reading literacy, though it remains weak. Research results indicate a small but significant association between extrinsic motivation and comprehension (Orellana et al., 2020), and external rewards might support reading, though not to the extent of the motivation intrinsic to the texts (Konrad, 2023; Watkins & Coffey, 2004; You et al., 2021).

The importance of motivation becomes even clearer when we consider its link to reading comprehension. A study with Indonesian EFL learners found that motivation can positively affect a student's literacy achievement, particularly reading comprehension (Govorova et al., 2020). Junior high schoolers reported similar findings, with reading motivation positively associated with comprehension ($r = 0.763$), reinforcing the idea that motivated students are more likely to use effective reading strategies and engage with texts (Cairns & Areepattamannil, 2019).

In an EFL situation, where language barriers may make reading tasks more difficult, motivation is shown to be a more important factor than any other element. This research study has previously shown that motivation plays a fundamental role in enhancing students' reading comprehension of English text. In addition to comprehension, motivation is also a predictor of better academic achievement in general. Students in primary school both report that reading motivation and comprehension significantly predict their performance, suggesting that we should foster children's motivation early on (Mohammadi et al., 2023; Schunk, 2003; Walker, 2003). The same predictive role was observed in research with Ethiopian high school students, in which the intrinsic, extrinsic, and self-efficacy dimensions of motivation were all significantly correlated with reading achievement (Locher et al., 2021).

These findings indicate that motivation not only affects literacy achievement but also shapes students' entire educational journey. However, motivation is not enough, as it cannot function in isolation. There is increasing evidence that contextual/cognitive factors, as well as motivation, correlate with reading literacy. One example is the influence of the home literacy environment and parental support on children's reading practices, which generally demonstrate low and inconsistent correlations (Afflerbach et al., 2013). There is also evidence suggesting a mediating effect of cognitive variables, such as metacognitive awareness and reading strategies, providing a link that motivation-driven learners might benefit most from pedagogical strategies that develop their strategic reading skills (Winberg et al., 2022).

As a result, reading literacy is viewed in a more multifaceted light: while motivation is a vital aspect of learning to read, it is not sufficient to produce reading-literate individuals; creating an environment conducive to pursuing these goals is also necessary. Thus, the discussion of existing research consistently shows that motivation, especially intrinsic motivation, plays a powerful

role in reading literacy and comprehension. However, it can work better when associated with facilitative environmental, cognitive, and instructional elements. This highlights the importance of holistic literacy instruction, which promotes motivational development alongside strategic reading instruction and supportive learning environments.

There is a Significant Relationship Between Students' Self-Efficacy and Their Reading Literacy

To examine Hypothesis 2, a statistical test was conducted to assess the effect of deep learning–based instruction on students' reading comprehension. The key analytical outcomes are summarized in the following table.

Table 3. Correlation and regression results of self-efficacy and reading literacy

Predictor Variable	Outcome Variable	*r*	*β*	*t*	R^2	*p*
Students Self Efficacy	Reading literacy	0.72	0.40	7.02	0.52	< .001

Note: r = Pearson correlation coefficient; $\hat{a}$ = standardized regression coefficient; t = t-value; R^2 = coefficient of determination; p = significance level.

The findings revealed a very strong and statistically significant positive correlation between self-efficacy and reading literacy ($r = .72$, $p < .001$). The regression analysis further demonstrated that self-efficacy was a significant and strong predictor of reading literacy ($\hat{a} = .40$, $t = 7.02$, $p < .001$), accounting for 52% of the variance in reading literacy ($R^2 = .52$). Thus, Hypothesis 2 was accepted, indicating that self-efficacy has the strongest effect on students' reading literacy. This may suggest that instructional practices rooted in deep learning are important for improving students' reading comprehension. Previous studies have established the link between student self-efficacy and reading literacy and found a positive relationship at that level. Self-efficacy, or a student's belief in their ability to succeed in specific tasks, is an important component of reading literacy, which involves reading comprehension and proficiency. Numerous studies examine the association between self-efficacy and reading tasks, finding that high self-efficacy is associated with better performance.

Given that self-efficacy is universally significant in reading literacy across the educational spectrum and among different kinds of learners, this relationship has been observed across different educational contexts. The study found a statistically significant positive correlation between Walker's (2003) reading comprehension and reading comprehension, as evidenced by several studies. An example is a study in which analysis revealed a moderate positive correlation (correlational coefficient of .537), with a p-value of 0.002 indicating statistical significance (Ortlieb & Schatz, 2020). Likewise, studies of Iraqi secondary school EFL students found that improved reading comprehension was associated with higher self-efficacy scores (Locher et al., 2021).

Predictive contribution of self-efficacy: In a tertiary school in South Africa, self-efficacy was recognised as the best predictor of first-year student reading skills and played an essential role as a driver of academic literacy (Boakye, 2015). The results are consistent with previous research, which found that self-efficacy is a significant predictor of reading achievement (Chen et al., 2021; Prat-Sala & Redford, 2012). Qualitative Insights: Qualitative data from focus group discussions with Iraqi EFL learners indicated that

self-efficacy predicts reading learning by measuring skills such as vocabulary knowledge, interest, and teachers' styles (Ronimus et al., 2023).

This finding indicated that self-efficacy does not just directly influence reading outcomes but also interacts with other educational factors, such as teacher training and environmental factors. Instructional programs: The Success for All (SFA) reading program showed a greater increase in students' reading self-efficacy than a language-based comparison, suggesting that, as one instructional choice, a specific instructional approach can strengthen self-efficacy in reading and, therefore, reading literacy.

Results indicated that positive perceptions of the environment could facilitate the development of self-efficacy, leading to better reading (Boakye, 2015). Although the positive relationship between self-efficacy and reading literacy is supported, we need to consider the educational context. As discussed, factors such as instruction quality, access to reading resources, and socio-cultural factors have effects on reading competency(Graham et al., 2020; Wuryaningsih et al., 2025)

For instance, the Saudi EFL study, which focused on Saudi students' literacy, showed that reading success depends on metacognitive strategies. Here, self-efficacy intersects with the cognitive processes responsible for (Govorova et al., 2020). Also, the literature indicates a need for educational interventions to support children's psychological and instructional development, emphasizing the importance of creating supportive learning environments that foster self-efficacy in reading literacy, as found across studies.

There is a Significant Relationship Between Students' Critical Thinking Toward Reading and Their Literacy Performance

To test Hypothesis 3, regression and correlation analyses were used to assess whether students' digital literacy skills significantly predict their problem-solving abilities. The findings are summarized in the table below.

Table 4. The hypothesis test of the relationship between students' critical thinking toward reading and their literacy performance

Analysis Component	Value	Interpretation
Pearson r / p-value	0.65 / 0.000	Strong and significant positive relationship
B, β, t-value, p-value	0.38; 0.30; 5.85; 0.00	Significant positive influence
Conclusion (H3)	Accepted	Critical thinking significantly affects reading literacy

Given the significant results across all relevant indicators, we accept Hypothesis 3. This implies that digital literacy skills can indeed have a positive and observable impact on students' problem-solving skills.

The relationship between students' critical thinking about reading and their literacy attainment is a complex issue that has been examined across several educational settings. Critical thinking is now considered a vital part of literacy, as it enables students to engage deeply with texts, analyze information, and make reasoned decisions. The study has shown a significant relationship among critical thinking, reading comprehension, and literacy performance.

There is a dynamic relationship between these factors, including a strong teacher focus, an educational environment, and high-quality reading materials. Several studies have found a positive correlation between critical thinking and

reading comprehension. For example, seventh-grade students showed a moderate relationship (r = 0.542) between the variables (Yassin, 2024), suggesting that students with better critical thinking skills demonstrate higher reading comprehension scores. In a second study, EFL students have a strong correlation, suggesting critical thinking is crucial for comprehending complex literary works and enhancing reading comprehension (Zhan et al., 2025). Another study conducted in a Madrasah area in South Sumatra also found a significant correlation, with critical thinking accounting for 48.4% of reading comprehension performance (Dowsett & Reinertsen, 2023). Relevant studies highlight the importance of teaching strategies for developing critical thinking and reading comprehension. Teachers can benefit immensely from adding critical thinking tasks to their reading practices, using debates and reflective practices as models (Cai & Chen, 2022; Smith et al., 2023; Zhan et al., 2025).

Multimodal literacy training, which combines different media and communication modes, has improved critical thinking and reading comprehension among college students (Yassin, 2024). Challenges and Barriers. While the correlation is positive, a challenge remains to improve the implementation of critical thinking in literacy instruction. Time, resources, and student motivation issues, as mentioned previously (Smith et al., 2023).

The success of literacy programs like the School Literacy Program (PLS) depends on factors such as the relevance of the reading materials and teachers' support (Mohammadi et al., 2023; Yildirim & Soylemez, 2018). The relationship between critical thinking and literacy extends beyond comprehension. Research by Bobkina & Stefanova (2016), for instance, shows that critical thinking is a factor in scientific literacy among high school students, alongside achievement motivation. As a general rule, the correlation is positively significant, although not consistent across different contexts. For example, one study conducted in an Indonesian EFL context found that reading and critical thinking were not highly correlated, suggesting that students develop critical thinking through multiple pathways (Dowsett & Reinertsen, 2023; Farley & Elmore, 2023).

In summary, although there is a strong link between students' critical thinking skills and performance in reading and writing, this correlation can vary across educational contexts and instructional strategies. Critical thinking should be integrated at the centre of literacy education in school and practice to increase students' reading comprehension and literacy ability. Nevertheless, it entails significant challenges and barriers. The following additional studies are recommended to examine these dynamics across various educational contexts and to explore design strategies for promoting critical thinking in literacy instruction.

■ CONCLUSION

The findings of this study confirm that motivation, self-efficacy, and critical thinking are central components in strengthening students' reading literacy. Students who exhibit strong intrinsic motivation, confidence in their reading abilities, and the capacity to analyze and evaluate information tend to achieve higher levels of literacy performance. These results illustrate that literacy development is not solely dependent on students' cognitive skills, but also on their affective and psychological readiness to engage with texts. Therefore, instructional practices should be intentionally designed to cultivate students' motivation, foster their belief in their capabilities, and develop their analytical reasoning as part of a holistic approach to literacy learning.

Critical thinking teaches students to look at complex texts and make them a living experience. All three abilities combine to create a virtuous spiral: the more motivation and self-efficacy are

aroused, the greater one's critical thinking capability will be; this, in turn, leads to better literacy. Critical thinking motivation is a trinity of competences that has so often been considered essential for successful learners. A fruitful way to research this is in relation to the effect of instructional design on this triad of variables. For instance, does inquiry-based learning strengthen the teacher-centered pedagogy model? Would the improvement in student literacy become more pronounced when schools start to adopt more inquiry-based teaching methods? Future studies might adopt a longitudinal design. They could ascertain whether changes in self-efficacy or motivation have occurred prior to any improvements in critical thinking, rather than treating these three constructs as static predictors of one another. Also, future research could replace the common generic measurements of perceived ability with subject-specific efficacy scales, and so on. Finally, it should be tested whether an intervention that explicitly trains students to use a metacognitive reading strategy can, in fact, heighten the synergy between motivation, self-efficacy, and critical thinking.

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