Improving Critical Reading Abilities in 10th Graders: An Active Learning Approach

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Abstract. The current study aimed to assess the impact of an active learning approach on the development of critical reading skills among 10th-grade students. The research involved 40 10th-grade students from a Thai public school, selected through purposive sampling methods. Data collection followed a one-group pre-test and post-test design, allowing for the assessment of changes in student performance before and after the implementation of an active learning management plan. An effectiveness index was employed to measure the relationship between post-test performance and initial proficiency, while a paired samples t-test was used to determine significant differences in pre-test and post-test scores. The results revealed the noteworthy effectiveness of the active learning approach in enhancing critical reading skills among the 10th-grade participants. Pre-test and post-test comparisons indicated substantial improvements in critical reading abilities, with an effectiveness index of 0.325, highlighting a significant 32.50% improvement. This result significantly contributes to the field of education by providing empirical evidence of the efficacy of the active learning approach in enhancing critical reading skills. Educators and instructional designers are encouraged to incorporate active learning strategies, such as game-based learning, think-pair-share, and Cooperative Integrated Reading and

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Composition into their teaching approaches. These strategies not only enhance critical reading but also nurture a holistic reading skill set.

1. Introduction

Critical reading (CR) is an important ability that plays a pivotal role in students' academic and personal growth. It entails the active and thoughtful analysis of text, allowing readers to engage with content at a deeper level, beyond surface comprehension (Pattison, 2015; Wallace, 2003). Critical readers not only understand the words on the page but also question, evaluate, and interpret the material. By possessing the valuable skill of CR, students, especially those in high school, can decipher complex texts more effectively, develop a nuanced understanding of various subjects, and sharpen their analytical thinking. Moreover, CR equips students with the skill to discern between reliable and unreliable sources, enabling them to make informed decisions and arguments based on credible information (Mohd Zin et al., 2014). Therefore, CR has been increasingly integrated into curricula around the world, recognizing its significance in fostering well-rounded and intellectually curious individuals (Fan, 2023).

However, CR is a complex skill that requires dedication, practice, and guidance to master. To read critically, individuals need to cultivate several essential attributes (Pirozzi et al., 2013). First and foremost, they must be adept at comprehension, grasping the literal meaning of the text (Larking, 2017). Simultaneously, readers need to hone their ability to analyze and evaluate the content, questioning the author's intentions, identifying biases, and assessing the reliability of sources. Critical readers also engage in interpretation, seeking deeper meanings and subtext within the text (Wallace & Wray, 2021). Furthermore, they must be open to alternative perspectives and capable of constructing well-reasoned arguments based on their analysis.

The skill of CR presents both an asset and a challenge for both students and teachers alike (Velayati et al., 2017). While CR equips students to navigate an information-rich world effectively, mastering this skill demands effort and guidance. Teachers play a crucial role in imparting the principles of CR, and students must actively engage in the process to access its full potential.
It should be noted that CR is challenging to develop within the confines of a traditional, passive classroom atmosphere (Rohmah, 2018). The very nature of CR demands active engagement, thoughtful questioning, and the exploration of diverse perspectives. In a passive classroom setting, where students are primarily the recipients of information rather than active participants in the learning process, the development of CR skills is hindered (Velayati et al., 2017).

At a contextual level, Thailand's education system has faced criticism for its passive approach and CR is one of its critical problem areas (Ratanaruamkarn et al., 2023). This passive approach often prioritizes rote memorization and standardized testing over fostering independent thinking and analytical skills.

This education restricts the opportunity for students to develop the vital skill of CR. This deficiency is evident in both national test scores and international assessments such as the Program for International Student Assessment (PISA), where Thailand's rankings have consistently placed the country in the lower end of the results, highlighting an urgent need for educational reform and a shift towards more active and critical learning methodologies (National Institute of Educational Testing Service, 2020; Schleicher, 2019).

The issue of passive learning needs to be addressed, and active learning offers a promising solution. Active learning is an educational approach that emphasizes student engagement, participation, and interaction in the learning process (Blaz, 2022). It encourages students to think critically, ask questions, collaborate with peers, and apply what they have learned in real-world contexts. Active learning may address the CR problems in education by fostering the very skills necessary for effective CR (Hovland, 2019).

The current study aimed to provide a solution to the situation of CR in the Thai educational context by designing an active learning management system specifically tailored to improve CR skills among 10th graders. Through this approach, students actively engage with the material, analyze texts from multiple perspectives, and develop the ability to think critically and independently. By implementing active learning strategies, we hope to contribute to the enhancement of CR abilities among students and promote a more dynamic and effective learning environment in Thailand's education system. As such, this study addressed the following research questions:
1) Can the effectiveness of active learning management in enhancing participants' CR ability be determined?
2) Is there a significant difference between the participants' CR ability before and after the implementation of the active learning management?

2. Literature Review
2.1 Critical Reading
Critical reading goes beyond simple text comprehension and involves actively interpreting and evaluating written material (Spears, 2012; Wallace, 2003). Unlike traditional reading approaches, CR requires thinking critically about the text, speculating about its content, and forming judgments through cognitive engagement. Critical reading is viewed as an attitude, emotional and intellectual behavior, and a mental stance that readers adopt when interacting with text (Koray & Çetinkılıç, 2020). Critical reading can be defined as both a science and an art, involving the examination and evaluation of text while adopting a unique perspective. It entails asking questions about conflicts, consistencies, and inconsistencies within the text and understanding the reasons behind its creation (Young et al., 2022).

Critical reading encompasses a diverse set of skills, including determining the purpose of reading, assessing text reliability, comparing prior knowledge with presented information, evaluating supporting evidence, understanding implicit meanings, discerning the author's intent, identifying the target audience,

establishing the author's perspective, and distinguishing perspectives from realities. Critical reading also entails making predictions based on specific text sections, recognizing text types, identifying unique authorial language features, extracting the main idea, inquiring into the text's content, making inferences, and summarizing the text in one's own words (Pattison, 2015; Pirozzi et al., 2013; Wallace, 2003).

Readers may be challenged to think critically when texts include complexity, controversy, bias and perspective, supporting evidence, and ambiguity. Critical texts often contain multifaceted ideas, intricate arguments, or nuanced viewpoints that require careful analysis. Texts may present controversial topics, conflicting perspectives, or contentious issues, inviting readers to consider multiple sides of an argument. Critical texts may also exhibit bias, whether intentional or unintentional, and recognizing and evaluating these biases is crucial for critical readers (Collins-Dogrul & Saldaña, 2019). Additionally, texts should provide evidence, data, or examples to support their claims, and critical readers would assess the quality and relevance of this evidence. Some critical texts may intentionally employ ambiguity or figurative language, encouraging readers to interpret and infer meaning (Larking, 2017).

Critical readers adopt a proactive approach when engaging with texts. They question and analyze the author's purpose, arguments, and assumptions, breaking down the text into its components to understand its structure (Jacobs, 2001). They critically assess the credibility and reliability of the sources cited within the text, recognizing potential biases or conflicts of interest. Critical readers are open to considering various viewpoints, even those that may challenge their own beliefs or preconceptions. They pinpoint the central arguments or claims made in the text and evaluate its validity, logic, and supporting evidence. Furthermore, they reflect on their own reactions, thoughts, and interpretations of the text, often synthesizing ideas from multiple sources. Finally, they engage in discussions, debates, or written responses to express their critical thinking and analysis of the text (Spears, 2012).

2.2 Active Learning in Developing Critical Reading
Active learning can be defined as an educational approach that involves students actively participating in the learning process (Faust & Paulson, 1998; Festus, 2013; Shroff et al., 2021; van Hout-Wolters et al., 2000). It emphasizes students' engagement, decision-making, and mental involvement in their education. In active learning, students are challenged to use their cognitive abilities to explore ideas, incorporate new information into their understanding, and apply course material to real-life situations or new problems. According to van Hout-Wolters et al. (2000), active learning is a philosophy of education that encourages students to take ownership of content, engage in meaningful tasks, and participate in higher-order thinking tasks, such as analysis, synthesis, and evaluation.

Ultimately, active learning aims to foster high levels of learning interactions and mental engagement initiated by students, positively affecting both learning outcomes and attitudes (Faust & Paulson, 1998; Festus, 2013). Through active

engagement in their education, students are more inclined to internalize concepts and cultivate problem-solving abilities. Therefore, active learning promotes a dynamic and engaging learning environment, increasing motivation and excitement for the subject matter.

Active learning holds significant potential to improve CR skills in students. By its very nature, active learning encourages students to engage more deeply with course material, promoting the development of CR abilities in several ways. For instance, in active learning environments, students are not passive recipients but actively engaged participants in the learning process, which includes reading and analyzing texts (Koray & Çetinkılıç, 2020). This engagement propels them beyond the realm of passive reading, compelling them to question, deliberate, and contemplate the content.

One of the fundamental components of active learning is the cultivation of curiosity and inquiry, encouraging students to ask probing questions about the material they are studying (Fornari & Poznanski, 2021). This process not only aids in grasping the deeper meaning of texts but also facilitates the identification of key points and the evaluation of argument validity.

Furthermore, active learning frequently incorporates interactive elements such as group discussions and debates (Rezaei, 2020). Here, students are tasked with articulating their perspectives and defending their viewpoints, fostering the essential skills of critical thinking and the capacity to analyze and assess various arguments and interpretations. Moreover, active learning integrates real-world applications of course material, offering students opportunities to transfer their CR skills to authentic scenarios (Chen et al., 2023). This practical approach reinforces their ability to analyze and interpret texts in a variety of contexts, enhancing their overall comprehension.

In addition, active learning thrives on collaboration, exposing students to a spectrum of diverse perspectives and interpretations (Keyser, 2000). This diversity encourages them to contemplate multiple viewpoints, a crucial aspect of CR. Active learning encourages students to engage in self-reflection, promoting an increased awareness of their strengths and areas for improvement in CR. This introspection aids in personal growth and the refinement of CR abilities. Moreover, the approach often involves problem-solving exercises that necessitate students to analyze information, draw conclusions, and make informed decisions (Wakhata et al., 2023). These activities inherently bolster critical thinking skills, directly applicable to CR.

Lastly, active learning strategies frequently incorporate higher-order thinking tasks, such as analysis, synthesis, and evaluation. These cognitive processes inherently align with the skills requisite for proficient CR. Consequently, active learning not only engages students actively in the learning process but also serves as a dynamic platform for cultivating and honing CR abilities. Therefore, incorporating active learning into the curriculum can create an environment where students actively practice CR, developing their ability to think critically

about text, evaluate arguments, and make informed judgments. As a result, active learning can serve as an effective means of enhancing CR skills, ultimately producing more discerning and thoughtful readers.

2.3 Active Learning and Reading Skill Improvement

Scholars have extensively examined the utility of active learning as an effective strategy for cultivating reading skills (Arsairach et al., 2021; Barrionuevo et al., 2023; Hovland, 2019; Khan et al., 2020; Li et al., 2021; Magableh et al., 2022; Wael et al., 2023). Their research consistently indicates that active learning offers notable advantages, including improvements in reading comprehension, satisfying learning experiences, and the enhancement of reading behaviors. However, it is worth noting that, despite the effectiveness of active learning, limited attention has been devoted to the development of CR skills, even though they are more intricate than basic reading comprehension.

Hovland (2019) examined the effects of the active learning approach on the 'invisible skill' of CR. Through the implementation of diverse active learning activities, such as close reading, reading logs, Bloom's questions, and addressing areas of uncertainty, the study reported significant enhancements in both reading proficiency and critical thinking skills among students.

Consequently, this current study has endeavored to fill the void left by previous research by emphasizing active learning as the core principle in a learning management system aimed at enhancing the CR abilities of 10th-grade students. The study had two primary objectives: 1) to assess the effectiveness of active learning management in improving CR abilities among 10th-grade students and 2) to investigate the impact of an active learning approach on the CR skills of 10th-grade students.

3. Methodology

3.1 Research Design

The study employed a quantitative approach, utilizing a one-group experimental design. A learning management plan centered around the active learning approach was designed, with the overarching goal of enhancing the CR abilities of 10th graders. During the development phase, rigorous expert evaluations were conducted, and a trial execution of the draft plan was undertaken to refine its effectiveness. The study's outcomes were assessed by examining the percentages of students' performance levels throughout the various activities implemented within the learning management program. Additionally, the study involved a comparison of participants' pre-test and post-treatment performances in CR to gauge the impact of the active learning approach on their skills.

3.2 Participants

The study included 40 English as a foreign language 10th-grade students from a public school in Thailand. The selection process employed purposive sampling, with specific criteria applied for participant inclusion, such as participants must: a) be enrolled in a Thai public school, b) lack prior experience in learning within a native language or English as a second language setting, or an international

school environment, and c) have an absence of health-related issues that could impede their ability to engage in the data collection process. These criteria were carefully established to mitigate potential factors that could influence the study's outcomes. The participants were treated ethically in accordance with human research standards.

3.3 Instruments

3.3.1 Active Learning Management Plan to Improve Critical Reading Ability

The primary instrument utilized in this study was a comprehensive learning management plan created in alignment with the principles of the active learning approach. This plan served as the foundation for outlining the rationale, objectives, timeframe, activities, and assessment methods. Within this learning management plan, six distinct lesson plans were available, all dedicated to enhancing CR skills through using short stories, passages, and literature. The active learning approach embedded in the plan is characterized by the creation of a dynamic and stimulating learning environment, the cultivation of real-world problem-solving abilities, and the promotion of collaborative learning and critical thinking. Consequently, various instructional activities have been incorporated, including game-based learning, think-pair-share exercises, and the implementation of Cooperative Integrated Reading and Composition (CIRC) techniques.

To ensure the effectiveness of the learning management plan, it underwent thorough evaluation for validity. In the content validation, the learning management plan was examined and evaluated by the three experienced educators. Subsequently, the plan was subjected to a trial study involving participants who shared similar characteristics with the target group. The results of this trial study demonstrated the suitability of the learning management plan for implementation (mean = 4.11). Feedback and insights from these experts, as well as the findings from the pilot study, were instrumental in refining the learning management plan before its formal implementation with the participants.

3.3.2 Critical Reading Test

A CR test of 30 multiple-choice questions intricately linked to CR was developed in this study. The questions varied in complexity (IOC 0.5-1.0) and difficulty (0.42-0.79), offering a diverse challenge. The questions effectively discriminated between different levels of CR skills (0.21-0.53). The test's reliability, assessed using the Kuder-Richardson method, yielded a strong coefficient of 0.79, confirming its consistency and dependability in assessing CR abilities.

3.4 Data collection and Data Analysis

This study employed a one-group pre-test and post-test design during the first semester of the 2023 academic year. The participants underwent a pre-test to assess their critical thinking abilities before receiving the treatment. The learning management plan was executed over a span of 6 weeks, covering all sub-lesson plans. Following the completion of the study, the participants underwent a post-test evaluation.

The effectiveness index (EI) of the learning management plan was evaluated using two indicators: process effectiveness (E1), measured by participants' average scores during activities, and product effectiveness (E2), determined by post-test scores, and both compared to a criterion of 80.

To gauge the relationship between post-test performance and initial proficiency, an EI was calculated by summing post-test scores and dividing by the product of the maximum attainable class score and the sum of pre-test scores. A paired samples t-test was conducted to identify significant differences between participants' pre-test and post-test scores, confirming the impact of the learning management plan on students' CR abilities.

4. Results
The results show the effectiveness of the learning management plan and the effects of an active learning approach on participants' CR ability.

4.1 Effectiveness of the Learning Management Plan
Table 1 shows an analysis of the effectiveness of the learning management plan.

Table 1: Descriptive statistical analysis on the effectiveness of the learning management plan

Effectiveness	Maximum point	Sum	$\bar{x}$	SD	%
The effectiveness of the process (E_1)	7,200	6,353	158.82	1.56	88.23
The effectiveness of the product (E_2)	1,200	966	24.15	1.40	80.50
The effectiveness of the active learning management (E_1/E_2) = 88.23/80.50					

The study's results indicated that students achieved an average score of 158.82 ($\bar{x}$ = 158.82, SD = 1.56) during the learning management activities, which accounts for 88.23% of the mean score. Furthermore, the post-test average score was 24.15 ($\bar{x}$ = 24.15, SD = 1.40), representing 80.50% of the maximum possible score. The effectiveness of the active learning management in enhancing participants' CR was calculated as 88.23/80.50 (E1/E2), surpassing the predetermined criterion of 80/80. This suggests that active learning management is instrumental in helping students develop CR abilities both during and upon completing the learning process.

Table 2: The effectiveness index of learning management plan

n	Sum		Effectiveness index (EI)
	Pre-test	Post-test	
40	853	966	0.325

The findings shown in Table 2 are that the pre-test scores of the participants totals 853, whereas the sum of their post-test scores is 996. Considering the highest attainable score on the test, which is 1200 (as presented in Table 1), we computed the EI for the active learning management plan as 0.325. This implies that students

enhanced their understanding by 0.325, signifying a noteworthy improvement of 32.50%.

4.2 Effects of active learning approach on participants' critical reading ability
The following table shows the participants pre-test and post-tests scores.

Table 3: Comparison between participants' pre-test and post-tests scores

Score	n	Mean	SD	t	Sig.
Post-test	40	21.32	2.03	-9.506	.00**
Pre-test	40	24.15	1.44	-	

*p<0.05

Comparing the students' performance in the pre-test and post-tests, we observed significant enhancements in their CR skills. As shown in Table 3, the study's findings revealed a highly significant difference between the participants' pre-test ($\bar{x}$ = 21.32, SD = 2.03) and post-test ($\bar{x}$ = 24.15, SD = 1.44) scores, with a t-value of -9.506 and p-value less than 0.00. Given the considerable improvement in scores seen in the post-test, it can be concluded that the learning management plan, which incorporates an active learning approach, positively influenced the CR abilities of the participants.

5. Discussion
The outcomes of this study unequivocally affirm the effectiveness of the active learning approach in elevating CR skills and concurrently fostering a comprehensive development of various facets of reading. The findings of this study aligned with prior research by Arsairach et al. (2021), Barrionuevo et al. (2023), Hovland (2019), Khan et al. (2020), Li et al. (2021), Magableh et al. (2022), and Wael et al. (2023), which underscores active learning's potential to serve as a versatile and robust tool for nurturing holistic reading skill development.

Active learning, through its dynamic engagement strategies, stimulates not only CR but also comprehension, vocabulary enrichment, and text decoding proficiency. By encouraging deep interaction with texts, fostering collaborative learning environments, and integrating problem-solving elements, active learning contributes to the multifaceted growth of reading skills, positioning it as a valuable asset in the educational landscape which aims at cultivating well-rounded and proficient readers.

In the specific context of CR, our study aligns closely with the conclusions drawn by Hovland (2019), further reinforcing the value of integrating active learning activities into the reading process. What unites our research with Hovland's is employing activities that foster critical thinking, facilitate collaborative learning, and actively immerse students in the educational experience. In detail, Hovland's study, for instance, delved into strategies such as close reading, reading logs, the application of Bloom's questions, and addressing areas of uncertainty. These activities are inherently designed to promote deep comprehension, encourage students to reflect on their reading experiences, and stimulate higher-order

thinking skills by posing thought-provoking questions and addressing uncertainties within the text.

In our study, we complemented these active learning techniques with a different set of activities, namely game-based learning, think-pair-share, and CIRC. Game-based learning introduces an element of enjoyment and competition, motivating students to immerse themselves in the material. Think-pair-share promotes open dialogue and collaborative problem-solving, encouraging students to articulate their thoughts and engage in meaningful discussions. Alternatively, CIRC emphasizes active participation and teamwork, fostering an environment where participants collectively analyze and dissect complex texts.

The common aspects in Hovland's strategies and ours is the commitment to active engagement, critical thinking, and collaborative learning, which collectively contribute to the enhancement of CR abilities. This convergence of methodologies underscores the versatility of active learning in catering to a range of teaching contexts and further validates its efficacy in nurturing well-rounded readers with advanced CR skills.

Delving into the particulars of our study, it becomes evident that activities such as game-based learning, think-pair-share, and CIRC have proven effective in developing CR skills. Game-based learning introduces an element of fun and competition, motivating students to engage deeply with the texts (Thangjai & Worapun, 2022). Think-pair-share fosters discussion and collaborative problem-solving, encouraging students to articulate their thoughts and perspectives (Mundelsee & Jurkowski, 2021). CIRC promotes active engagement and teamwork, creating an environment where participants collectively dissect and understand complex texts. These activities, embedded within the active learning management plan, contributed to the improvement of CR abilities among the participants.

6. Conclusion

This study has provided robust evidence supporting the effectiveness of the active learning approach in enhancing CR skills among students. The findings align with a growing body of research and underscore the versatility of active learning as a pedagogical tool that not only improves CR but also contributes to comprehensive reading skill development, including comprehension, vocabulary enrichment, and text decoding. The shared use of activities that promote critical thinking, collaborative learning, and active engagement in the learning process unites our study with prior research, emphasizing the value of these methodologies in educational contexts. Active learning emerges as a valuable asset for cultivating well-rounded and proficient readers, offering pedagogical insights and opportunities for further investigation.

7. Suggestions

From a pedagogical standpoint, the implications of this study are significant. Educators and instructional designers are encouraged to incorporate active learning strategies, such as game-based learning, think-pair-share, and CIRC, into

their teaching approaches. These strategies not only enhance CR but also nurture a holistic reading skill set. Additionally, this study encourages further research into the application of active learning in the context of CR. Future studies should explore various active learning techniques and their specific impact on different aspects of reading, thus enriching our understanding of effective pedagogical approaches.

8. Limitations
One notable limitation of this study is the focus on quantitative data, with a lack of qualitative insights. While the quantitative data provide strong empirical support for the effectiveness of active learning, a more nuanced understanding could be gained through qualitative analysis, including student feedback, observations, and in-depth interviews. Qualitative data would offer valuable insights into the students' experiences, perceptions, and the specific aspects of active learning that they found most beneficial. Future research endeavors should consider incorporating qualitative methodologies to complement the quantitative findings and provide a more comprehensive understanding of the active learning-CR dynamic.

A further limitation of this study may be the limited number of participants, and the variables investigated. The participants' demographics, such as age, sex, family income, and parent educational attainment, may also have affected their CR abilities. Future research may consider these factors.

9. Acknowledgement

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