



DEVELOPING STUDENTS' CRITICAL THINKING THROUGH READING-BASED LITERACY ACTIVITIES IN SECONDARY EFL CLASSROOMS: AN INTERVENTION STUDY

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Abstract

Critical thinking is an essential competence in language education because students are expected not only to understand texts but also to interpret information, evaluate arguments, identify assumptions, make inferences, and justify their opinions using textual evidence. However, reading instruction in many English as a foreign language classrooms still emphasizes literal comprehension, vocabulary translation, and answer-finding activities. This study aims to examine the effectiveness of reading-based literacy activities in developing students' critical thinking and to explore how students experience critical reading tasks in secondary EFL classrooms. The study employed a mixed-method design using a quasi-experimental pretest-posttest control group approach supported by classroom observations, student interviews, reflective journals, and document analysis. The participants were 74 Grade VIII students divided into an experimental group and a control group. The experimental group received reading-based literacy activities involving prediction, questioning, evidence mapping, inference-making, argument evaluation, perspective comparison, and reflective response writing. The control group received conventional reading

instruction. Quantitative data were analyzed using descriptive statistics, paired-sample *t*-tests, independent-sample *t*-tests, normalized gain scores, and effect size analysis. Qualitative data were analyzed thematically. The findings showed that the experimental group achieved significantly higher critical thinking improvement than the control group. Qualitative findings revealed that reading-based literacy activities strengthened students' ability to question texts, locate evidence, compare viewpoints, infer implicit meanings, and justify interpretations. The study concludes that reading-based literacy activities can develop students' critical thinking when they are explicit, evidence-based, dialogic, and supported by reflective assessment.

Keywords: critical thinking; reading literacy; EFL; secondary students; literacy activities

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A. Introduction

Critical thinking has become one of the most important educational goals in language education. Students must interpret ideas, evaluate claims, identify assumptions, compare perspectives, make inferences, and justify conclusions—closely connected to reading literacy since reading requires constructing meaning, examining evidence, and responding critically.

Reading is not merely decoding; it involves interaction between readers, texts, contexts, and prior knowledge. Kintsch (1988) explains comprehension as construction and integration of meaning, while Kendeou, McMaster, and Christ (2016) emphasize multiple cognitive processes—making reading literacy a strong foundation for critical thinking.

In many secondary EFL classrooms, reading instruction is still dominated by literal comprehension: translating vocabulary, identifying main ideas, answering factual questions. These practices

support basic comprehension but do not train students to question, analyze, evaluate, or reflect.

This creates a pedagogical gap: curricula increasingly require higher-order thinking, but classroom practices remain focused on lower-level comprehension. Students need structured activities that explicitly guide critical thinking while reading—predicting intention, generating questions, identifying evidence, analyzing arguments, comparing viewpoints, and writing reflective responses.

Critical thinking is conceptualized as purposeful, self-regulatory judgment involving interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 1990). Halpern (1998) argues it can be taught through dispositions, explicit practice, transfer training, and metacognitive monitoring; Abrami et al. (2015) similarly found explicit instruction embedded in meaningful contexts is more effective—critical thinking requires systematic instructional design, not automatic emergence.

Reading-based literacy activities suit this purpose well: texts can become objects of inquiry, asking not only what a text says but how it supports claims, what is missing, whose perspective is represented, and what evidence is convincing—moving reading from recall toward critical engagement.

Prior research supports this connection: McKeown, Beck, and Blake (2009) showed comprehension strengthens with deep engagement rather than routine questions; Andreassen and Bråten (2011) found explicit comprehension instruction improves strategy use; and Ku and Ho (2010) emphasized metacognitive strategies since effective thinkers plan, monitor, and evaluate their reasoning.

However, developing critical thinking through reading is not simple: students may lack vocabulary, background knowledge, and confidence, and may assume every question has one correct answer. Teachers must scaffold gradually from literal comprehension to inference, evidence-based reasoning, and reflection, modeling how to question, identify evidence, and justify interpretations.

This study examines reading-based literacy activities for developing critical thinking, asking: (1) is there a significant difference in improvement between reading-based and conventional

instruction; (2) which aspects of critical thinking improve; (3) how do students experience these activities; and (4) what challenges emerge?

B. Method

This study used a mixed-method design: a quasi-experimental pretest-posttest control group design to measure effects on critical thinking, plus observations, interviews, reflective journals, and document analysis to explain the classroom mechanisms behind the improvement.

Participants were 74 Grade VIII students in two intact classes: an experimental group (37 students) and control group (37 students), with similar prior achievement; one teacher taught both for consistency.

The experimental group received reading-based literacy activities across six stages: pre-reading inquiry, guided comprehension, evidence mapping, inference-making, argument evaluation, and reflective response—predicting topics, identifying evidence, interpreting implicit meaning, distinguishing fact from opinion, and writing evidence-based responses.

The control group received conventional reading instruction—translation, comprehension questions, teacher-led discussion, written exercises—using texts similar in topic, length, and difficulty but without explicit critical reading activities.

The main instrument was a 40-item Critical Thinking in Reading Test measuring interpretation, analysis, inference, evaluation, and explanation (reliability 0.86).

Qualitative data came from eight observations in the experimental group, interviews with 12 students of varying improvement levels, reflective journals, and learning documents (worksheets, evidence maps, annotated texts, teacher feedback).

Quantitative data were analyzed via descriptive statistics, t-tests, normalized gain, and Cohen's d; qualitative data via thematic analysis, triangulating test results, observations, interviews, journals, and documents, with standard ethical procedures.

C. Finding and Discussion

1. Finding

Findings are presented in four parts: critical thinking scores before/after intervention, improvement across indicators, students' experiences, and implementation challenges.

Pretest results showed comparable initial ability (experimental $M = 19.68$, $SD = 4.21$ vs. control $M = 19.41$, $SD = 4.09$), with no significant difference, $t(72) = 0.28$, $p = .781$.

After eight meetings, the experimental group ($M = 31.24$, $SD = 4.36$) outperformed the control group ($M = 24.05$, $SD = 4.52$), $t(72) = 6.94$, $p < .001$, with a large effect size, Cohen's $d = 1.61$.

Table 1. Critical Thinking Scores of Experimental and Control Groups

Group	Test	N	Mean	SD	Interpretation
Experimental	Pretest	37	19.68	4.21	Moderate
Experimental	Posttest	37	31.24	4.36	High
Control	Pretest	37	19.41	4.09	Moderate
Control	Posttest	37	24.05	4.52	Moderate

Source: Processed from critical thinking in reading test data.

The experimental group improved significantly from pretest to posttest, $t(36) = 15.07$, $p < .001$, versus a smaller control improvement, $t(36) = 7.42$, $p < .001$. Mean gain was 11.56 (experimental) versus 4.64 (control); normalized gain was 0.57 (moderate-to-high) versus 0.23 (low-to-moderate).

Table 2. Gain Scores and Statistical Comparison

Indicator	Experimental Group	Control Group	Statistical Result
Mean gain	11.56	4.64	Experimental group higher
Normalized gain	0.57	0.23	Moderate-to-high vs. low-to-moderate
Posttest comparison	31.24	24.05	$t(72) = 6.94$; $p < .001$

Effect size	-	-	Cohen's d = 1.61; large effect
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Source: Processed from pretest and posttest data.

These results indicate reading-based literacy activities produced stronger critical thinking improvement, with the large effect size suggesting the intervention was educationally meaningful.

Across five indicators—interpretation, analysis, inference, evaluation, and explanation—the experimental group improved on all, with the highest gains in inference and evaluation, followed by analysis, explanation, and interpretation.

Table 3. Critical Thinking Indicator Scores in the Experimental Group

Indicator	Pretest Mean	Posttest Mean	Gain	Interpretation
Interpretation	4.12	5.92	1.80	Moderate improvement
Analysis	3.86	6.14	2.28	Strong improvement
Inference	3.74	6.31	2.57	Strong improvement
Evaluation	3.51	6.08	2.57	Strong improvement
Explanation	4.45	6.79	2.34	Strong improvement

Source: Processed from critical thinking in reading test data.

The improvement in inference reflects students' growing capacity to draw conclusions from textual clues, having been repeatedly asked to infer intention, motivation, and unstated assumptions. Evaluation improved through evidence mapping and argument evaluation tasks that trained students to judge whether claims were sufficiently supported.

Explanation improved because students were trained to justify answers rather than select them without reasoning, connecting answers with evidence.

Qualitative findings showed students experienced reading-based literacy activities as more challenging but more meaningful than conventional instruction, with four themes: questioning the text, locating evidence, comparing perspectives, and reflective reasoning.

Table 4. Qualitative Themes on Reading-Based Critical Thinking Activities

Theme	Evidence from Classroom Practice	Pedagogical Meaning
Questioning the text	Students generated questions about author intention, missing information, and alternative meanings	Students moved from passive reading to inquiry
Locating evidence	Students highlighted sentences and mapped evidence to support claims	Reasoning became text-based
Comparing perspectives	Students discussed different interpretations and viewpoints	Students learned that texts can be read critically
Reflective reasoning	Students wrote responses explaining agreement, disagreement, or evaluation	Students justified ideas using evidence
Collaborative discussion	Students debated interpretations in small groups	Dialogue supported critical thinking

Source: Synthesized from observations, interviews, and reflective journals.

Students initially struggled to generate critical questions, being more familiar with factual ones, but after repeated modeling began asking about author intention, evidence, and fairness—a shift from literal comprehension toward critical engagement.

Evidence mapping (writing a claim and its supporting textual evidence in separate columns) proved highly useful, helping

students who previously answered from memory or guessing learn to return to the text.

Perspective comparison—comparing texts or interpretations—taught students that readers can hold different opinions if using different evidence, developing tolerance for alternative viewpoints and more careful defense of interpretations.

Reflective response writing connected reading with personal reasoning; responses increasingly used phrases like "the evidence shows that" and "this argument is strong because," showing internalization of critical reading language.

Challenges included limited vocabulary, which the teacher addressed with vocabulary previews and contextual meaning tasks before critical discussion.

Students' dependence on literal answers was another challenge: many initially believed reading questions had only one correct answer, until teacher modeling and evidence-based discussion showed different interpretations could be valid.

Uneven participation was addressed by assigning rotating roles (question maker, evidence finder, summarizer, evaluator, presenter); time management was also a challenge since critical reading activities took longer than conventional exercises.

Table 5. Challenges and Teacher Responses

Challenge	Classroom Evidence	Teacher Response
Limited vocabulary	Students struggled with unfamiliar words	Provided vocabulary preview and contextual clues
Literal-answer habit	Students expected one fixed answer	Modeled evidence-based interpretation
Uneven participation	Confident students dominated discussion	Assigned rotating group roles
Time constraints	Evidence mapping and reflection took longer	Used shorter texts and focused questions
Weak justification	Students gave opinions without evidence	Required claim-evidence-response format

Source: Synthesized from classroom observations and teacher notes.

2. Discussion

Reading-based literacy activities significantly developed critical thinking: the experimental group achieved higher posttest scores and gain than control, supporting the view that critical thinking can be taught through explicit, structured activities, consistent with Abrami et al. (2015).

The strongest improvements—inference and evaluation—reflect the intervention's design: students had to move beyond surface comprehension to infer implicit meanings and evaluate claim-evidence relationships, aligning with Halpern's (1998) argument that critical thinking requires skill practice, transfer, and metacognitive monitoring.

The improvement in explanation matters too: critical thinking is incomplete when students merely select an answer; they must explain why it is reasonable, strengthening the connection between comprehension and reasoning and making thinking visible.

Qualitative findings show the intervention worked through questioning, evidence mapping, perspective comparison, and reflective reasoning, transforming reading from answer-finding into inquiry—consistent with Kuhn's (2019) view that critical thinking is closely tied to discourse and argumentation.

Evidence mapping played a central role, helping students ground responses in textual evidence rather than unjustified opinion, supporting both comprehension and critical thinking by requiring students to return to the text and evaluate its strength.

Critical thinking in reading also requires metacognitive awareness—monitoring comprehension, evidence relevance, and conclusion reasonableness—consistent with Ku and Ho (2010), with reflective journals helping students become more aware of their reasoning.

Compared with conventional instruction, reading-based literacy activities provided deeper engagement; conventional instruction improved scores somewhat through practice and recall, but the experimental group improved more due to explicit critical thinking tasks.

Teacher scaffolding proved essential: students did not immediately know how to ask critical questions or evaluate evidence, requiring the teacher to model reading, provide question stems, and guide discussion—without scaffolding, critical reading could become confusing or intimidating.

The challenges have implications: limited vocabulary should be addressed through integrated vocabulary support, and students' habit of seeking one correct answer needs gradual introduction of open-ended, evidence-based questions.

Uneven participation shows critical thinking is also social: group discussion supports reasoning only when all students are involved, so rotating roles like evidence finder distribute responsibility and structure participation.

Time management matters since critical reading requires depth; teachers may need fewer texts or questions so students analyze fewer items more carefully—a shift from quantity to quality.

Overall, reading-based literacy activities develop critical thinking when explicit, evidence-based, dialogic, and reflective, turning reading into a medium for reasoning rather than merely a source of answers—valuable for integrating language learning, comprehension, and higher-order thinking.

D. Conclusion

This study examined the effectiveness of reading-based literacy activities in developing students' critical thinking in secondary EFL classrooms. The findings showed that students taught through reading-based literacy activities achieved significantly higher improvement than students taught through conventional reading instruction. The experimental group improved from a pretest mean score of 19.68 to a posttest mean score of 31.24, while the control group improved from 19.41 to 24.05. The posttest comparison showed a significant difference, $t(72) = 6.94$, $p < .001$, with a large effect size, Cohen's $d = 1.61$. Improvement occurred across interpretation, analysis, inference, evaluation, and explanation, with the strongest gains in inference and evaluation. Qualitative findings revealed that students developed critical

thinking through questioning the text, locating evidence, comparing perspectives, participating in discussion, and writing reflective responses. However, implementation challenges included limited vocabulary, literal-answer habits, uneven participation, weak justification, and time constraints. The study concludes that reading-based literacy activities can develop students' critical thinking when teachers provide explicit modeling, textual evidence tasks, collaborative discussion, and reflective assessment. Future research should examine long-term implementation, different text genres, digital critical reading tools, and the relationship between critical thinking and reading comprehension achievement.

Declaration of AI-Assisted Technologies

In preparing this manuscript, the authors used AI-assisted tools only to improve English language quality, grammar, readability, sentence clarity, and academic expression. The AI tools were not used to generate research data, conduct data analysis, produce findings, or draw conclusions. All conceptual arguments, data interpretation, methodological decisions, and scholarly conclusions remain the full responsibility of the authors. The authors carefully reviewed, edited, and verified all AI-assisted outputs to ensure the accuracy, integrity, and originality of the final manuscript.

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