



Empowering Sophomores' Higher-Order Thinking Skills in Analytical and Critical Reading Course through Utilizing KWL Plus Strategy

Jureeporn Malelohit^{1*}

¹Faculty of Humanities and Social Sciences, Thaksin University, Thailand

✉: mjureeporn@tsu.ac.th

(*Author Corresponding Email)

Received: 21 January 2026; Revised: 21 February 2026; Accepted: 17 March 2026

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Abstract

Developing higher-order thinking skills (HOTS) has become a crucial objective in tertiary-level English reading instruction, particularly in courses emphasizing analytical and critical reading. To achieve this goal, instructional strategies that actively engage learners and foster metacognitive awareness are essential for enhancing reading comprehension and critical thinking. This study aimed to empower sophomores' higher-order thinking skills in an Analytical and Critical Reading course through the utilization of the KWL Plus strategy. The purposes of the study were twofold: (1) to compare sophomores' reading comprehension achievement before and after learning through the KWL Plus strategy, and (2) to examine changes in their higher-order thinking skills before and after engaging in analytical and critical reading instruction using the KWL-plus strategy. The participants were 48 sophomore students enrolled in the Analytical and Critical Reading course during the second semester of the 2025 academic year. A one-group pretest–posttest research design was employed. The KWL Plus strategy was systematically implemented throughout the instructional period to encourage active reading, metacognitive reflection, and deeper textual analysis. Research instruments consisted of a reading comprehension test and a higher-order thinking skills assessment focusing on analysis, evaluation, and synthesis. Data were analyzed using descriptive statistics and paired-samples t-tests. The results revealed statistically significant improvements in both reading comprehension and higher-order thinking skills following the implementation of the KWL Plus strategy. These findings suggest that the KWL Plus strategy is an effective instructional approach for enhancing sophomores' analytical and critical reading abilities while promoting higher-order thinking skills at the tertiary level.

Keywords: Analytical and Critical Reading, Higher-Order Thinking Skills, KWL Plus Strategy, Sophomores

1. Introduction

In the context of higher education, the development of higher-order thinking skills (HOTS) has become a central goal of English language instruction, particularly in reading courses that emphasize analytical and critical engagement with texts. HOTS, as defined in Bloom's revised taxonomy, involve cognitive processes such as analyzing, evaluating, and creating, which go beyond basic comprehension and recall (Anderson & Krathwohl, 2001). These skills are essential for university students to interpret complex academic texts, evaluate

arguments, synthesize information, and apply knowledge critically across disciplines. However, numerous studies have reported that EFL learners at the tertiary level continue to face challenges in reading comprehension and critical thinking due to limited strategic reading practices and passive learning environments (Amali et al., 2022; Indriastuti et al., 2023; Javorcikova & Badinská, 2021).

Reading, particularly analytical and critical reading, is not merely a receptive skill but an active, strategic, and cognitive process that requires learners to interact meaningfully with texts. According to Carrell (1988) and Anderson and Nunan (2008), effective reading instruction should encourage students to activate prior knowledge, set purposes for reading, monitor comprehension, and reflect on learned information. Anderson (2008) further emphasized that strategic reading instruction enables students to become autonomous readers who can analyze textual structures and critically evaluate content. In addition, Critical thinking is claimed to be an essential skill that enables learners to analyse information, make informed decisions, and solve problems effectively. Its significance is obvious, particularly in this information age, where knowledge and information are abundant through technologies. (Prommak, S., & Bunchuay, K., 2025).

Despite this theoretical understanding, traditional reading instruction in many EFL contexts still focuses heavily on surface-level comprehension questions, which inadequately foster higher-order thinking skills (Mukhlis et al., 2023; Pakpahan et al., 2021). To address these challenges, learner-centered and metacognitive strategies such as the KWL (Know–Want–Learn) and KWL Plus strategies have gained increasing attention in reading pedagogy. Originally proposed by Ogle (1986), the KWL strategy guides learners to activate background knowledge, formulate learning questions, and reflect on acquired knowledge. The KWL Plus strategy extends this framework by incorporating post-reading activities such as summarizing, concept mapping, or organizing ideas, thereby promoting deeper comprehension and critical engagement with texts. Empirical studies have demonstrated that the use of KWL and KWL Plus strategies can significantly enhance students' reading comprehension, engagement, and learning outcomes across various educational levels (Diasti et al., 2023; Masrurroh, 2024; Pratama, 2023; Zuriah & Mutia, 2023). Recent research has further highlighted the effectiveness of the KWL Plus strategy in fostering higher-order thinking skills and related affective factors. For example, Alshaikh (2023) found that the KWL Plus strategy not only improved learners' academic performance but also enhanced their perceived self-efficacy. Similarly, Chimwong et al. (2024) and Sornkeaw (2021) reported significant improvements in reading comprehension and English learning achievement when KWL Plus was integrated with collaborative learning and multimedia tools. Studies conducted in higher education contexts also suggest that KWL Plus supports learners' analytical abilities, note-taking skills, and metacognitive awareness, which are essential components of HOTS (Guo & Ibrahim, 2023; Jittisukpong, 2023; Karagöl, 2025).

Although previous studies have confirmed the effectiveness of the KWL and KWL Plus strategies in improving reading comprehension, limited research has specifically focused on their impact on sophomores' higher-order thinking skills in analytical and critical reading course. Given the increasing demand for university graduates who possess strong critical thinking and analytical abilities, there is a need to explore instructional strategies that effectively integrate reading comprehension and HOTS development. Therefore, this study aims to empower sophomores' higher-order thinking skills in an Analytical and Critical Reading course through the utilization of the KWL Plus strategy by comparing students' reading comprehension and HOTS before and after the instructional intervention.

2. Literature Review

This section reviews relevant theoretical and empirical studies related to the present research. It first examines the concept of higher-order thinking skills (HOTS) in EFL reading and their role in analytical and critical reading at the tertiary level. The review then discusses analytical and critical reading in higher education, followed by an overview of the KWL and KWL Plus strategies as metacognitive frameworks for reading instruction. Finally, previous studies employing KWL Plus to enhance higher-order thinking skills are synthesized in order to identify research gaps and establish the conceptual foundation of the present study.

1. Higher-Order Thinking Skills in EFL Reading

Higher-order thinking skills (HOTS) are widely recognized as essential competencies in higher education, particularly in analytical and critical reading courses. According to Anderson and Krathwohl's (2001) revised Bloom's taxonomy, HOTS encompass the cognitive processes of analyzing, evaluating, and creating, which go beyond basic comprehension and recall. In the context of EFL reading, these skills enable learners to interpret implicit meanings, evaluate arguments, synthesize information, and construct personal responses to texts. Empirical studies have consistently emphasized the importance of integrating HOTS into reading instruction. Nourdad et al. (2018) demonstrated that explicit instruction in HOTS significantly improved EFL learners' reading ability, particularly in inferential and evaluative comprehension. Similarly, Javorcikova and Badinská (2021) found a strong correlation between undergraduate students' critical thinking ability and their reading comprehension performance, underscoring the cognitive demands of academic reading tasks. In Southeast Asian EFL contexts, research has revealed persistent challenges in fostering HOTS through reading instruction. Mukhlis et al. (2023) and Pakpahan et al. (2021) reported that reading assessments at secondary and vocational levels remain dominated by lower-order cognitive questions, limiting opportunities for learners to engage in deeper analysis. At the tertiary level, Indriastuti et al. (2023) identified uneven development of students' HOTS, even in extensive reading programs, suggesting the need for structured instructional strategies that explicitly support higher-level cognitive processing.

2. Analytical and Critical Reading in Higher Education

Analytical and critical reading are core components of academic literacy in university settings. Carrell (1988) highlighted that reading comprehension is an interactive process involving readers' prior knowledge, textual features, and strategic processing. In EFL contexts, students often struggle with academic texts due to limited vocabulary, background knowledge, and ineffective reading strategies (Anderson & Nunan, 2008). Analytical reading requires students to examine textual structures, identify main ideas and supporting details, and recognize rhetorical patterns, while critical reading involves evaluating the credibility, relevance, and implications of textual information (Anderson, 2008). Zambrano and Alcívar (2023) emphasized that strengthening reading comprehension strategies in higher education is essential for developing students' critical awareness and independent learning capacity. Thai EFL learners, in particular, face additional affective barriers such as reading anxiety. Jaroentasanasiri and Jeanjaroonsri (2023) reported that students with limited strategy use experience higher anxiety levels, which negatively affect comprehension and critical engagement. These findings suggest that effective reading instruction should integrate cognitive, metacognitive, and affective dimensions to support learners' analytical and critical reading development.

3. KWL Strategy as a Metacognitive Reading Framework

The KWL strategy, introduced by Ogle (1986), is a well-established instructional model

designed to activate learners' prior knowledge (Know), stimulate purposeful reading (Want to know), and promote reflection (Learned). Grounded in constructivist learning theory, KWL encourages active engagement, self-questioning, and metacognitive awareness during reading. Numerous studies have confirmed the effectiveness of the KWL strategy in improving EFL learners' reading comprehension. Masrurroh (2024), Zuriah and Mutia (2023), and Diasti et al. (2023) found that KWL significantly enhanced students' understanding of texts by guiding them through structured pre-, while-, and post-reading activities. At the junior high school level, Fatmawan et al. (2023) reported improved comprehension and motivation among students using KWL, highlighting its adaptability across educational stages. Recent studies have extended KWL implementation through multimedia and contextualized content. Azwar et al. (2024) demonstrated that integrating KWL with multimedia resources improved Indonesian EFL students' comprehension of report texts, while Pratama (2023) emphasized the strategy's effectiveness in encouraging students to formulate meaningful questions and monitor comprehension.

4. KWL Plus Strategy and Higher-Order Thinking Skills

KWL Plus is an expanded version of the original KWL model that incorporates post-reading activities such as summarizing, mapping, or note-taking to promote deeper cognitive processing. This extension aligns closely with HOTS, as learners are required to analyze information, synthesize ideas, and construct new knowledge from texts. Research has shown that KWL Plus effectively enhances higher-level cognitive outcomes. Jittisukpong (2023) reported significant improvements in EFL undergraduate students' reading comprehension through KWL Plus, particularly in analytical and inferential skills. Similarly, Chimwong et al. (2024) found that combining KWL Plus with collaborative strategic reading significantly improved students' reading comprehension and overall English achievement. Beyond reading comprehension, KWL Plus has been shown to influence related academic skills. Karagöl (2025) revealed that the strategy positively affected university students' note-taking and academic listening skills, indicating its potential for broader academic literacy development. Japah et al. (2025) further demonstrated the effectiveness of KWL Plus in culturally contextualized reading materials, such as Jatakas, for first-year undergraduate students. Importantly, Alshaikh (2023) highlighted that KWL Plus not only improves cognitive outcomes but also enhances learners' perceived self-efficacy, suggesting that the strategy supports both cognitive and affective dimensions of learning—an essential factor for sustaining engagement in analytical and critical reading tasks. Effective reading instruction in higher education requires a combination of strategic instruction and meaningful content engagement. Fitriani et al. (2025) found that students' reading comprehension achievement was influenced by both KWL strategy use and reading habits, emphasizing the role of sustained engagement. Guo and Ibrahim (2023) similarly reported that integrating KWL teaching modes in college English reading improved students' participation and comprehension outcomes.

5. Research Gap and Conceptual Framework

While extensive research has documented the effectiveness of KWL and KWL Plus strategies in improving reading comprehension, several gaps remain. First, many studies focus primarily on comprehension outcomes rather than explicitly examining higher-order thinking skills aligned with analytical and critical reading courses. Second, empirical evidence at the sophomore level in tertiary EFL contexts—particularly in Thailand—is still limited. Third, few studies integrate both quantitative gains and cognitive–metacognitive dimensions such as self-efficacy and HOTS development. Addressing these gaps, the present study investigates the extent to which the KWL Plus strategy empowers sophomores' higher-order thinking skills in

an analytical and critical reading course by examining changes in reading comprehension and HOTS performance before and after instruction. By situating KWL Plus within a HOTS-oriented instructional framework, this study contributes to the growing body of research on metacognitive reading strategies in higher education EFL contexts.

3. Research Methodology

In line with the study title, this research applies the KWL Plus strategy as an instructional intervention to promote sophomores' analytical, evaluative, and reflective reading abilities. To examine the impact of the KWL Plus strategy on students' reading comprehension and higher-order thinking skills, a systematic research design was employed. Accordingly, the following section describes the research methodology, including the research design, participants, instructional procedures, research instruments, and data analysis methods used to address the research objectives.

3.1 Research Instruments

Three main research instruments were used in this study.

1. Reading Comprehension Test

The reading comprehension test was developed by the researcher to align with the objectives of the Analytical and Critical Reading course. It consisted of selected academic reading passages followed by multiple-choice and short-answer questions measuring students' abilities to identify main ideas, analyze textual details, make inferences, interpret meanings, and evaluate arguments. The test was administered as both a pretest and a posttest. Content validity was examined by three experts in English language teaching, and the reliability coefficient was calculated using appropriate statistical methods.

2. Higher-Order Thinking Skills (HOTS) Assessment

The HOTS assessment was designed based on Bloom's revised taxonomy, focusing on the cognitive levels of analyzing, evaluating, and creating. The instrument included open-ended questions and analytical tasks requiring students to interpret texts, evaluate evidence, justify opinions, and synthesize information. The assessment was administered before and after the implementation of the KWL Plus strategy. A scoring rubric was used to ensure consistent and objective evaluation of students' responses.

3. Instructional Lesson Plans Using KWL Plus Strateg

A set of lesson plans integrating the KWL Plus strategy was developed as the treatment instrument. Each lesson followed the four stages of the KWL Plus strategy: activating prior knowledge (Know), generating questions (Want to know), reflecting on learning (Learned), and organizing information through summarizing or concept mapping activities (Plus). These lesson plans guided the instructional process throughout the study period.

2. Research Procedure

The research procedure was conducted in three main phases:

2.1 Pre-Implementation Phase

At the beginning of the semester, the participants were administered the reading comprehension pretest and the HOTS pretest to assess their baseline abilities in analytical and critical reading as well as higher-order thinking skills.

2.2 Implementation Phase

The KWL Plus strategy was implemented over the instructional period of the Analytical and Critical Reading course. During each lesson, students actively engaged in pre-reading activities to activate prior knowledge, formulated questions to guide their reading, reflected on newly acquired information after reading, and completed post-reading activities such as summarizing, mapping ideas, or synthesizing arguments. The instructor facilitated discussions and provided feedback to support students' analytical and critical thinking processes.

2.3 Post-Implementation Phase

At the end of the instructional period, the same reading comprehension test and HOTS assessment were administered as posttests. The posttest results were used to measure changes in students' reading comprehension and higher-order thinking skills after learning through the KWL Plus strategy.

3. Data Collection

Data collection was conducted during the second semester of the 2025 academic year in an Analytical and Critical Reading course. The participants consisted of 48 sophomore students who were enrolled in the course and participated in all stages of the study. A one-group pretest–posttest design was employed to collect data on students' reading comprehension achievement and higher-order thinking skills before and after the implementation of the KWL Plus strategy.

Two research instruments were used for data collection. The first instrument was a reading comprehension test designed to measure students' ability to understand, analyze, and interpret academic texts. The second instrument was a higher-order thinking skills assessment focusing on the cognitive domains of analysis, evaluation, and synthesis, in accordance with Anderson and Krathwohl's revised Bloom's taxonomy. Prior to the instructional intervention, all participants completed the reading comprehension pretest and the HOTS pretest to establish baseline performance levels.

The KWL Plus strategy was then systematically implemented throughout the instructional period as part of regular classroom instruction. The instructional procedures encouraged students to activate prior knowledge, formulate guiding questions, engage in analytical and critical reading, and reflect on their learning through summarizing and organizing information.

At the end of the instructional period, the same reading comprehension test and higher-order thinking skills assessment were administered as posttests. The pretest and posttest scores were collected and recorded for statistical analysis to examine changes in students' reading comprehension and higher-order thinking skills resulting from the use of the KWL Plus strategy.

4. Results

1. Results of the Study

To examine the effectiveness of the KWL-Plus instructional strategy in enhancing sophomores' reading comprehension with higher-order thinking skills, a paired-samples t-test was conducted to compare students' pre-test and post-test scores. The test consisted of 30 items measuring comprehension, analysis, evaluation, and creation skills. The results revealed a substantial improvement in students' reading comprehension with HOTS after receiving instruction through the KWL-Plus strategy. As shown in Table 1, the mean score of the post-test ($M = 23.46$, $SD = 3.12$) was considerably higher than that of the pre-test ($M = 15.27$, $SD = 3.45$). The paired-samples t-test indicated that the difference between the pre-test and post-test scores was statistically significant at the .05 level, $t(47) = 14.82$, $p < .001$. This result

demonstrates that students' reading comprehension and higher-order thinking skills significantly improved after the implementation of the KWL-Plus strategy.

Table 1: Comparison of Pre-test and Post-test Scores on Reading Comprehension with HOTS (n = 48)

Test	Mean	SD	t	df	p
Pre-test	15.27	3.45			
Post-test	23.46	3.12	14.82	47	< .001*

*Significant at the .05 level

The findings indicate that the KWL-Plus strategy had a positive and significant effect on sophomores' reading comprehension with higher-order thinking skills. The notable increase in post-test scores suggests that activating prior knowledge (K), setting learning goals (W), organizing information through mapping and summarization (Plus), and reflecting on learning outcomes (L) effectively supported sophomores in processing texts more analytically and critically. Moreover, the large *t*-value reflects a strong instructional impact, implying that students were better able to analyze information, evaluate ideas, and generate new insights after engaging in KWL-Plus-based reading activities.

The second research objective aimed to examine changes in sophomores' higher-order thinking skills (HOTS) before and after engaging in analytical and critical reading instruction using the KWL Plus strategy. To address this objective, the sophomores' higher-order thinking skills were assessed through a HOTS test administered before (pretest) and after (posttest) the implementation of the KWL Plus strategy. The data were analyzed using descriptive statistics and a paired-samples *t*-test to determine whether there was a statistically significant difference between the pretest and posttest scores. The results showed that the students' mean HOTS score increased from the pretest ($M = 62.45$, $SD = 7.83$) to the posttest ($M = 75.68$, $SD = 6.91$).

This increase indicates an improvement in students' higher-order thinking skills after participating in analytical and critical reading instruction using the KWL Plus strategy. The paired-samples *t*-test revealed that the difference between the pretest and posttest scores was statistically significant, $t(47) = 10.24$, $p < .001$. This result suggests that the KWL Plus strategy had a significant positive effect on the development of sophomores' higher-order thinking skills.

5. Conclusion

The purpose of this study was to examine the effectiveness of the KWL-Plus instructional strategy in enhancing sophomores' reading comprehension integrated with higher-order thinking skills (HOTS) in an analytical and critical reading course. The findings clearly indicate that the implementation of the KWL-Plus strategy resulted in significant improvements in both students' reading comprehension performance and their higher-order thinking skills.

The results of the paired-samples *t*-test revealed a statistically significant increase in students' reading comprehension with HOTS from the pre-test to the post-test. The substantial difference between the mean scores (pre-test $M = 15.27$; post-test $M = 23.46$) suggests that students benefited considerably from instruction structured around the KWL-Plus strategy. This finding supports the notion that reading instruction that explicitly integrates cognitive and metacognitive processes can lead to deeper comprehension and more analytical engagement with texts. The large *t*-value further indicates that the instructional intervention had a strong effect, emphasizing the effectiveness of KWL-Plus as a reading strategy for EFL learners at the tertiary level. One possible explanation for this improvement lies in the systematic stages of

the KWL-Plus strategy. Activating prior knowledge in the K (Know) phase likely helped students connect new textual information with existing schemas, facilitating comprehension. The W (Want to know) stage encouraged students to set purposeful reading goals, which may have increased their engagement and focus during reading. The Plus component, which emphasizes organizing information through concept mapping and summarization, appears to have played a crucial role in promoting analysis and synthesis of ideas. Finally, the L (Learned) phase allowed students to reflect on and evaluate their learning, reinforcing critical thinking and self-regulation. Together, these stages created a learning environment that supported students in processing texts more analytically and critically rather than relying on surface-level understanding. In addition to improvements in reading comprehension, the study also found a significant enhancement in students' higher-order thinking skills as measured by the HOTS test. The increase in mean HOTS scores from 62.45 in the pretest to 75.68 in the posttest demonstrates that the KWL-Plus strategy positively influenced students' abilities to analyze, evaluate, and create—core components of higher-order thinking. The statistically significant t-test result confirms that this improvement was not due to chance but rather to the instructional intervention. These findings suggest that the KWL-Plus strategy is particularly effective in fostering HOTS because it actively engages learners in metacognitive reflection and higher-level cognitive processes throughout the reading cycle. By encouraging students to generate questions, evaluate information, and synthesize ideas, KWL-Plus aligns well with the upper levels of Anderson and Krathwohl's revised Bloom's taxonomy. As a result, students are not only passive recipients of information but also active constructors of meaning, which is essential for developing critical and analytical reading skills in EFL contexts.

Overall, the findings of this study are consistent with previous research highlighting the effectiveness of strategy-based instruction in enhancing reading comprehension and higher-order thinking skills. The results provide empirical support for integrating the KWL-Plus strategy into analytical and critical reading courses at the university level. Pedagogically, this study suggests that EFL instructors should adopt structured instructional strategies that promote active engagement, reflection, and higher-order thinking to improve students' reading outcomes. By doing so, students can be better prepared to meet the cognitive demands of academic reading and higher education learning contexts.

6. Discussion

The present study examined the effectiveness of the KWL-Plus instructional strategy in enhancing sophomores' reading comprehension integrated with higher-order thinking skills (HOTS) in an analytical and critical reading course. The findings revealed statistically significant improvements in both reading comprehension and HOTS following the implementation of the KWL-Plus strategy. These results provide strong empirical support for the use of structured, strategy-based, and metacognitive reading instruction in EFL higher education contexts. The significant increase in sophomores' reading comprehension scores from the pre-test to the post-test aligns with a substantial body of research demonstrating the effectiveness of KWL-Plus strategies in improving EFL sophomores' reading comprehension. Ogle (1986) introduced the KWL strategy to promote active reading through activating prior knowledge, setting reading purposes, and reflecting on learning outcomes. Subsequent studies have consistently shown that KWL-based instruction enhances students' understanding of texts by encouraging purposeful and engaged reading (Masrurah, 2024; Zuriah & Mutia, 2023; Pratama, 2023). The present findings corroborate these results and further suggest that the integration of the "Plus" component strengthens the impact of the strategy. Therefore, the effectiveness of the KWL-Plus strategy observed in this study is also consistent with recent empirical studies conducted in EFL contexts. For example, Jittisukpong (2023) and Sornkeaw

(2021) reported significant improvements in undergraduate students' reading comprehension when KWL-Plus was implemented as part of reading instruction. Similarly, Chimwong et al. (2024) found that the combination of KWL Plus and collaborative strategic reading significantly enhanced students' reading comprehension and English achievement. These findings suggest that KWL-Plus is particularly effective when applied in analytical reading contexts that require sophomores to engage with texts beyond literal comprehension. Then, from a theoretical perspective, the results align with schema theory, which emphasizes the role of background knowledge in reading comprehension (Carrell, 1988). The K (Know) stage of the KWL-Plus strategy likely enabled students to activate relevant schemata prior to reading, facilitating the integration of new information with existing knowledge. In addition, the W (Want to know) stage encouraged students to formulate questions and set clear reading goals, which may have increased motivation and focus during reading. These processes are consistent with Anderson's (2008) view of reading as an active and strategic process and with Anderson and Nunan's (2008) emphasis on readers engagement in reading instruction. Beyond reading comprehension, the present study also found a significant improvement in students' higher-order thinking skills, as indicated by the increase in HOTS scores from the pretest to the posttest. This finding supports the effectiveness of the KWL-Plus strategy in fostering higher-order cognitive processes such as analysis, evaluation, and creation, as conceptualized in Anderson and Krathwohl's (2001) revised Bloom's taxonomy.

The results are in line with previous research indicating that reading instruction incorporating HOTS-oriented activities leads to improved critical and analytical thinking (Nourdad et al., 2018; Javorcikova & Badinská, 2021). The Plus component of the KWL-Plus strategy appears to be a key factor contributing to the development of HOTS. Activities such as concept mapping and summarization require learners to organize information, identify relationships among ideas, and synthesize key points, which correspond directly to higher levels of cognitive processing. Similar conclusions were drawn by Amali et al. (2022) and Pakpahan et al. (2021), who emphasized the importance of aligning reading tasks and assessments with HOTS frameworks to promote deeper comprehension. Furthermore, Indriastuti et al. (2023) found that structured reading activities significantly enhanced university students' HOTS, supporting the findings of the present study. The reflective L (Learned) stage also plays an essential role in promoting higher-order thinking. By encouraging students to reflect on what they have learned and evaluate whether their initial questions were answered, the strategy supports metacognitive awareness and self-regulation. This finding is consistent with Alshaikh (2023), who reported that KWL-Plus instruction enhanced learners' perceived self-efficacy and metacognitive engagement—both of which are closely linked to the development of HOTS. Such reflective practices are particularly valuable in analytical and critical reading courses, where students are expected to evaluate arguments and generate new insights. The improvement found in this study is consistent with a wide range of previous research demonstrating the positive impact of KWL-based strategies on EFL learners' reading comprehension. Studies by Diasti et al. (2023), Masruroh (2024), Zuriah and Mutia (2023), and Pratama (2023) similarly reported that KWL strategies facilitate better understanding of texts by helping students organize information and monitor their comprehension. More recent studies, such as Azwar et al. (2024) and Chimwong et al. (2024), further confirm that KWL and KWL Plus strategies are effective across different contexts and text types, including when integrated with multimedia or collaborative approaches. The present findings extend this body of research by demonstrating that KWL Plus is not only effective for general comprehension but also particularly suitable for analytical and critical reading at the tertiary level. More importantly, the results revealed a significant enhancement in students' higher-order thinking skills following the implementation of the KWL Plus strategy. This finding suggests that KWL

Plus goes beyond surface-level comprehension and supports cognitive processes associated with higher levels of Bloom's revised taxonomy, such as analyzing, evaluating, and creating (Anderson & Krathwohl, 2001). During the "Want" phase, students were required to generate questions, which inherently involves analysis and inquiry. The "Learn" and "Plus" phases, especially when students summarize, synthesize ideas, and construct graphic organizers, encourage evaluation of information and integration of concepts. These activities align with Amali et al. (2022) and Pakpahan et al. (2021), who emphasized that HOTS-oriented reading instruction and assessment foster deeper engagement with texts and lead to higher-level comprehension outcomes. The findings also corroborate earlier studies that explicitly linked KWL-based instruction with the development of higher-order thinking. Jittisukpong (2023) and Japah et al. (2025) found that KWL Plus effectively promoted analytical thinking and deeper text interpretation among Thai undergraduate students. Similarly, Nourdad et al. (2018) and Indriastuti et al. (2023) highlighted that explicit instruction targeting HOTS in reading can significantly enhance learners' ability to analyze and evaluate texts.

The present study reinforces these conclusions by showing that when KWL Plus is systematically integrated into an Analytical and Critical Reading course, it can serve as an effective pedagogical framework for HOTS development. Another important aspect of the discussion relates to metacognitive awareness.

The KWL Plus strategy inherently promotes metacognition by requiring learners to reflect on what they already know, identify gaps in their understanding, and evaluate what they have learned. This process aligns with Carrell's (1988) view that successful reading involves strategic awareness and self-regulation. Increased metacognitive engagement may explain why students in this study demonstrated improved HOTS, as they became more conscious of their thinking processes while interacting with complex texts. This interpretation is supported by Guo and Ibrahim (2023), who found that integrating the KWL teaching mode in college English reading enhanced students' strategic awareness and independent learning. In addition, the findings resonate with Alshaikh's (2023) study, which reported that the KWL Plus strategy positively influenced learners' perceived self-efficacy. Although self-efficacy was not directly measured in the present study, the observed improvement in reading comprehension and HOTS may be indirectly associated with increased confidence in handling analytical and critical reading tasks. When students are actively involved in setting learning goals and monitoring their progress, they are more likely to feel capable of engaging with challenging texts, which can further support higher-order cognitive engagement. From a broader pedagogical perspective, the results of this study align with calls to strengthen higher-order thinking and reading strategies in higher education (Zambrano & Alcívar, 2023; Javorcikova & Badinská, 2021).

The effectiveness of the KWL Plus strategy demonstrated here suggests that reading instruction should move beyond traditional teacher-centered approaches toward learner-centered, strategy-based models that actively involve students in meaning construction. This is particularly relevant in analytical and critical reading courses, where students are expected to interpret, critique, and synthesize complex academic texts. Nevertheless, the findings should be interpreted with consideration of the study's design. The one-group pretest–posttest design, while useful for examining instructional impact, does not allow for comparison with a control group. Therefore, although the improvements observed can be reasonably attributed to the KWL Plus strategy, future studies employing experimental or quasi-experimental designs could provide stronger causal evidence. Despite this limitation, the consistency of the present findings with a substantial body of prior research strengthens the claim that KWL Plus is an effective instructional strategy for enhancing both reading comprehension and higher-order thinking skills.

In summary, the discussion of the findings indicates that the KWL Plus strategy effectively supports sophomores' development of analytical and critical reading abilities by improving comprehension and fostering higher-order thinking skills. Grounded in constructivist and metacognitive theories of reading and supported by extensive empirical evidence, the KWL Plus strategy emerges as a powerful pedagogical tool for tertiary-level EFL reading instruction.

7. Suggestions

Based on the findings of this study, EFL instructors are encouraged to integrate the KWL-Plus instructional strategy into analytical and critical reading course to enhance sophomores' reading comprehension and higher-order thinking skills (HOTS). Explicit guidance through the stages of activating prior knowledge, setting reading goals, organizing information through mapping and summarization, and reflecting on learning outcomes can promote active and purposeful reading. Particular emphasis should be placed on the Plus component, as activities such as concept mapping and summarization support analysis, evaluation, and synthesis of textual information.

In addition, reflective practices in the Learned stage should be incorporated to foster students' metacognitive awareness and self-regulated learning. At the curriculum level, reading tasks and assessments should be aligned with HOTS-oriented objectives to ensure consistency between instruction and evaluation. Professional development programs for EFL instructors may also include training on strategy-based and metacognitive reading instruction. For future research, studies employing control groups, longitudinal designs, or mixed methods are recommended to further examine the effectiveness and sustainability of the KWL-Plus strategy across different contexts and learner groups.

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