The Development of Reading Comprehension Skills and Learners' Satisfaction toward English Using Content and Language Integrated Learning (CLIL) with the Canva Application for Grade 12 Learners at Thammakhositwittaya School

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Abstract

Reading comprehension is an important skill for academic success. However, many Thai learners struggle to read English due to limited vocabulary and overreliance on memorization. To tackle this issue, this research examined the enhancement of Grade 12 learners' reading comprehension skills and their satisfaction with English learning through the incorporation of Content and Language Integrated Learning (CLIL) with the Canva application. The study aimed to investigate (1) the effects of CLIL with Canva on learners' reading comprehension skills, (2) the level of learners' reading comprehension, and (3) their satisfaction with this integrated intervention. A quasi-experimental one-group pretest and posttest design was used with 20 purposely chosen Grade 12 learners at Thammakhositwittaya School during the first semester of 2025. The tools included a reading comprehension test (20 questions covering literal, interpretive, critical, and creative levels), a satisfaction questionnaire (15 items on a 5-point Likert scale), and semi-structured interviews. Descriptive statistics, paired-sample t-tests, effect size calculations, and thematic analysis were utilized to analyze the data. The results indicated a substantial improvement, with mean scores rising from 10.20 (SD = 1.79) to 14.85 (SD = 3.03). The effect size (Cohen's d = 1.88) is deemed to be significant according to Cohen's (1988) standards. Across the four comprehension levels, the greatest gain was found in critical, followed by notable progress in creative, literal, and interpretive levels. Learners were extremely satisfied with CLIL and Canva, giving a mean score of 4.62 (SD = 0.27). Qualitative findings corroborated these results, indicating that Canva's visual and creative features deepened engagement and encouraged self-expression. The study indicates that integrating CLIL with Canva fosters an effective, innovative learning environment that improves English proficiency and higher-order skills. These results demonstrate a practical and replicable model for integrating CLIL with digital design tools to improve English instruction in Thailand and beyond.

Introduction

English serves as a global lingua franca, enabling people worldwide to communicate and exchange knowledge. It plays a vital role in education, careers, business, and international collaboration (UCL, 2022). The Basic Education Core Curriculum B.E. 2551 (Ministry of Education, 2008) in Thailand requires English as a subject. Nevertheless, many Thai learners continue to face difficulties in reading English. Reading comprehension involves several cognitive processes, including decoding, inference, and interpretation (Garcia et al., 2024). According to the Programme for International Student Assessment (PISA 2022), only 35 percent of Thai learners reached at least Level 2 in reading, far below the OECD average of 74 percent (Organisation for Economic Co-operation and Development, 2023). This persistent gap underscores the urgent need to strengthen reading comprehension instruction in Thai schools.

Although numerous studies have explored approaches to improve English reading comprehension, many Thai learners still rely heavily on translation and rote memorization. Content and Language Integrated Learning (CLIL) has been recognized as a practical framework for fostering both language and content learning. The approach is based on four interconnected dimensions (4Cs): content, communication, cognition, and culture (Coyle, Hood & Marsh, 2010). It encourages active learning and higher-order thinking. A study found that Thai EFL students improved vocabulary and subject content using CLIL in 2024 (Wangmanee, 2024). Digital tools like Canva have also been shown to help increase student engagement and understanding through multimodal design and visualization (Yundayani et al., 2021; Rahman & Alzahrani, 2023). However, existing studies tend to examine CLIL and Canva separately, and there remains a lack of research combining the two, particularly in Thai upper-secondary contexts that assess both reading subskills and learner satisfaction.

Theoretically, this study is grounded in constructivism, which views learning as an active process of building knowledge through reflection, experience, and social interaction (Dewey, 1933; Vygotsky, 1978; Piaget, 1972). Within this framework, CLIL's 4Cs encourage learners to connect prior knowledge with new input and engage in meaningful communication (Coyle, Hood & Marsh, 2010). Canva reinforces these constructivist principles by enabling learners to collaborate, design, and express ideas visually. The combination of text and images supports the theories of Dual Coding (Paivio, 1986) and Multimedia Learning (Mayer, 2005), which stress the importance of learning through verbal-visual integration. Cognitive Load Theory (Sweller, 2011) also stresses the importance of organized visuals for deeper understanding. Together, CLIL and Canva operationalize constructivist learning through active, multimodal, and collaborative engagement, enhancing comprehension and enjoyment.

Accordingly, this study aims to (1) compare learners' reading comprehension performances before and after integrating CLIL with Canva, (2) investigate the learners' levels of reading comprehension across literal, interpretative, critical, and creative levels, and (3) investigate learners' satisfaction with this integrated learning model. The findings are expected to contribute to English-language pedagogy by presenting an innovative, evidence-based framework that merges CLIL principles with the digital design tool Canva. This integration enhances comprehension and learner motivation and offers a practical model for developing 21st-century English instruction in Thailand and similar EFL contexts worldwide.

Questions

1. How does CLIL with the Canva application develop learners' reading comprehension skills?

2. What are learners' levels of reading comprehension in terms of literal, interpretive, critical, and creative before and after the use of CLIL with the Canva application?

3. What are the learners' satisfactions towards the use of CLIL with the Canva application in improving their reading comprehension?

Objectives

1. To compare learners' reading comprehension performances before and after using CLIL with the Canva application.

2. To investigate the learners' levels of reading comprehension in terms of literal, interpretive, critical, and creative before and after the use of CLIL with the Canva application.

3. To investigate the learners' satisfaction after the use of CLIL with the Canva application.

Literature Review

Reading comprehension and its challenges for Thai learners

Reading comprehension is a sophisticated process that involves decoding, constructing meaning, and drawing on what you know. There are four levels: literal, interpretive, critical, and creative (Burns, Roe, & Ross, 1988; Wahidah, 2012). Literal comprehension requires retaining explicit information; interpretive comprehension focuses on inference; critical comprehension entails evaluation; and creative comprehension fosters original thinking. Thai learners of English as a second language typically have trouble at several levels, particularly after passing beyond the literal stage. This is due to their limited vocabulary and reliance on translation (Chawwang, 2021; Thomas, 2016). The results of national tests show that learners have always struggled with reading parts. Several learners skip important parts of the examinations, misread the materials, or provide arbitrary answers. These results show that learners are having trouble understanding what they read (Nirattisai, 2017; Nipakornkitti & Adunyarittigun, 2018). These challenges show that we need to develop new, more engaging ways to teach that help learners better understand ideas at higher levels of learning.

CLIL for reading comprehension development

Content and Language Integrated Learning (CLIL) is an innovative approach to learning that combines language learning with learning about other subjects. CLIL is based on the four Cs: content, communication, cognition, and culture. It is grounded in constructivist philosophy. This helps learners learn a language and improves their higher-level thinking and understanding of other cultures (Coyle, Hood, & Marsh, 2010). CLIL enhances motivation, vocabulary acquisition, and comprehension through the utilization of authentic and content-rich resources (Hamidavi, Amiz & Gorjian, 2016; Sanad & Ahmed, 2017; Puspitasari, 2020). Research conducted in Thailand indicates that CLIL is more effective than conventional English education in enhancing comprehension outcomes and promoting active learning (Kewara & Prabjandee, 2018; Charunsri, 2019). According to Charunsri and Sripicharn (2023), Thai pre-service teachers who participated in CLIL training exhibited enhanced lesson design skills. Wangmanee (2024) found that Thai learners participating in CLIL training improved their English proficiency and social skills. The findings of this study underscore the growing importance of CLIL in Thailand; however, additional research is necessary to identify strategies for enhancing the approach through digital platforms.

Recent empirical studies in Thailand and Asia further support the potential of CLIL and digital integration in language education. For instance, Charunsri and Sripicharn (2023) found that CLIL training significantly improved Thai pre-service teachers' ability to design and implement CLIL-based instruction, while Wangmanee (2024) demonstrated that CLIL

enhanced both English proficiency and soft skills in a Thai university course. In parallel, the deployment of Canva in classrooms has shown promise; studies in Indonesia reported that Canva-based learning increased learner engagement, creativity, and overall learning outcomes in English language instruction (Christiana & Anwar, 2021; Febriyanti & Haryanto, 2024). Similarly, learners perceived Canva materials as beneficial for comprehension, retention, and participation (Nhi & Anh, 2024).

The integration of CLIL and Canva application

Alongside pedagogy, technology plays a crucial role in modern English language learning. Canva, a widely used online design platform, enables teachers and learners to create interactive visuals such as infographics, posters, and organizers that align with the communication stage of CLIL. Its multimodal features foster creativity, collaboration, and comprehension by allowing learners to express ideas through text and visuals (Yundayani et al., 2021; Wahyuni, 2018). Research shows that integrating Canva into classrooms enhances learners' motivation, engagement, and confidence while deepening their understanding of content (Christiana & Anwar, 2021; Rahman & Alfiyani, 2022). Recent studies in Indonesia and other Asian contexts confirm Canva's effectiveness in improving vocabulary mastery, comprehension, and classroom participation (Febriyanti & Haryanto, 2024; Nhi & Anh, 2024). Rajendran, Din, and Othman (2023) also emphasized that while Canva supports language learning, few studies have explored its integration with established pedagogical frameworks such as CLIL, especially in Thai secondary education (Rajendran, Din & Othman, 2023). Addressing this gap, the present research investigates how combining CLIL with Canva can provide an effective model to enhance both comprehension and satisfaction in English classrooms.

The synthesis of the literature review

In summary, prior studies highlight that Thai learners continue to face persistent difficulties in English reading comprehension, particularly beyond the literal level, due to limited vocabulary and dependence on translation. Research supports CLIL as a promising pedagogical framework that integrates content and language learning to promote higher-order thinking and active engagement. Digital tools like Canva, when incorporated, stimulate learners' motivation, creativity, and comprehension through multimodal visual design. Despite these advancements, research on the effective integration of CLIL and Canva in the Thai secondary school context remains limited. Few empirical studies have examined the dual impact of this integration on both reading comprehension and learner satisfaction. Therefore, this study bridges the gap by synthesizing CLIL pedagogy with Canva's digital affordances to develop an innovative instructional model that improves Thai learners' English reading comprehension and enhances their engagement and satisfaction in language learning.

Methodology

This study adopted a quasi-experimental one-group pretest–posttest design to examine the effects of integrating CLIL with the Canva application on Grade 12 learners' reading comprehension and satisfaction. This design was suitable, as the participants were a complete class, which made random assignment difficult. It enabled a comparison of performance before and after the intervention in the same group. The same test formats, time intervals, and teaching settings were employed to minimize challenges to internal validity.

The participants were 20 purposively selected Grade 12 learners (12 females, 8 males; aged 17–18) enrolled in a Fundamental English course at Thammakhositwittaya School, Nakhon Phanom Province, during the first semester of 2025. Inclusion required regular attendance and willingness to participate; students with prior CLIL experience were excluded. Based on internal assessments, these learners exhibited low reading-comprehension performance, supporting their selection.

Three instruments were used: (1) a reading comprehension test (20 items, four levels: literal, interpretive, critical, and creative) with IOC = .80–1.00 and KR-20 = .803; (2) a 15-item satisfaction questionnaire measuring content, affective, and behavioral engagement (Cronbach's α = .901); and (3) semi-structured interviews exploring learners' experiences. Participant verification and peer feedback ensured that the interview was credible and trustworthy. (Lincoln & Guba, 1985).

The intervention comprised six CLIL-based lessons integrated with Canva over four weeks (12 hours). Lessons followed the CLIL 4Cs—content, communication, cognition, and culture—while Canva facilitated creative visual tasks such as infographics and posters. Teacher observation checklists and reflective notes that showed consistent use helped maintain consistency.

Quantitative data from pretests and posttests were analyzed using descriptive statistics and a paired-sample t-test with t, df, p, mean difference, SD, diff, 95% CI, and effect size following Lakens (2013). Normality and outliers were assessed using the Shapiro–Wilk test and box plots. Questionnaire results were interpreted using the mean and SD, as described by Boone and Boone (2012). Qualitative data from interviews were analyzed thematically (Braun & Clarke, 2006) through coding, theme generation, and review. The two data strands were integrated during interpretation, where qualitative themes such as motivation, creativity, and confidence explained the quantitative improvements in comprehension and satisfaction.

Results

The study's findings are presented in accordance with the three research objectives. Combining quantitative and qualitative results provides a comprehensive picture of how CLIL with Canva affects students' reading comprehension and satisfaction.

Objective 1: Comparison of Learners' Reading Comprehension Before and After Using CLIL with Canva

Quantitative results:

The results indicated that integrating CLIL with the Canva application improved the reading comprehension skills of grade 12 learners. The mean score increased from 10.20 (SD = 1.79) on the pretest to 14.85 (SD = 3.03) on the posttest, as shown in Table 1. The average score increased by 4.65 points. A statistically significant difference was identified by a paired-sample t-test (t = 9.12, df = 19, p < .001). Cohen (1988) claimed that the integrated method significantly influenced learning, as indicated by a Cohen's d of 1.88, which suggests a substantial effect size.

Table 1 *Reading comprehension pretest and posttest results (N = 20)*

Comprehension level	Pretest x̄ (SD)	Posttest x̄ (SD)	Gain score
Literal	3.10 (0.91)	4.20 (1.01)	+1.10
Interpretive	2.80 (0.83)	3.90 (0.97)	+1.10
Critical	2.15 (0.73)	5.05 (1.12)	+2.90
Creative	2.15 (0.86)	3.95 (1.08)	+1.80
Total	**10.20 (1.79)**	**14.85 (3.03)**	**+4.65**

Qualitative corroboration:

The interview data corroborated these statistical findings. Students at various performance levels demonstrated enhanced understanding and better vocabulary retention following the intervention. A low-performing learner reported,

"Before, I read slowly and did not understand many words. Now I can understand the main idea better—Canva helps me remember vocabulary and connect meanings." (L6)

An intermediate-level learner was observed.

"When we started using it for CLIL, it was a new skill, but Canva made reading tasks effortless and enjoyable." (L2)

These reflections indicate a measurable enhancement, demonstrating that learners recognized significant advancement in their reading skills and self-assurance.

Both datasets indicate that CLIL with Canva significantly improved comprehension through visually organized, interactive learning tasks.

Objective 2: Learners' Levels of Reading Comprehension Across Literal, Interpretive, Critical, and Creative Stages

Quantitative results:

Figure 1 illustrates the comparison of mean scores across the four comprehension levels. While all dimensions improved, critical comprehension exhibited the highest gain (+2.90), indicating growth in analytical and evaluative thinking fostered by CLIL-based inquiry and Canva's visual scaffolds. **Creative comprehension** also rose substantially (+1.70), suggesting that visual design tasks stimulated imaginative application of ideas. Literal and interpretive skills also rose by 1.10 each, showing balanced progress across comprehension dimensions.
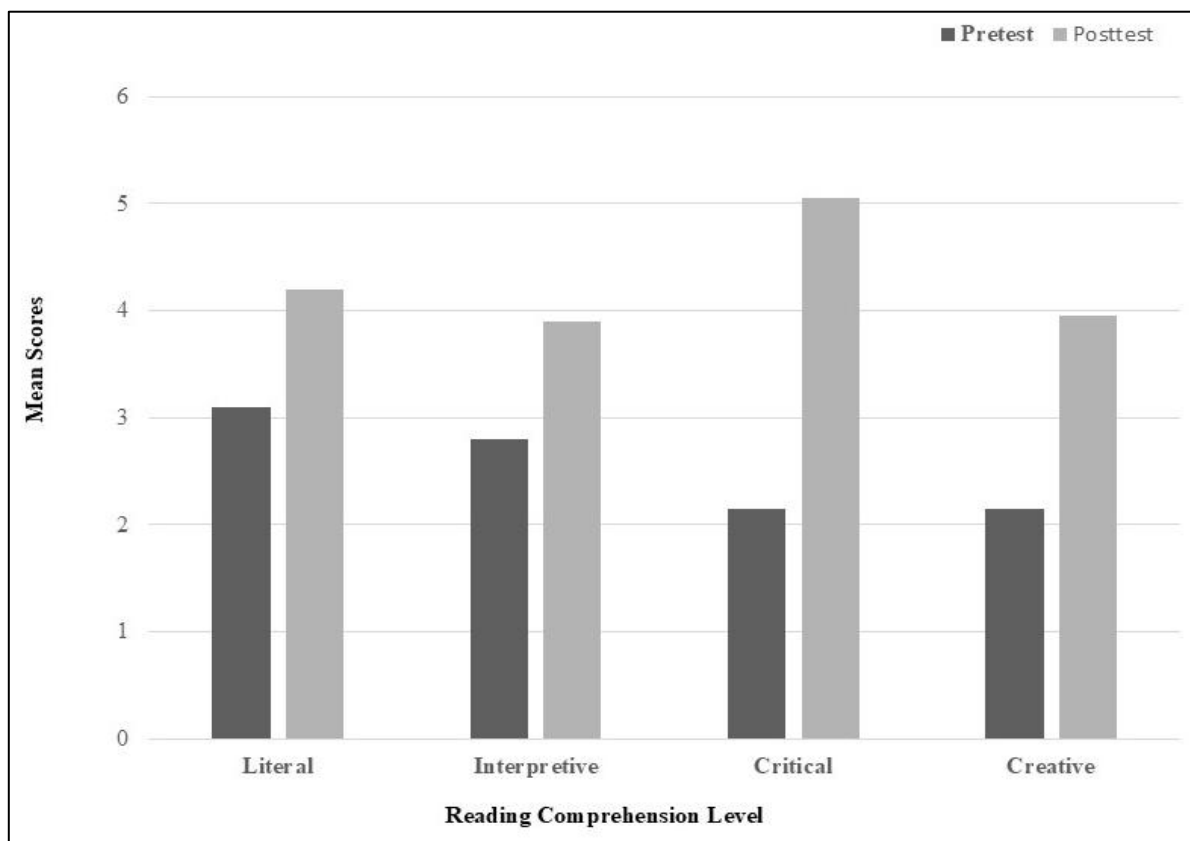

Figure 1 *Pretest and posttest mean scores across comprehension levels*

Qualitative corroboration:

Learners' qualitative reflections revealed overlapping progress in literal and interpretive comprehension. Many explained that Canva's images and layouts helped them both recall explicit details and infer relationships among ideas.

At the literal and interpretive comprehension levels, learners explained that Canva's templates and graphics facilitated their ability to discern meaning and infer connections between concepts.

"Canva pictures help me see the story; I can guess new words from images." (L3)

They further explained that visual scaffolds reduced confusion and promoted active reasoning while reading.

For a **critical comprehension level,** learners reported learning to evaluate and connect information across subjects:

"I'm using my English reading to learn science. English is no longer just a separate subject." (L16)

For a creative comprehension level, high achievers expressed that designing posters and storyboards enabled them to re-create knowledge in new forms:

"I became more confident in reading and creating English projects. Canva helps me show my understanding creatively and professionally." (L9)

These anecdotes substantiate the quantitative trend—especially the significant improvement in critical and creative comprehension—illustrating that CLIL's content-based pedagogy, augmented by Canva's visual tools, advanced learners beyond superficial knowledge to higher-order thinking.

Objective 3: Learners' Satisfaction with CLIL and Canva
Quantitative results

Learners reported a very high level of satisfaction with the CLIL-Canva experience (overall $\bar{x}$ = 4.62, SD = 0.27). As shown in Table 2, content understanding ranked highest ($\bar{x}$ = 4.71, SD = 0.25), followed by feelings toward learning ($\bar{x}$ = 4.60, SD = 0.28) and participation ($\bar{x}$ = 4.55, SD = 0.31). These results reflect strong cognitive, affective, and behavioral engagement.

Learner satisfaction

Learners' responses to the satisfaction questionnaire showed a very high overall mean score of 4.62 (SD = 0.27). Among the three dimensions, "content understanding" received the highest mean ($\bar{x}$ = 4.71, SD = 0.25), followed by "feelings toward learning" ($\bar{x}$ = 4.60, SD = 0.28) and "participation" ($\bar{x}$ = 4.55, SD = 0.31). These findings indicate that learners perceived CLIL with Canva as highly engaging and supportive of their English learning.

Table 2 *Learners' Satisfaction with CLIL and Canva (N = 20)*

Dimension	Mean ($\bar{x}$)	SD	Interpretation
Content	4.71	0.25	Very high
Feelings	4.60	0.28	Very high
Participation	4.55	0.31	Very high
Overall	**4.62**	**0.27**	**Very high**

Qualitative corroboration:

Interview insights complemented these quantitative findings and offered deeper explanations of learners' satisfaction across cognitive, affective, and behavioral dimensions. Learners described how the Canva application enhanced their understanding and organization

of ideas, reflecting cognitive satisfaction: one participant noted that "Canva helps me organize ideas and understand texts faster" (L19). In terms of affective satisfaction, learners emphasized the enjoyment and motivation gained from integrating English with meaningful content, as expressed by another who said, "Studying English with other subjects helps me learn more things—it's fun" (L7). Behavioral satisfaction was evident in learners' appreciation of teamwork and peer collaboration: "Collaboration is important. I can explain to my friends if they don't understand, and I also learn from their opinions" (L10). Although some participants mentioned minor technological difficulties, such as unstable internet connections or limited device access, they consistently stressed that the creativity and enjoyment of using Canva outweighed these challenges.

Overall, the qualitative findings reinforce the quantitative results, showing that CLIL integrated with Canva cultivated motivation, confidence, and collaboration among learners—outcomes that correspond closely with the very high satisfaction scores.

Discussion

The purpose of this study was to investigate the effects of integrating CLIL with Canva on Grade 12 learners' reading comprehension and satisfaction. The findings revealed significant improvements across all four levels of comprehension, high levels of learner satisfaction, and positive perceptions of engagement, confidence, and creativity. These outcomes provide empirical support for the use of digital tools within CLIL instruction in Thai secondary schools.

The significant gains in overall comprehension performance, with the largest increase in critical comprehension, suggest that CLIL with Canva can effectively promote higher-order reading skills. This aligns with earlier findings that CLIL enhances learners' comprehension by embedding language in meaningful content contexts (Hamidavi, Amiz & Gorjian, 2016; Sanad & Ahmed, 2017; Puspitasari, 2020). The enormous effect size in this study (d = 1.88) also suggests that Canva's visual scaffolding and task design may have strengthened the benefits of CLIL, helping learners move from literal comprehension to interpretive and evaluative reading, as Sepesiova and Strakova (2018) stated.

Learners reported very high satisfaction with CLIL and Canva, consistent with prior studies showing that digital tools enhance engagement and enjoyment of learning (Yundayani et al., 2021; Christiana & Anwar, 2021). The highest ratings were given to "content understanding," reflecting that Canva helped learners visualize and organize information while also encouraging participation. This supports Rahman and Alfiyani (2022), who found that Canva promotes collaborative and confident expression in English learning contexts.

The themes of engagement, confidence, and creativity provide vital explanations for the intervention's effectiveness. Canva's multimodal environment allowed learners to represent ideas both textually and visually, which not only reinforced comprehension but also fostered confidence in communication. Similar to Wangmanee's (2024) findings, which showed that CLIL enhances soft skills, this study demonstrates that pairing CLIL with Canva nurtures creativity and higher-order thinking. These outcomes suggest that the intervention met both linguistic and cognitive goals of CLIL while simultaneously aligning with 21st-century skill development.

Taken together, these results corroborate the growing body of literature on the value of CLIL in Thai education (Charunsri, 2019; Charunsri & Sripicharn, 2023) and extend it by demonstrating the added impact of digital design tools. While previous research examined CLIL and digital tools separately, the present study shows that their integration creates a learning environment in which comprehension, satisfaction, and cognitive engagement mutually reinforce one another.

Conclusion

This study demonstrated that integrating CLIL with the Canva application significantly enhanced Thai secondary learners' reading comprehension and satisfaction with English learning. Students' comprehension improved significantly across all four levels, with the largest gains in critical reading. They also said they were very happy with the learning experience. Qualitative insights further revealed that Canva fostered engagement, confidence, and creativity, complementing the cognitive and linguistic goals of CLIL. Together, these findings highlight the potential of combining CLIL with digital design tools to create an engaging, multimodal learning environment that strengthens both academic achievement and 21st-century skills.

Originality

This study advances the field by demonstrating that CLIL can be effectively combined with Canva, a digital design platform, to address persistent challenges in the reading comprehension of Thai secondary learners. While previous studies have highlighted the benefits of CLIL (Charunsri, 2019; Kewara & Prabjandee, 2018) and the motivational impact of Canva (Yundayani et al., 2021; Rahman & Alfiyani, 2022), this research is among the first to systematically integrate the two. The results reveal not only significant gains in comprehension and satisfaction but also qualitative evidence of enhanced engagement, confidence, and creativity. Figure 2 presents the conceptual model emerging from this study. It illustrates how integrating CLIL with Canva creates a multimodal learning environment that supports comprehension across four levels, fosters learner satisfaction, and promotes higher-order thinking and 21st-century skills. This model provides a replicable framework for Thai secondary schools while also offering broader implications for global classrooms seeking innovative, technology-enhanced approaches to language learning.
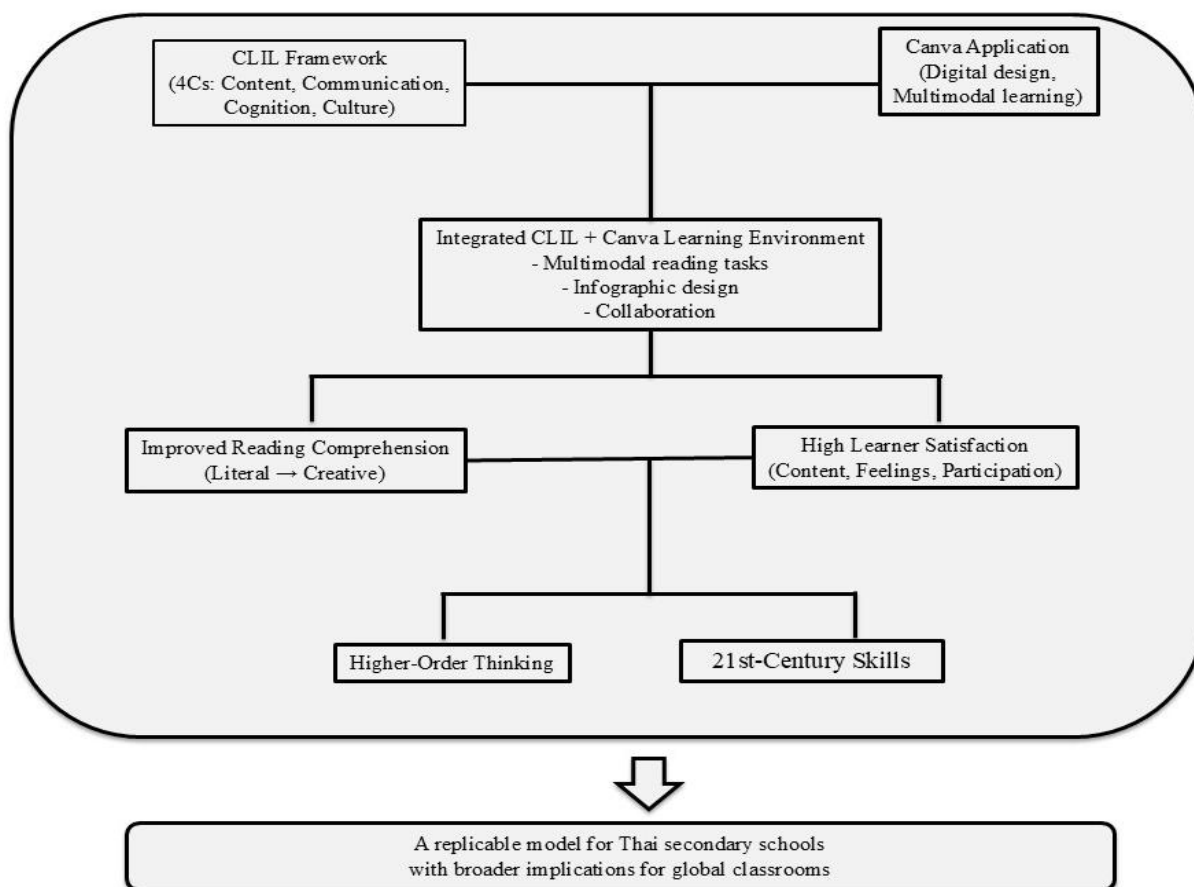

Figure 2 *Conceptual Model of CLIL and Canva Integration for Reading Comprehension and Learner Satisfaction*

Acknowledgments

Based on the research findings, the integration of CLIL with the Canva application significantly improved Grade 12 learners' reading comprehension skills across literal, interpretive, critical, and creative levels and also resulted in high levels of learner satisfaction. These results confirm that combining CLIL pedagogy with digital design tools can create meaningful, engaging, and effective English learning experiences in secondary school classrooms. Despite these promising findings, several limitations should be acknowledged. The study was conducted with a relatively small sample of 20 learners in one school over a short intervention period, which limits generalizability. Moreover, the study relied on self-reported satisfaction, which may be subject to bias.

Recommendations

Recommendations for Applying the Research Findings

Based on the findings, several recommendations are offered for applying CLIL with Canva in English classrooms:

• Integrate subject standards: Teachers should prepare lesson content that links English learning objectives with science, history, or art to promote both language proficiency and subject knowledge.

• Ensure technology access: Schools should provide sufficient devices, stable internet, or offline alternatives to ensure all learners can participate.

• Design varied and challenging tasks: Canva activities should promote analysis, synthesis, and presentation skills to foster critical thinking and communication.

• Strengthen institutional support: Administrators should allocate resources for digital integration and encourage collaboration between English and subject teachers to enrich authentic learning experiences.

Recommendations for Future Research

Future research should extend the present findings in the following ways:

• Examine long-term effects: Investigate if reading comprehension gains persist beyond short-term interventions.

• Expand to other skills: Investigate the impact of CLIL with Canva on speaking and writing through tasks such as oral presentations and poster creation.

• Address implementation challenges: Investigate strategies to surmount obstacles such as restricted device access, unreliable internet connectivity, and learner anxiety, incorporating blended or offline methodologies.

• Test in diverse contexts: Conduct studies with larger and more varied samples to strengthen generalizability across educational settings.

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