

CLIL IN READING COMPREHENSION LEARNING: A SYSTEMATIC LITERATURE REVIEW

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Abstract

The Content and Language Integrated Learning (CLIL) approach has become one of the innovative strategies in language learning that integrates foreign language proficiency with academic content understanding. This study aims to synthesize the latest research findings related to CLIL-based reading comprehension learning through a Systematic Literature Review (SLR). The literature search was conducted in the ERIC and Scopus databases for the period 2015–2024, resulting in 26 articles that met the inclusion criteria. Thematic analysis revealed nine major challenges in CLIL-based reading learning, namely: limited vocabulary, inappropriate text level, lack of explicit reading strategy instruction, cognitive load due to multimedia, limited teacher competence, affective factors, lack of diagnostic assessment, suprasegmental aspects, and cultural relevance of the material. On the other hand, nine supporting factors were identified, including vocabulary mastery, selection of texts with appropriate levels of difficulty, integration of reading strategies, use of technology and multimedia, teacher competence, learning motivation, diagnostic assessment, mastery of suprasegmental features, and cultural relevance of the material. The results of this review provide a comprehensive understanding of the dynamics of CLIL-based reading learning and offer practical implications for teachers, curriculum designers, and researchers to improve learning effectiveness.

Keywords: CLIL, reading comprehension, Systematic Literature Review, language learning.

1. INTRODUCTION

Content and Language Integrated Learning (CLIL) is a pedagogical approach that has gained significant traction in the world of education, especially in settings where there are many languages (San Isidro, 2018) (Coyle, 2018). Essentially, *CLIL* is a dual-focus learning approach where a foreign language is used as the medium of instruction for both content and language learning. (Hao et al., 2023). The main objective of *CLIL* is to facilitate language skill acquisition while promoting understanding of specific subject content. According to Finnish linguistics expert David Marsh, the term "content" in *CLIL* refers to non-language subjects, while the term "language" refers to a second language or foreign language other than the mother tongue (Manli, 2019).

CLIL has been recognized as an effective approach that can bridge foreign language teaching and specific subject content by integrating foreign language learning and non-language subjects, characterized by the application of various forms of teaching organization and methods, including various types of teaching and learning strategies (Lipkova, 2020). The distinctive feature of *CLIL* lies in its dual focus on language and content, where foreign language is both the goal of learning and a tool for learning, and professional knowledge serves as the foundation for the learning process (Marsh & Martin, 2023).

In the ever-evolving landscape of educational approaches, *CLIL* has emerged as a dynamic and impactful approach that effectively integrates subject-specific knowledge acquisition with target language development (Lazăr, 2017). The core of this approach lies in the fundamental role of reading comprehension, a skill that not only facilitates content understanding but also enables students to navigate the linguistic complexities inherent in *CLIL* settings. A number of studies have highlighted the interrelationship between reading comprehension and the *CLIL* approach to learning. When learners engage with subject-specific texts, they face a dual challenge: understanding the conceptual and factual information presented, as well as deciphering the linguistic structures and vocabulary that convey this knowledge (Yang et al., 2023). Effective reading comprehension skills enable students to navigate these demands, allowing them to extract meaning, draw conclusions, and engage with content at a deeper level. The importance of reading comprehension in *CLIL* learning is further emphasized by the diversity of classroom dynamics and varying levels of student language proficiency (Espia & Cortezano, 2023); (Saran, 2021). Systematic literature reviews have emerged as an appropriate methodology for synthesizing research evidence in a transparent and replicable manner (Antons et al., 2023). These reviews can provide valuable insights into specific domains, such as the use of *CLIL* in improving reading comprehension skills. Systematic reviews in this

field can reveal the current state of knowledge, identify gaps, and provide a comprehensive overview to inform researchers and practitioners in the field of English language teaching (Sayfour, 2014).

Conducting a systematic literature review on *CLIL* and reading comprehension skills can serve several important purposes. First, this review can help describe the main findings and implications of existing research, thereby enabling a better understanding of the topic. Second, this literature review can reveal the methodological approaches and quality of evidence used in previous studies, thereby enabling an evaluation of the reliability and validity of research in this field (Myllyaho et al., 2021). Third, systematic reviews can identify areas that require further investigation, inform the design of future research studies, and contribute to the advancement of the field (Choi, 2019).

The systematic literature review proposed in this paper aims to synthesize the latest evidence on the effectiveness of *CLIL* in improving reading comprehension skills among language learners. This literature review consists of two *research questions*, namely: 1) What are the challenges in *CLIL*-based reading comprehension learning? and 2) What are the supporting factors in reading comprehension learning with the *CLIL* approach?

2. RESEARCH METHODS

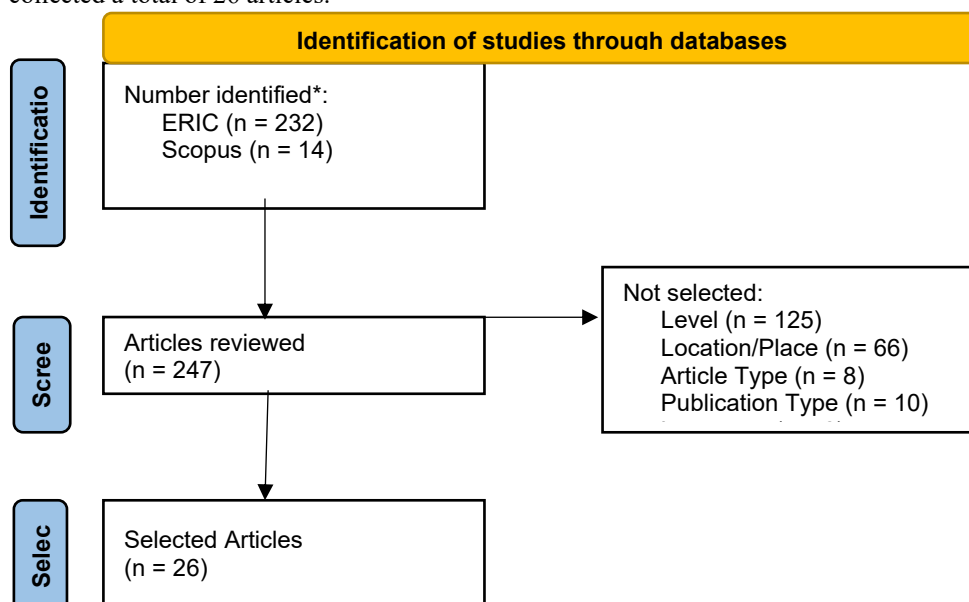
This systematic review was prepared in accordance with *the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)* 2020 (Page et al., 2021). The purpose of the review, as well as the inclusion and exclusion criteria, are listed in Table 1. The year 2015 was chosen as the start of the article search because of the novelty of the research and its beneficial impact over the past ten years. Therefore, the time interval of this review ranges from 2015 to 2024.

The search for articles was conducted in the *ERIC* and *Scopus* databases using the keywords (*CLIL OR integrated* content and language*) AND (*"reading comprehension"*). The *ERIC* and *Scopus* databases were chosen because they were in line with the review's objectives to represent and provide diverse literature relevant to the research topic.

Table 1. Inclusion and Exclusion Criteria

Type	Inclusion	Exclusion
Education Level	Basic, Intermediate, and Advanced	University
Publication	Peer reviewed	conference proceedings, book chapters & dissertations, (Presentations or policy reports)
Place/Location	Asia	Non-Asia
Language	English and Arabic	Other than English and Arabic
Article Type	Field Research Articles	Not a field research article

The article selection process involves screening titles and abstracts identified during the search. Researchers review the full text of potentially relevant research articles. Initially, researchers examined the suitability of titles and abstracts before discussing the results and resolving differences. After independently assessing the suitability of the full text, researchers discussed the results of this screening process, resolved differences, and agreed on the reasons for excluding studies. After selecting articles based on inclusion and exclusion criteria, researchers successfully collected a total of 26 articles.



3. RESULTS AND DISCUSSION

3.1 Challenges in learning reading comprehension based on the *CLIL* approach

Based on an analysis of 26 articles that met the inclusion criteria, nine main themes were identified that represent challenges in reading comprehension learning in the context of *Content and Language Integrated Learning (CLIL)*. These themes appeared consistently in various research contexts, including primary, secondary, and higher education. The nine themes include: (1) limited vocabulary, (2) text level appropriateness, (3) lack of explicit reading strategy instruction, (4) cognitive load due to inappropriate use of multimedia, (5) inadequate teacher competence, (6) affective factors such as motivation and anxiety, (7) lack of diagnostic assessment, (8) suprasegmental aspects and language skill transfer, and (9) cultural relevance and authenticity of materials.

1. Vocabulary limitations are the most dominant challenge in almost all of the studies analyzed. *CLIL* students face difficulties in understanding academic and science-based texts due to a lack of general vocabulary and technical terms related to specific subjects (Chanwiwattana et al., 2024; (Haris, 2022) . These limitations slow down the process of text comprehension and cause difficulties in establishing connections between the concepts being read. Studies focusing on explicit vocabulary teaching interventions show a significant improvement in students' reading comprehension (Brooks et al., 2023) , which confirms the importance of integrating vocabulary teaching into *CLIL* learning.

2. Text level appropriateness is also a crucial issue. Several studies have found that authentic texts used in *CLIL* are often beyond the linguistic abilities of students, causing confusion and reducing motivation to learn (Alshumaimeri & Alzyadi, 2015) . However, if the text is too simple, students do not get enough challenge to develop their academic literacy skills. This emphasizes the need for an *i+1* approach, which is to provide texts that are slightly more difficult than the students' ability level but supported by adequate scaffolding (Niazifar & Shakibaei, 2019) .

3. The lack of explicit reading strategy instruction is a significant obstacle. Many teachers in the *CLIL* context assume that students will automatically develop reading skills simply by being exposed to academic texts frequently. Recent studies show that without explicit instruction, students tend to have difficulty using cognitive and metacognitive strategies such as inference, prediction, and monitoring comprehension (Fathi & Afzali, 2020; Wafa' A & Moath Khalaf, 2023) . Explicit reading strategy training programs have been proven to improve students' comprehension of complex texts (Yow & Priyashri, 2019) .

4. The cognitive load resulting from inappropriate multimedia design is also a widely reported challenge. The use of multimedia in *CLIL* learning often aims to enrich the learning experience of students. However, if visual, text, and audio elements are not designed coherently, this actually increases cognitive load and disrupts information processing (Sun et al., 2019; AlSaleem, 2018) . Several studies show that when text is accompanied by relevant images that support conceptual understanding, learning outcomes improve significantly, while the use of decorative images actually reduces learning effectiveness (Yow & Priyashri, 2019) .

5. Teacher competence, both in content and language mastery, is a determining factor in the success of *CLIL*. Many teachers report difficulties in designing truly integrated learning due to a lack of adequate training on the *CLIL* approach (Fareed et al., 2018) . Teachers often simply adapt traditional methods without paying attention to the integration of language strategies, so that learning focuses more on content transfer than on language skill development.

6. Affective factors such as motivation, anxiety, and interest in the topic also have a significant effect on reading success. Studies show that when students encounter texts that are too difficult or irrelevant to their culture, anxiety levels increase and motivation decreases (Hasbi, 2021) . Conversely, culturally relevant texts can increase student engagement and encourage deeper learning (Sheridan et al., 2019) .

7. The lack of diagnostic assessment in *CLIL* learning makes it difficult for teachers to identify the sources of students' reading difficulties. Recent research using diagnostic models such as G-DINA has successfully mapped specific attributes that are weaknesses for students, such as inference or vocabulary, enabling the design of more targeted interventions (Boori et al., 2023) .

8. Suprasegmental aspects such as mastery of prosody, intonation, and phonological structure also influence reading comprehension. Although often viewed as part of oral skills, research shows that these abilities influence the decoding process and reading speed, especially for students learning a language with a different orthographic system from their first language (Mirfatemi et al., 2020) .

9. Cultural relevance and authenticity of materials are important considerations in *CLIL*. Authentic materials have been shown to improve communication skills and understanding of real-world contexts, but if they are not adapted to the language level of the students, they can cause confusion and reduce motivation (Sheridan et al., 2019) (Alshumaimeri & Alzyadi, 2015) .

3.2 Supporting Factors in Reading Comprehension Learning with the *CLIL* Approach

A systematic analysis of 26 reviewed articles revealed nine main themes as supporting factors for reading comprehension learning in the *CLIL* or integrated learning approach. These themes emerged from patterns found in the analyzed articles.

1. Vocabulary Mastery as the Foundation of Comprehension

One of the most dominant factors supporting reading comprehension is adequate vocabulary knowledge. Several studies (Chanwiwattana et al., 2024;) show that limited vocabulary is a major obstacle to academic text comprehension. The study by found that vocabulary knowledge has a more significant influence than other factors such as reading fluency or decoding in determining the reading success of *EAL (English as an Additional Language)* students. Similarly, research using *Cognitive Diagnostic Modeling* identified that vocabulary, along with inference skills, are the two most difficult aspects for test takers to master.

In the context of CLIL, vocabulary plays a dual role, namely as the medium of instruction and as the specific academic language of the content area. The study " shows that in Arabic-language physics texts, technical terms and complex nouns pose a significant challenge, even for students with good prior knowledge. The integration of vocabulary teaching strategies, such as through language games (Sukdee, 2024) or the use of student-level texts (i+1 material) (Niazifar & Shakibaei, 2019) , has been proven to improve vocabulary retention and comprehension. From these factors, teacher involvement is needed in: 1) explicitly introducing academic vocabulary before reading activities; 2) using multimodal approaches such as language games or visual mind mapping [4] to strengthen vocabulary and concept associations; 3) integrating pre-teaching vocabulary strategies into *CLIL* lessons.

2. Appropriate Text Difficulty Level

The level of text difficulty greatly affects students' comprehension and motivation. Research comparing texts with difficulty levels i-1 (easier) and i+1 (more difficult) found that i+1 texts not only improved comprehension but also students' motivation to read. However, excessive difficulty can increase anxiety (*foreign language reading anxiety*). Meanwhile, the study " highlights that the textbooks used are often not appropriate for the students' proficiency level. Texts that are too complex reduce the effectiveness of learning and hinder authentic interaction in *CLIL* learning. Therefore, when designing the curriculum, teachers must conduct an initial diagnosis of students' reading ability before selecting materials. Materials need to follow the principle of *scaffolding*, moving from simple texts to complex texts while maintaining a balance between challenge and affordance.

3. Integrated Reading Strategy Instructions

Several studies show that explicit teaching of reading strategies supports reading comprehension. Research (Fathi & Afzali, 2020) shows that young Iranian learners who were taught reading strategies for 12 weeks experienced a significant improvement in reading comprehension compared to the control group. Strategies such as prediction and content schema activation were also found to be effective (Junhee & Yusun, 2022) , where prediction ability was a strong predictor of literal and inferential comprehension. In the context of *CLIL*, reading strategies are not only language skills but also tools for understanding content. Research (Saleh Alghonaim, 2019) shows that text comparison techniques in the *Kintsch-Van Dijk* model help students develop reading autonomy and cross-text comprehension.

One thing to note about this factor is that teachers need to integrate reading strategy instructions such as *skimming*, *scanning*, prediction, and *mind mapping* into *CLIL* learning . Teaching materials can include guiding questions such as the 5W1H technique, which has been proven to improve comprehension and summary writing skills.

4. Use of Technology and Multimedia

Digital technology plays an important role in supporting *CLIL* learning, especially in reading comprehension. Research on shows that social media-based activities (*Facebook*) significantly improve reading skills through collaborative interaction. Animated e-books and bilingual books with multimedia features (Yow & Priyashri, 2019) have also been proven to improve visual attention, vocabulary retention, and story comprehension in bilingual children. However, the study warns of the high cognitive load of bilingual texts with multimedia, so technology design must consider students' information processing capacity. An important consideration in this regard is that multimedia technology must be designed with the principles of visual and verbal cohesion to maximize learning. In addition, teachers need to teach digital literacy skills so that students can make optimal use of technology without being distracted by cognitive load.

5. Teacher Competence and Learning Management

Teachers play a central role in the success of *CLIL* learning. The study " shows that traditional teaching methods such as reading aloud and translation are still dominant, which hinders the development of students' understanding. In contrast, innovative approaches such as *Gallery Walk* (Lopez & Ortega-Dela Cruz, 2022) and *collaborative learning management* increase student engagement and reading skills. Teacher competence also includes the ability to select and modify materials, as demonstrated by the use of authentic materials in English textbooks that emphasize the need for authentic materials that are still appropriate for the students' level. From this factor, it is necessary to note that teacher training programs need to focus on *CLIL* learning design skills and the use of interactive strategies. Teachers are encouraged to apply project-based and collaborative methods to increase motivation and understanding.

6. Affective Factors: Motivation and Anxiety

Reading motivation and anxiety are important factors that influence comprehension. The study by Niazifar & Shakibaei (2019) found that slightly more difficult texts (i+1) increase learning motivation. Meanwhile, the study by Aghajani & Gholamrezapour (2019) revealed a negative relationship between critical thinking skills and foreign language reading anxiety: the higher the critical thinking skills, the lower the reading anxiety. In the context of *CLIL*, motivation can be strengthened through culturally relevant materials and enjoyable learning

activities such as language games or educational video games. The practical implication is that teachers need to build a safe and supportive learning environment to reduce student anxiety. Activities that encourage creativity and emotional engagement, such as *role-play* or games, can increase reading motivation.

7. Diagnostic Assessment and Progress Monitoring

Diagnostic assessment helps identify students' strengths and weaknesses. Research Boori et al. (2023) shows that vocabulary and inference skills are the two most challenging aspects of reading comprehension. Diagnostic models such as G-DINA enable teachers to provide more targeted feedback. Teachers are advised to use diagnostic assessment tools to map students' initial abilities before and during *CLIL* learning, so that diagnostic data can be used to develop personalized interventions.

8. Suprasegmental Features in Text Processing

Linguistic aspects such as syllable stress and intonation patterns affect comprehension. Research on (Mirfatemi et al., 2020) shows that comprehension of suprasegmental features in the native language can be transferred to aid comprehension of the second language. Simpler systems are easier to learn and can increase text processing speed. From these factors, it is important to note that reading instruction should include training in sound pattern recognition and word stress, especially for beginner readers. *CLIL* teaching materials can integrate audio that highlights suprasegmental features to support comprehension.

9. Cultural Relevance and Context of Materials

Culturally relevant material increases engagement and comprehension. Studies Sheridan et al. (2019) show that culturally familiar texts result in higher comprehension and vocabulary retention scores. Conversely, texts that are too unfamiliar can reduce interest and hinder comprehension. Teachers need to choose material that combines global and local content so that students feel emotionally and intellectually connected. Reading activities can be linked to students' daily experiences to increase engagement.

4. CONCLUSION

The results of this Systematic Literature Review (SLR) show that the application of Content and Language Integrated Learning (CLIL) in reading comprehension learning has significant potential in improving students' academic literacy skills, but still faces various challenges. From the analysis of 26 reviewed articles, nine main challenges were found that are often encountered in CLIL-based reading comprehension learning, namely: limited vocabulary, inappropriate text difficulty levels, lack of explicit reading strategy instruction, cognitive load due to inappropriate multimedia, inadequate teacher competence, affective factors such as motivation and anxiety, lack of diagnostic assessment, suprasegmental aspects of language, and cultural relevance of teaching materials.

On the other hand, there are nine supporting factors that can strengthen the effectiveness of CLIL learning, such as adequate vocabulary mastery, selection of texts with the appropriate level of difficulty (*i+1* principle), integrated reading strategy instruction, appropriate use of technology and multimedia, improvement of teacher competence, management of student affective factors, continuous diagnostic assessment, reinforcement of suprasegmental aspects, and selection of culturally relevant material.

These findings confirm that the success of CLIL learning depends not only on the selection of materials and methods, but also on learning designs that take into account linguistic, psychological, and pedagogical aspects holistically. Thus, CLIL can be a strategic approach to developing language skills and content understanding, particularly in the context of learning Arabic and other foreign languages.

5. RECOMMENDATIONS

Based on the results of this study, there are several recommendations that can be applied to improve the effectiveness of CLIL-based reading comprehension learning. For teachers and education practitioners, it is important to conduct an initial diagnosis of students' reading abilities in order to determine the appropriate level of text difficulty so that learning can run optimally. Teachers are also advised to integrate vocabulary teaching and explicit reading strategies, such as prediction, skimming, scanning, and mind mapping, so that students can understand academic texts more deeply. In addition, learning should be designed with culturally relevant and enjoyable activities to increase motivation and reduce student anxiety in the reading process. The use of technology and multimedia also needs to be considered by applying appropriate design principles so as not to cause excessive cognitive load.

For curriculum developers, CLIL material should combine authentic content that is tailored to students' abilities and incorporate suprasegmental aspects such as intonation and prosody to support the process of decoding and text comprehension. The use of diagnostic assessment models is also recommended to map students' specific weaknesses, particularly in vocabulary mastery and inference skills, so that interventions can be more targeted.

For further research, studies are needed to explore the relationship between affective factors such as motivation and anxiety with reading ability in the context of CLIL, as well as to expand studies on Arabic language learning, which has been minimally researched. Longitudinal research is also needed to understand the long-term impact of CLIL implementation on students' academic literacy and language skills development. With these steps, the

implementation of CLIL is expected to make a significant contribution to improving the quality of language and content learning in an integrated manner.

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