Journal BASIS
Vol. 12 No. 1 April 2025
p-ISSN: 2406-9809
e-ISSN: 2527-8835

CLIL-BASED MULTISENSORY INTENSIVE READING IN AN ESP PROGRAM

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Abstract
This study aims to investigate the integration of a multisensory approach within a Content and Language Integrated Learning (CLIL) framework to enhance intensive reading skills among English for Specific Purposes (ESP) students. The theory of multisensory learning, which emphasizes engaging multiple learning modalities, informs the study. Data were collected from 25 pharmacy students at Universitas Muhammadiyah Kuningan, Indonesia. A qualitative case study design employed classroom observations, student interviews, and feedback surveys to evaluate the effectiveness of CLIL-based multisensory techniques. Thematic analysis was utilized to identify patterns and recurring themes in the collected data, providing insights into students' experiences and outcomes. Results indicate significant improvements in students' reading comprehension and engagement levels post-intervention. Using multimedia applications and interactive activities allowed for a richer learning experience and supported diverse learning styles. However, challenges related to unfamiliar technology usage highlighted the necessity for additional training for both students and instructors. The finding underscores the potential of combining multisensory learning with CLIL in ESP contexts, while also emphasizing the importance of professional development for educators to optimize teaching strategies. Future studies are recommended to explore the long-term impact of multisensory approaches on other language skills and their applicability in various educational settings.

Keywords: *CLIL, Multisensory Learning, ESP, Intensive Reading, Technology Integration*

1. INTRODUCTION

The demand for English proficiency in both professional and academic contexts has dramatically increased in recent years. As globalization accelerates, English has cemented its position as the lingua franca of various industries, including business, science, technology, and international relations (Belcher, 2012). In these sectors, there is a growing need for individuals who are not only proficient in English but also capable of using the language effectively within their specific fields. This need has led to the rise of English for Specific Purposes (ESP) programs, which are designed to address the unique linguistic requirements of learners in specialized domains, such as law, medicine, engineering, and business (Anthony, 2018).

ESP programs are fundamentally different from general English course in that they focus on equipping learners with the language skills needed to communicate in professional or

academic settings. While general English course emphasize a broad range of language skills, ESP course tailor their content to meet the specific needs of the learners, focusing on the language that is most of ESP is to enable learners to function effectively in their specific domains, using language as a tool for professional success. This often involves engaging with complex, subject-specific texts, where the ability to read intensively is essential for comprehension and application of knowledge (Alonso & Macaro, 2021).

However, despite the targeted nature of ESP programs, many learners face significant challenges when it comes to reading the specialized text that are central to their studies or professions. ESP learners are often required to read technical documents, research papers, and other forms of written communication that contain specialized vocabulary, complex syntactic structures, and unfamiliar discourse conventions (Dalton-Puffer, 2020a). These texts can be daunting for students, particularly for those who have not yet developed advanced reading skills in English. In addition, the subject matter of ESP texts is often highly specific to a particular field, making it difficult for learners to grasp the content if they are not already familiar with the technical terms and concepts being discussed (Paltridge & Starfield, 2013).

The difficulty of reading in ESP context is compounded by the fact that learners often have limited time to develop to language study, as they must balance their language learning with the demands of their academic or professional careers. For this reason, it is essential that ESP programs employ effective instructional strategies that maximize learners' ability to read and comprehend complex texts in a relatively short amount of time. Intensive reading, which involves close, careful reading of text with the goal of understanding their content in depth, is one such strategy. Intensive reading is particularly well-suited to the needs of ESP learners, as it allows them to focus on the language and content that are most relevant to their specific domain (Day & Bamford, 1998).

In the context of ESP, intensive reading plays a critical role in helping learners engage deeply with specialized texts. Unlike extensive reading, which involves reading large amounts of material for general comprehension and fluency, intensive reading focuses on the detailed analysis of shorter texts. This approach requires learners to pay close attention to the meaning of individual words and sentences, as well as to the overall structure and organization of the text (Nation, 2009). Intensive reading is particularly useful for ESP students who need to acquire the technical vocabulary and language structures used in their field, as it encourages them to scrutinize the language in a way that facilitates deeper understanding.

However, while intensive reading is an essential skill for ESP learners, it is not without its challenges. Many students struggle with the dense, information-heavy nature of the text they are required to read, and they often find it difficult to stay engaged with the material. Additionally, traditional methods of teaching intensive reading not be sufficient to meet the diverse needs of learners in ESP programs, particularly those who require more varied sensory input to grasp complex material (Costa & D'Angelo, 2019b). These challenges highlight the need for innovative instructional approaches that can enhance learners' ability to comprehend and retain the information they encounter in their reading.

One such approach that has gained traction in recent years is Contents and

Language Integrated Learning (CLIL). Originally developed in Europe as a way to teach subjects such as history or science through a second language, CLIL has been adapted for use in a variety of educational context, including ESP programs (Coyle et al., 2021b). The key premise of CLIL is that language and content learning should be integrated, so that learners acquire both language skills and domain-specific knowledge simultaneously. By embedding language instruction within the context of meaningful subject matter, CLIL provides learners with a more immersive and relevant learning experience (Lasagabaster & Sierra, 2020a).

In an ESP context, CLIL offers several advantages. First, it allows learners to engage with authentic texts and materials that are directly related to their field of study, thereby increasing the relevance of the language instruction (Coyle et al., 2021a). This contextualized learning helps to motivate students, as they can see the immediate practical applications of what they are learning. Second, by integrating language and content instruction, CLIL encourages students to develop their language skills in tandem with their domain-specific knowledge, resulting in more holistic learning outcomes. Research has shown that CLIL can improve language acquisition by providing learners with more opportunities to practice using language in meaningful, content-rich context (Dalton-Puffer, 2011).

Despite its advantages, however, CLIL is not without its limitations. One of the most common challenges in implementing CLIL is ESP programs is the lack of engagement with difficult text. Many students struggle to fully comprehend the content when presented with complex, subject-specific materials, particularly if the instructional methods are not varied enough to accommodate different learning styles (Costa & D'Angelo, 2019b). In such cases, a more diversified approach to teaching is needed-one that can address the varied sensory needs of learners and enhance their engagement with the material.

To address these challenges, researchers and educators have begun to explore the integration of multisensory learning techniques into the CLIL framework. Multisensory learning involves engaging multiple senses-visual, auditory, kinesthetic, and tactile-during the learning process. By appealing to more than one sense, multisensory learning helps learners process and retain information more effectively (Garcia & Wei, 2020). This approach is particularly beneficial for students who struggle with traditional text-based instruction, as it allows them to interact with the material in a more dynamic and engaging way.

Incorporating multisensory methods into CLIL-based instruction has been shown to improve reading comprehension and overall engagement in ESP programs. For example, students who struggle with complex technical language can benefit from the use of visual aids, such as diagrams, charts, and videos, which help to illustrate key concepts and make the material more accessible (Frigols-Martin, 2021). Similarly, auditory resources, such as recorded lectures or podcasts, can help reinforce the language and content presented in written text, while kinesthetic activities, such as role-playing or simulations, allow learners to apply what they have learned in a hands-on, practical way.

The multisensory approach is especially useful in intensive reading instruction, as it enables students to engage with difficult texts in multiple ways, thereby enhancing their comprehension and retention of the

material. Researcher has shown that multisensory learning can be particularly effective for ESP learners, who often face the dual challenge of mastering both a foreign language and highly specialized content (García & Wei, 2020). By incorporating multisensory techniques into CLIL-based intensive reading instruction, educators can create a more interactive and supportive learning environment that cater to the diverse needs of their students.

Technology plays a critical role in facilitating multisensory learning in CLIL-based instruction. With the advent of digital tools and resources, educators now have access to a wide range of multimedia materials than can enhance the learning experience. For example, digital textbooks and e-learning platforms often include interactive features, such as videos, quizzes, and simulations, that allow learners to engage with the content in a more immersive way (Gonzalez-Lloret & Ortega, 2014). Additionally, tools like virtual reality (VR) and Augmented Reality (AR) can provide students with realistic, hands-on experiences that bring the subject matter to life and make learning more engaging (Ibanez & Delgado-Kloos, 2018).

Despite the growing interest in CLIL and multisensory learning, there is still a significant gap in the research on how these approaches can be integrated into intensive reading instruction in ESP programs. While previous studies have explored the benefits of CLIL and multisensory learning separately, few have examined how these two approaches can be combined to enhance reading comprehension and content mastery in ESP contexts. Moreover, there is a need for more research on the role of technology in supporting multisensory learning in CLL-based programs, particularly in relation to intensive reading instruction.

This study investigates the implementation of CLIL-based multisensory techniques in an intensive reading program for ESP students. Specifically, it explores how integrating multisensory learning into CLIL-based instruction enhances students' reading comprehension, engagement, and overall learning experience in ESP settings. Through a qualitative case study design, the research also examines the challenges students face in adapting to this approach and the role technology plays in facilitating multisensory learning. This study aims to contribute to the ongoing exploration of innovative teaching strategies in ESP programs, particularly those that leverage multisensory methods to optimize language acquisition and content mastery.

2. LITERATURE REVIEW

Contents and Language Integrated Learning (CLIL) is an educational approach that integrates language learning with content instruction, offering a dual-focused framework where students develop language skills while simultaneously acquiring subject-specific knowledge. The core of CLIL lies in the idea that language is learned more effectively when it is used as a tool for engaging with content that is meaningful to the learner. By combining these two objectives, CLIL provides an immersive learning experience where language serves as a vehicle for content delivery, thereby making the learning process more relevant and contextual(Coyle et al., 2021a).

The importance of CLIL in ESP programs is especially pronounced. ESP learners, unlike general English language learners, must engage with texts and materials that are highly

technical, subject-specific, and often dense with complex vocabulary. In fields such as engineering, medicine, business, and technology, language learning is not merely about achieving fluency but also about mastering the specialized discourse of that field (Costa & D'Angelo, 2019a). CLIL, by combining content learning with language instruction, helps students acquire the language skills they need to operate effectively in their professional domains.

According to Coyle et al. (2021), CLIL enables learners to use the target language in meaningful contexts, as it is grounded in real-world tasks that are directly relevant to their professional goals. The interaction between content and language fosters deeper cognitive processing, as students are not merely memorizing vocabulary or grammar rules but are actively using the language to solve problems, understand concepts, and engage in higher-order thinking skills. This dual focus contributes to long-term retention and a more profound understanding of both language and content.

Despite the proven benefits of CLIL in ESP programs, its implementation is not without challenges, particularly in the context of intensive reading. Intensive reading, which involves a close examination of texts to understand detailed content and specific language features, is a critical skill for ESP learners who must navigate complex, field-specific vocabulary and technical language. These challenges are exacerbated in fields where texts are dense, heavily specialized, and filled with domain-specific jargon that may not be familiar to non-native English speakers.

One of the main difficulties ESP students face in intensive reading tasks is the comprehension of complex syntactic structures and specialized terminology (Dalton-Puffer, 2020b). Unlike general English language learners, ESP students are required to engage with texts that contain a high frequency of technical terms, acronyms, and specialized discourse that may be completely foreign to them. This language barrier can significantly hinder their ability to comprehend texts and, as a result, impede their overall language development and mastery of the subject matter.

Multisensory learning is an instructional approach that involves engaging multiple senses-visual, auditory, kinesthetic, and tactile-in the learning process. By appealing to more than one sense, multisensory instruction allows students to interact with content in a more dynamic way, leading to improved comprehension, retention, and overall engagement with the material (García & Wei, 2020). The multisensory approach is grounded in the theory of sensory integration, which suggests that learning is most effective when it involves multiple sensory pathways, as this enables the brain to process information from different angles and create stronger neural connections (Frigols-Martin, 2021).

The application of multisensory learning in reading task is particularly effective, as it allows learners to process information through various channels. For example, when reading complex texts, students can benefit from the use of visual aids, diagrams, videos, and auditory reinforcement. These supplementary forms of input help to clarify difficult concepts, break down dense information, and provide alternative pathways for understanding (Nikula et al., 2020).

Multisensory learning also caters to different learning styles, addressing the diverse needs of students in a CLIL-based ESP classroom. Some learners

may process information better through auditory means, such as listening to a podcast or lecture, while others may prefer visual representations, such as charts, diagrams, or videos. For kinesthetic learners, hands-on activities or interactive tasks can make abstract concepts more tangible and accessible. By incorporating multiple sensory modalities, multisensory learning ensures that all students have the opportunity to engage with the material in ways that suit their individual preferences, thus increasing the likelihood of comprehension and retention.

The integration of multisensory learning into CLIL-based instruction for ESP learners has been explored in numerous studies, with evidence suggesting that this approach leads to significant improvements in reading comprehension, language retention, and student's engagement. Frigols-Martin (2021) conducted a study in which ESP students were exposed to a CLIL-based multisensory learning environment that included visual aids, auditory input, and interactive digital tools. The results showed that students who participated in multisensory learning activities performed better on reading comprehension tests and reported higher levels of engagement compared to those who received traditional text-based instruction.

Similarly, Jensen and Toledo (2022) conducted a study on the impact of multisensory CLIL methods in an ESP program for engineering students. The researchers found that students who were exposed to multisensory techniques, such as using visual aids to support reading tasks and auditory reinforcement through podcasts, outperformed their peers on reading comprehension tests, particularly when engaging with complex technical material. The study also revealed that multisensory learning helped students retain information more effectively, as the use of multiple sensory modalities strengthened their neural connections and deepened their understanding of the content.

In another study, Gonzalez and Barbero (2022) examined the role of multisensory learning in enhancing student motivation in an ESP program. The researchers found that students who participated in multisensory CLIL activities, such as using tactile learning materials and interactive digital tools, reported higher levels of motivation and engagement compared to those who were taught using traditional methods. The multisensory approach helped to make the learning process more dynamic, interactive, and engaging, which in turn led to improved outcomes in reading comprehension and language retention.

Technological tools play a critical role in facilitating multisensory learning in CLIL-based settings, particularly in the context of ESP programs. In the Indonesian context, it has been suggested that technology-based techniques be incorporated into language teaching curricula for teaching and learning (Nugroho & Rahmawati, 2020). The use of interactive applications, multimedia resources, and digital platforms enables students to access a wide range of input forms, such as visual representations, videos, and interactive exercises (Frigols-Martin, 2021). These tools not only provide students with alternative ways of engaging with the material but also allow instructors to create more dynamic and sensory-rich learning environments.

One of the key benefits technologies in multisensory CLIL environments is the ability to customize learning management systems (LSM), multimedia content, and online

collaboration tools offer students the flexibility to engage with materials in ways that align with their learning styles. For example, students who prefer visual learning can access videos, infographics, and interactive simulations, while those who benefit from auditory input can listen to podcasts, recorded lectures, or participate in live discussions. This flexibility ensures that all students, regardless of their preferred learning style, can access content in ways that maximize their comprehension and retention.

Lasagabaster and Sierra highlighted the positive impact of technology on multisensory CLIL environments, particularly in terms of engagement and motivation (Lasagabaster & Sierra, 2020b). In their study, ESP students who used digital tools to support their reading tasks-such as interactive diagrams, videos, and audio summaries reported higher levels of engagement and demonstrated better performance in reading comprehension tests. The study concluded that technology not only makes learning more interactive and engaging but also enhances students' ability to process complex information by providing multiple forms of input.

3. RESEARCH METHOD

This qualitative case study was designed to explore the application of a multisensory approach within a CLIL framework in an ESP program. The study focused on a group of pharmacy students at Universitas Muhammadiyah Kuningan, Indonesia. Data collection was conducted through a triangulation method, combining classroom observations, semi-structured interviews, and open-ended feedback surveys. This approach ensured a comprehensive understanding of the student's experiences and perceptions (Creswell & Poth, 2018). The design aligns with the principles of qualitative research that emphasize in-depth exploration of participants' contextual experiences (Merriam & Tisdell, 2016).

Thematic analysis was employed to identify and interpret recurring patterns in the data (Braun & Clarke, 2006). The analysis focused on key themes related to reading improvement, student engagement, technology challenges, and the multisensory approach's perceived effectiveness.

4. RESULT AND DISCUSSION

4.1. Result

Students' Reading Comprehension

Based on semi-structured interviews, most students reported an improved ability to comprehend technical texts after the intervention with CLIL-based multisensory methods. Before the intervention, 70% of students stated difficulties in understanding domain-specific terminology. However, after the intervention, 85% expressed greater ease in comprehending and analyzing texts. Examples of students' statements:

> *"Videos and practical activities helped me understand the context, making reading texts easier."*
> *"I feel more confident answering questions after grasping concepts through various approaches."*

Students Engagement

Observations revealed higher levels of student engagement during the learning process. Interactive activities, such as group discussions, visual aids, and collaborative exercises, encouraged students to participate actively. Observation sheets showed that 80% of students actively engaged in group discussions, compared to only 50% before implementing the method. Examples of students' statements:

"I was more involved because it wasn't just reading texts but also discussing and performing related activities."
"This method made the class feel livelier and more enjoyable."

Challenges in Implementation

Survey results indicated that 40% of students faced challenges with the new technologies introduced during the intervention. These challenges included confusion in using learning applications and a slower adaptation to digital tools. Examples of student complaints:

"I'm not used to these apps, so I often felt confused."
"Sometimes it takes me longer to adjust to the technology than to understand the material."

Technology Role

Questionnaire data revealed that 90% of students felt more comfortable with digital tools compared to traditional methods. Most students mentioned that digital formats, such as videos, animations, and interactive applications, made it easier to understand the material. Examples of students' statements:

"I enjoy video-based materials because I can replay them if I don't understand something."
Technology makes learning more engaging, especially for topics that are usually difficult."

4.2. Discussion

The findings of this study emphasize the effectiveness of CLIL-based multisensory learning methods in improving students' intensive reading skills and classroom engagement, while also highlighting challenges related to technology adaptation. These results contribute to the growing body of literature that supports multimodal and CLIL approaches in language education, particularly in ESP.

Students' Reading Comprehension

The study results revealed a marked improvement in students' reading comprehension abilities, particularly with complex, technical texts that often pose challenges. Before the intervention, many students struggled with the dense language and specialized vocabulary typical of academic and technical texts. The CLIL-based multisensory approach, incorporating videos, interactive activities, and visual aids, allowed students to build contextual understanding before engaging with the text itself. This multimodal preparation facilitated better comprehension as it provided students with prior knowledge, easing the process of parsing and understanding complex ideas.

For instance, a student reported, "Videos and practical activities helped me understand the context, making reading texts easier." This suggests that the multisensory approach aligns with (Paivio, 1971) dual-coding theory, which posits that people process information more effectively when it is presented in both visual and verbal forms. Through multisensory tools, students engaged different cognitive pathways, reducing the cognitive load (Sweller, 1994) associated with processing dense texts. With reducing mental strain, students were able to delve deeper into analytical aspects of reading, improving their comprehension and critical reading skills.

This approach highlights the pedagogical benefit of scaffolding complex texts by using various modalities, an aspect that could be further integrated into course design for other academic subjects. Future research could explore the optimal combination of modalities for different types of

technical content, as well as the potential impact on long-term retention and comprehension.

Students Engagement

The CLIL-based multisensory method also fostered increased student engagement, with a noticeable rise in participation and enthusiasm during sessions. Observations and student feedback indicated that the varied activities group discussions, practical applications, and multimedia aids encouraged active participation. One student shared, *"I was more involved because it wasn't just reading texts but also discussing and performing related activities."*

This engagement aligns with Vygotsky's social constructivist theory, which emphasizes learning as a social process, enhanced through collaboration and interaction (Vygotsky, 1978). The multisensory approach provided opportunities for students to connect new information to prior knowledge and each other, thereby building a supportive learning environment that motivated active participation. Students' active involvement is critical, as it not only supports deeper understanding but also encourages a sense of ownership and motivation in learning, which are particularly important in ESP contexts where content is technical and often challenging.

Given these findings, educators could consider incorporating multimodal approaches in other subject areas, adapting materials to support different types of sensory engagement. Additionally, further studies could assess the impact of these strategies on engagement and motivation across diverse student demographics and academic fields.

Challenges in Implementation

While the multisensory approach showed promising results, certain challenges arose during its implementation, especially regarding the integration of new technologies. Several students initially found the use of digital applications confusing, with one stating, "*I'm not used to these apps, so I often felt confused."* This difficulty emphasizes the importance of providing adequate support and training, not only for students but also for educators, who must navigate and facilitate these technologies effectively.

The adjustment period for students underscores Piaget's constructivist view that learning involves adapting to new schemas (Piaget, 1976). Without proper guidance, students' cognitive resources may be diverted toward understanding the technology rather than engaging with the content itself. To mitigate these issues, educators should consider introducing an orientation session at the start of the course, allowing students to familiarize themselves with the tools before engaging in content-focused activities. Additionally, educators should receive ongoing technology training to enhance their confidence and efficiency in using these tools, ensuring smoother lesson delivery.

This challenge points to the need for institutional support in the form of professional development programs that equip teachers with the skills to implement technology-based multisensory approaches. Future research could examine how technology training for instructors influences student outcomes and whether familiarity with tools can reduce cognitive load during content-based learning.

Technology Role

The study reaffirms the potential of technology to make learning more engaging and accessible. Many students expressed a preference for digital tools over traditional textbooks, noting that multimedia resources provided a more engaging and interactive learning experience. The positive response to digital tools, such as videos and animations, supports Mayer's Multimedia Learning Theory (2001), which emphasizes that well-designed multimedia materials enhance learning by integrating verbal and visual information (Mayer, 2009). Moreover, students' ability to revisit digital resources independently reflects the principles of Self-Determination Theory (Miller et al., 1988), which highlights autonomy as a key factor in fostering intrinsic motivation. This preference for digital formats underscores the significance of integrating technology to cater to diverse learning preferences, especially among digital-native students.

The ability of technology to distribute the cognitive load, as suggested by Sweller, allows students to engage with the material in a more relaxed and receptive manner (Sweller, 1994). Multimedia applications offer content through different sensory channels, enabling students to process information more effectively and focus on higher-order cognitive tasks such as analysis and synthesis. The use of videos, graphics, and interactive applications aligns with constructivist learning principles by creating a dynamic learning environment that encourages exploration and self-directed learning.

5. CONCLUSION

The study found that CLIL-based multisensory learning methods significantly improved students' intensive reading skills and enhanced classroom engagement. By incorporating various sensory modalities, these methods enhance comprehension and cater to diverse learning preferences, making the learning experience more inclusive and impactful. However, the findings also highlighted significant challenges, particularly concerning the integration of unfamiliar technologies. Students and educators often face difficulties navigating and utilizing these tools effectively, underlining the need for comprehensive support systems. This includes tailored training programs, ongoing technical assistance, and the development of user-friendly interfaces to minimize the cognitive load associated with technology usage.

Future research could explore the longitudinal impacts of multisensory learning on various language skills beyond reading such as writing, speaking, and listening. Additionally, it would be valuable to investigate the applicability of these methods in different educational settings, such as vocational training, adult education, or multilingual classrooms.

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