P-ISSN 2355-2794
E-ISSN 2461-0275

Bridging Language and Nursing Proficiency: Technology-Enhanced TBLT Integrated into CLIL in ESP Instruction

Dodi Mulyadi[1*]
Testiana Deni Wijayatiningsih[1]
Tri Hartiti[2]
Charanjit Kaur Swaran Singh[3]

[1]Department of English Education, Faculty of Educational Sciences and Humanities, Universitas Muhammadiyah Semarang, Semarang 50273, INDONESIA
[2]Department of Nursing Education, Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang, Semarang 50273, INDONESIA
[3]Department of English Language and Literature, Faculty of Languages and Communication, Universiti Pendidikan Sultan Idris, Perak 35900, MALAYSIA

Abstract

The research examined the perspectives of ESP learners and lecturers regarding the implementation of technology-enhanced task-based language teaching (TBLT) integrated into content language integrated learning (CLIL) in ESP instruction, and it identified key factors affecting its effective integration. A qualitative research design was employed, involving 95 nursing students and 10 ESP lecturers, who completed an open-ended questionnaire. Moreover, participants took part in focus group discussions (FGDs), including ESP students, heads of the nursing program, ESP lecturers, nursing lecturers, stakeholders, and professional nurses. Thematic data analysis of the open-ended questionnaire and FGDs results revealed that students and lecturers viewed the implementation of technology-enhanced TBLT integrated into CLIL as beneficial for integrating nursing theory with English language proficiency, thereby significantly improving content knowledge and language competence. Nonetheless, substantial obstacles arose, encompassing technology limitations, insufficient instructor preparation, and limited interdisciplinary collaboration. The results indicate that successful implementation necessitates a robust technology infrastructure, continuous professional development for educators, and enhanced collaboration between language teachers and nursing departments. The results of this study also show that technology-enhanced TBLT integrated into CLIL can relate theoretical lessons to real-world

[*] Corresponding author, email: dodi@unimus.ac.id

Citation in APA style: Mulyadi, D., Wijayatiningsih, T. D., Hartiti, T., & Singh, C. K. S. (2025). Bridging language and nursing proficiency: Technology-enhanced TBLT integrated into CLIL in ESP instruction. *Studies in English Language and Education, 12*(3), 1153-1170.

Received December 25, 2024; Revised February 20, 2025; Accepted July 9, 2025, 2025; Published Online September 30, 2025

https://doi.org/10.24815/siele.v12i3.43482

Copyright © 2025 by Authors, published by *Studies in English Language and Education*. This is an open-access article distributed under the Creative Commons Attribution 4.0 International License (https://creativecommons.org/licenses/by/4.0/)

applications. These results create a complete learning environment that gives nursing students the skills they need to meet the high standards of the medical field.

Keywords: CLIL, ELT, English for Nursing, English for Specific Purposes, Technology-enhanced TBLT.

1. INTRODUCTION

In recent years, the field of teaching English for specific purposes (ESP) has increasingly focused on developing methodologies that teach language skills tailored to the specific needs of various professional and academic disciplines. It has highlighted the development of targeted teaching methodologies to enhance learners' proficiency in specific fields (Dou, 2024). Similarly, Hyland (2022) discusses the centrality of research-based language education in ESP, focusing on pedagogies tailored to learners with identifiable professional, academic, and occupational communicative needs. With the growing demand for more specialised language instruction, language approaches have emerged to integrate content knowledge with concurrent language acquisition. This trend reflects the need for learners to use language skills in real professional contexts, making ESP an essential part of career-based education, especially in fields that require technical expertise and effective communication skills.

Proficiency in ESP becomes an essential skill for nursing professionals. This ESP mastery is necessary not only to fulfil the professional demands of the healthcare industry but also for promoting effective interactions with international patients and health practitioners. However, conventional ESP instruction for student nurses, particularly those whose native language is not English, presents significant challenges. Furthermore, ESP learning has significantly transformed with innovative pedagogical approaches and technological advancements. Currently, lecturers of English as a foreign language (EFL) have an opportunity to utilise a diverse array of technological tools and methodologies to improve the quality of their language instruction (Castillo-Cuesta et al., 2024).

Traditional approaches in ESP tend to focus on mastery of general grammar and vocabulary, which poorly reflect the communication dynamics faced by working professionals in real-world situations. It typically focuses on general language acquisition instead of adequately addressing the specific linguistic and professional demands that nursing students encounter. Furthermore, many Indonesian EFL learners take ESP classes with Indonesian as the language of instruction, so they have little exposure to the use of English and minimal interaction with native speakers. This discrepancy establishes a considerable divide between classroom instruction and the practical abilities necessary in healthcare environments. Therefore, student nurses frequently have difficulties in translating the linguistic knowledge acquired in the classroom to the clinical environment, where having the ability to make informed choices and communicate effectively is essential.

Regarding the aforementioned problems, the transformation of ESP learning, driven by innovative pedagogical strategies and technological advancements, has opened new opportunities for EFL lecturers to enhance their teaching practices. Two ESP learning methods, including Content and Language Integrated Learning (CLIL) and Task-Based Language Teaching (TBLT), have begun to be acknowledged for their potential to enhance the learning outcomes of ESP. CLIL integrates language learning with particular nursing content. It combines content mastery with language proficiency, making it highly relevant in specialised fields such as nursing, where theoretical knowledge and practical communication skills are crucial (Burns & Martínez Agudo, 2023). Meanwhile, TBLT promotes student engagement through relevant practical tasks. It focuses on engaging learners through practical tasks to make them participate intensively in the language learning experience (Mulyadi et al., 2021).

The integration of CLIL with TBLT creates a symbiotic relationship by using authentic and meaningful content to design motivating and challenging tasks, fostering authentic communication and a deeper understanding of both language and professional concepts (Lopes,

2020). In ESP for nursing, the dual focus on language and content acquisition is essential, in which student nurses must not only grasp complex medical knowledge but also develop the communicative competence required for effective patient interaction and professional collaboration.

Nonetheless, the challenges stem from the inadequate integration of these two methodologies and the limitations of technology integration into the educational process. Integrating TBLT into CLIL is often hindered by a lack of teacher expertise, separation of content and language, weak collaboration, and reliance on providing relevant language learning tasks (Isnaini et al., 2020). Meanwhile, the challenges of technology integration in ESP instruction include low motivation and focus, limited speaking practice opportunities, internet connectivity issues, and insufficient exposure to ESP materials (Mulyadi et al., 2023). These challenges result in ESP learning experiences becoming less contextual and less dynamic, leading to a mismatch between the learning experiences received by nursing students and the professional needs expected in nursing practice. The relevant use of technology in implementing TBLT and CLIL in ESP instruction can provide interactive elements that are more pertinent to the learners' field of study and serve as an effective instrument for bridging the gap between the theory taught in the classroom and real-world practice. The advent of technology in educational settings further amplifies the potential of this integration by providing real-world professional scenarios that enable students to engage in tasks that reflect actual nursing practices (Feddermann et al., 2024). The gap becomes increasingly evident when considering the lack of a technology-enhanced framework that effectively integrates the strengths of both TBLT and CLIL, specifically designed to meet the needs of student nurses.

Without such a framework, current ESP instruction continues to fall short in preparing nursing students for the complexities of global healthcare communication. Therefore, this study aims to investigate the viewpoints of ESP lecturers, ESP learners, ESP stakeholders, professional nurses, and heads of nursing programs on the implementation of technology-enhanced TBLT integrated into the CLIL approach. It was conducted to provide a more holistic and integrated learning experience that enhances language proficiency and nursing competence. This innovative method focuses on blending language learning with nursing-specific content, enabling students to develop their linguistic proficiency and professional competence simultaneously. By engaging students in meaningful, real-world tasks that mirror the complexities of the nursing profession, technology-enhanced TBLT integrated into CLIL can create a more immersive and practical learning environment.

There remains a significant gap in implementing CLIL and TBLT in English nursing education in Indonesia. While integrating these methods offers great potential by enhancing knowledge construction and oral competence, current teaching practices in this context predominantly rely heavily on textbook-based instruction with limited pedagogical authenticity (Moore & Lorenzo, 2015). This contrasts with the growing recognition that nursing students require a deep understanding of complex medical knowledge and the communicative skills necessary for effective patient interaction and professional collaboration (Feddermann et al., 2024). Moreover, using technology to simulate real-world nursing scenarios remains underutilised, highlighting the need for more dynamic and practical approaches in English for nursing pedagogy. Addressing this gap, this study aims to explore the perceptions of ESP students, ESP lecturers, nursing lecturers, professional nurses, stakeholders, and heads of nursing programs regarding the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction. Therefore, this study is essential in addressing these gaps by providing empirical insights into the effectiveness of integrating CLIL and TBLT in ESP, particularly in the field of nursing education, and offering practical recommendations to enhance its implementation. Two research questions were developed to guide the study.

1. How do ESP students and lecturers perceive the important factors of technology-enhanced TBLT integrated into CLIL in ESP instruction?
2. What are the key factors influencing the acceptance and challenges encountered in implementing technology-enhanced TBLT integrated into CLIL in ESP instruction?

2. LITERATURE REVIEW

Previous studies in ESP underline the necessity of integrating specific content knowledge with language competence for professional work fields. They have demonstrated that CLIL effectively enhances subject-matter understanding while improving language proficiency (Gallardo-del-Puerto et al., 2020; Merino & Lasagabaster, 2018). Meanwhile, TBLT is widely recognised for its ability to foster communicative competence through authentic, task-oriented learning experiences (Ellis, 2018).

Despite the advantages of both CLIL and TBLT, research on their systematic integration in English for nursing remains limited. Unlike general ESP contexts, English for nursing requires both theoretical medical knowledge and practical communicative competence, such as giving patient instructions and responding to emergencies (Tardieu & Dolitsky, 2012). Standard TBLT activities may not fully align with the structured and regulated nature of nursing communication, making the adaptation of TBLT into CLIL more difficult.

Furthermore, empirical studies on CLIL-TBLT integration in healthcare training are scarce. While TBLT has been applied in business English (González-Lloret, 2015) and CLIL has been effective in bilingual science education (Pérez Cañado, 2018), little research has explored how TBLT can be systematically integrated into CLIL specifically for nursing education. Nursing communication is high-stakes, where errors in language use can have serious consequences for patient safety.

Moreover, traditional CLIL instruction often relies on text-heavy content, which may not fully engage nursing students in active communication practice. By incorporating technology-enhanced TBLT, learners can participate in real-time virtual simulations, online patient interactions, and AI-driven role-playing tasks. Research suggests that authentic, interactive tasks lead to higher engagement, better language retention, and improved professional skills application (González-Lloret, 2015). Thus, technology-enhanced TBLT offers a more dynamic and effective learning approach for English for nursing.

2.1 The Integration of TBLT into CLIL

TBLT is a language learning methodology that emphasises the use of meaningful, real-world tasks to develop language skills skills (Kamal et al., 2024; Mulyadi & Candra, 2016; Mulyadi et al., 2023; Mulyadi et al., 2021). In English for nursing, TBLT learning activities may include patient assessments, care planning, and professional communication scenarios. For example, a task might involve students role-playing a nurse patient interaction about checking vital signs, explaining medication schedules, or delivering discharge instructions. These tasks enable ESP learners to apply both linguistics and nursing knowledge simultaneously in order to make language learning relevant by implementing it directly to their future nursing practice.

TBLT is particularly suitable for integration with CLIL because it treats language as a tool to achieve specific communicative outcomes, thus complementing the content-focused nature of CLIL (Kamal et al., 2024; Ortega, 2015). Integrating TBLT into CLIL creates a more holistic learning environment where language and content become mutually reinforcing, enhancing language acquisition and content mastery (Kamal et al., 2024). In nursing ESP, students do not merely memorize terminology or clinical procedures, but they engage in authentic tasks such as patient interviews, case report writing, or ward-round simulations where language and content operate simultaneously. This dual focus ensures that learners refine their communicative competence while deepening their understanding of clinical practice. Research demonstrates that when disciplinary concepts are embedded in communicative tasks, both content retention and language proficiency are enhanced since learners process information more deeply and meaningfully (Francomacaro, 2019; Nguyen & Tran, 2023).

Without integrating language into the learning process, students may achieve an understanding of theoretical knowledge but fail to apply or communicate it effectively in real healthcare environments. In contrast, engaging learners in bilingual tasks promotes deeper comprehension and more durable memory formation because they must articulate content clearly

in a second language, which forces them to refine and internalize the underlying concepts (Pittas & Tompkins, 2024). Thus, integrating TBLT into CLIL not only avoids hindering content learning but actively reinforces it, as the demand for precise communication in authentic professional tasks drives both linguistic accuracy and disciplinary mastery (Ortega, 2015).

2.2 The Role of Technology-Enhanced TBLT Integrated into CLIL

The integration of technology-enhanced TBLT into CLIL has the potential to bridge the distance between theoretical instruction and real-world application by establishing environments that resemble professional settings. Virtual simulations, interactive patient case studies, and online collaborative tasks are examples of how technology can provide situational authenticity, making learning more engaging and practical (Castillo-Cuesta et al., 2024). This approach is particularly relevant in English for nursing, where mastering complex medical concepts and developing effective communication skills are equally important. According to Ortega (2015), digital tools enhance student engagement and support knowledge transfer from the classroom to clinical practice, reinforcing the practical relevance of the lesson.

Despite its potential benefits, integrating technology-enhanced TBLT into CLIL poses several challenges. One significant hurdle is the need for educators to design or align both language and content objectives (Moore & Lorenzo, 2015; Tardieu & Dolitsky, 2012). This task requires specialised skills and considerable effort, which many teachers may lack without adequate support or training (Adipat, 2021; Charunsri, 2020). Another pedagogical challenge is the alignment of content and language teaching through collaborative practice between language and content lecturers. Moore and Lorenzo (2015) warn that when content and language lecturers work in isolation, the learning process can become disconnected, preventing students from fully benefiting from the integrated nature of TBLT and CLIL. As highlighted in a recent review in language teaching, sustainable CLIL implementation requires systematic collaboration between language specialists and subject teachers, since a lack of coordinated planning often leads to fragmented instruction and hinders the achievement of both language and content goals (Malmström & Zhou, 2025).

2.3 Addressing the Challenges of ESP Instruction: The Potential of CLIL and TBLT in Nursing

In Indonesia, ESP teaching, especially in English for nursing, faces unique challenges such as limited resources, insufficient training for educators, and a curriculum that may not fully address the specific needs of professional fields (Mulyadi et al., 2020). The limitations make it difficult for nursing students to develop both language and content mastery needed for their future careers. However, integrating CLIL and technology-enhanced TBLT can help overcome these challenges by making language learning more relevant and context-specific with authentic and multimodal input (e.g., digital simulations, virtual patients, online case studies) to substitute for scarce teaching materials, offering ready-to-use content-rich tasks that support lecturers with limited training, and aligning classroom practice with the real communicative demands of nursing context (Dao et al., 2019; Nguyen & Tran, 2023). Through these digital platforms, students can engage in interactive role-plays, record patient education videos, or practice electronic charting, activities that simultaneously foster language and professional skills while reducing teachers' dependence on specialized content knowledge (Adipat, 2021).

The present study is grounded in the premise that integrating CLIL and TBLT within a technologically enriched environment can offer a more practical approach to ESP teaching, particularly in English for nursing. Educators can bridge the gap between theoretical knowledge and practical application by incorporating technology to create situational authenticity, enhancing both language proficiency and content knowledge. Additionally, the study underscores the need for interdisciplinary collaboration and ongoing professional development to address the challenges of implementing TBLT integrated into CLIL frameworks. This aligns with the findings of a previous study by Castillo-Cuesta et al. (2024), who argue that using technology in ESP

teaching can foster active learning and better prepare students for real-world professional contexts.

3. RESEARCH METHOD

This study employed a qualitative research design. This research aims to explore the perspectives and experiences of student nurses and ESP lecturers regarding the integration of technology-enhanced TBLT into CLIL in ESP instruction. To achieve this objective, the research design, instruments, participants, data analysis procedures, and measures for validity, reliability, and ethics are systematically described in this section.

3.1 Research Method and Instruments

The study was conducted qualitatively using an open-ended questionnaire and focus group discussions (FGDs). Data were gathered utilising the subsequent instruments, i.e., open-ended questionnaire and Focus Group Discussion. An open-ended questionnaire was employed to investigate the perspectives of students and ESP lecturers concerning the important factors in applying the technology-enhanced TBLT into the CLIL approach. The open-ended questionnaire was designed to gather ESP students' perspectives on the key factors influencing the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction, as well as lecturers' viewpoints on the critical aspects of this integration. The first section focuses on students' general perceptions of the approach's effectiveness, while the second section explores themes such as technological readiness, interdisciplinary collaboration, and the training needs of lecturers. This questionnaire was developed in alignment with relevant literature to ensure its consistency with the research objectives. The questionnaire was distributed digitally via Google Forms to 95 nursing students and 10 ESP lecturers. The estimated completion time was 20-30 minutes.

Furthermore, FGDs were undertaken to obtain comprehensive insights into the real-time experiences of ESP students and lecturers during the implementation of technology-enhanced TBLT integrated into CLIL. This data collection facilitates an in-depth examination of participant viewpoints, emphasising critical elements such as technology readiness (Yusof & Mohammed, 2024), multidisciplinary cooperation (Arnó-Macià & Mancho-Barés, 2015), and the efficacy of the instructional strategy (Payne & Manning, 1992; Yabukoshi, 2021). FGDs were conducted with a select group of participants to capture more profound insights into their experiences. The semi-structured FGDs focused on topics such as technology readiness, interdisciplinary collaboration, and barriers to implementation. These sessions were intended to facilitate open discussions and lasted about 45-60 minutes. Furthermore, focus group discussions FGD were employed to corroborate the results from the open-ended questionnaires, assuring a thorough comprehension of the implementation's effects. This FGD sought to identify challenges and opportunities encountered while implementing technology-enhanced TBLT integrated into the CLIL approach, including technological obstacles, content difficulty, and linguistic issues. Participants were voluntarily asked to express their views on these challenges and propose solutions for enhancement, contributing vital insights to refine the methodology for improved language acquisition and content comprehension.

3.2 Study Participants

The participants of the open-ended questionnaire include 95 student nurses and 10 ESP lecturers from a university in Indonesia. The student nurses comprise 72 female and 23 male participants, aged between 18 and 25 years. All participants received the English course for nursing purposes, in which technology-enhanced TBLT integrated into CLIL was applied over a semester by three ESP lecturers. Meanwhile, 10 ESP lecturers comprise seven females and three males, aged between 28 and 50 years. Regarding educational background, eight lecturers held a

Master's degree in Applied Linguistics or TESOL, while two had a PhD in English Education. Their teaching experience varied, with three lecturers having one to five years of experience, four lecturers with six to 10 years of experience, and three lecturers having more than 10 years of experience. This range of experience levels and educational qualifications provided a diverse perspective on implementing language instruction in nursing. They were asked to speak about the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction.

Furthermore, FGDs were performed to evaluate the authenticity and clarity of their responses, and they were conducted with different groups of participants to validate and enrich the collected data. These FGDs included five nursing students, five ESP lecturers, three nursing lecturers, three heads of nursing programs, five stakeholders, and three professional nurses. Each group engaged in in-depth discussions about the perceived benefits, challenges, and key factors influencing the success of TBLT integrated into CLIL. These FGDs provided a platform for participants to share their experiences and insights, contributing to a comprehensive understanding of implementing this instructional model in English for Nursing. The detailed breakdown of the demographic and educational data of FGD participants is presented in Table 1.

Table 1. Demographic data of focus group discussion (FGD) participants.

Participant Group	Total (N)	Gender (F/M)	Age Range	Educational Background	Participant Characteristics & Experience
Nursing students	5	3 female, 2 male	19-23 years	High school English, Nursing-specific ESP courses	2nd and 3rd year students with prior exposure to ESP courses
ESP lecturers	5	3 female, 2 male	30-48 years	Master's in Applied Linguistics or TESOL, PhD in English Education	2 lecturers experienced in implementing TBLT, a lecturer implementing CLIL, and 2 lecturers experienced in implementing TBLT integrated into CLIL in ESP for Nursing, 5-15 years of experience
Nursing lecturers	3	2 female, 1 male	35-50 years	Master's or PhD in English for nursing	Specializing in clinical and communication training, 7-20 years of experience
Stakeholders	5	2 female, 3 male	40-60 years	Master's in Healthcare Administration, PhD in Educational Management	Hospital administrators, curriculum advisors, and healthcare policy makers >10 years of experience
Professional nurses	3	3 female,	32-38 years	Nursing Licensure and Certification	Working in clinical settings, experience in mentoring nursing students, 7-15 years of experience
Heads of nursing program	3	2 female and 1 male	48 - 37 years	PhD in English for Nursing	Head of Nursing Program, 15+ years of experience in teaching Student Nurses

3.3 Data Analysis Techniques

The data analysis was performed with triangulation utilised by contrasting results from two data sources (open-ended questionnaire and focus group discussions) to validate findings and ensure interpretative consistency. The responses given by ESP students and lecturers were analysed using NVivo 12 to find prevailing themes from the data collected through open-ended questionnaires. This qualitative software facilitated systematic coding, topic development, and categorisation of responses, enabling a comprehensive comprehension of participants' perceptions. The results were subsequently presented in both graphical formats to elucidate overarching insights into the learning methodology. The results were explicated in bar charts in order to visually display key trends, frequency distributions, and relationships between themes.

Similarly, FGD data were analysed thematically in NVivo 12 to identify patterns, connections, and emerging themes. Each transcript was thoroughly tagged to ensure authenticity and validity, facilitating the identification of story exemplars associated with specific themes. NVivo was employed to monitor sources, illustrate relationships among topics, and systematically arrange data. This method enabled an in-depth comprehension of the qualitative data and bolstered the triangulation procedure to enhance the credibility of the study.

3.4 Validity and Reliability

The questionnaire was piloted with three instructors who had five years of experience in teaching ESP for nursing. The expert validity of the open-ended questionnaire was established through a triangulated procedure that included expert evaluation, participant feedback, and congruence with theoretical frameworks. The expert judgment was obtained from three ESP instructors in nursing with over five years of experience, who assessed the relevance, clarity, and representativeness of each item (Cohen et al., 2018; Creswell, 2012). Based on the expert judgment, the open-ended questionnaires have been relevant with research questions and ready to be delivered to the participants. Furthermore, reliability analysis produced coefficients between 0.84 and 0.96, thereby confirming that the questionnaire is both valid and reliable (Ho, 2013).

The guidelines for FGDs were evaluated for validity and reliability to ensure data quality. Validity encompasses content validity via expert assessment, face validity to ascertain the comprehensibility of the questions and construct validity to evaluate the topics under investigation. Content validity was evaluated by a panel of experts, yielding a content validity index (CVI) of 1.00, indicating full agreement among experts. Face validity was assessed through feedback from participants familiar with the research context, resulting in a face validity index (I-FVI) of 0.91, confirming clarity and comprehensibility. Construct validity was ensured by aligning the instrument with relevant theoretical frameworks to ensure that the instrument effectively captured the constructs under study (Yaakop et al., 2023).

Reliability was evaluated through inter-rater and procedural reliability. Inter-rater reliability was assessed by multiple trained raters, with a consistency score of 0.749, indicating substantial agreement. Procedural reliability was ensured through a standardized protocol for FGD implementation, resulting in a final reliability score of 0.89. Additionally, triangulation was employed to gather feedback from experts, confirming the instrument consistency and reliability in data collection (Kalaycioglu et al., 2023). With high scores in all aspects, this FGD guideline is proven to be valid, reliable, and ready to be used to produce quality research data.

3.5 Ethical Considerations

All participants received information regarding the research objectives and their rights. Afterward, they were required to sign informed consent forms before the research activities started. Data confidentiality was rigorously upheld by implementing unique identification codes for each participant, ensuring that the research findings would not be utilised beyond the academic context without their approval.

4. FINDINGS

4.1 ESP Students and Lecturers' Perspectives of the Important Factors of Technology-Enhanced TBLT integrated into CLIL in ESP instruction

To better understand the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction, an open-ended questionnaire was administered to 95 nursing students and 10 ESP lecturers, gathering detailed responses on their perspectives. The questionnaire aimed to gather participants' views on the perceived benefits, challenges, and areas for improvement within the technology-enhanced TBLT integrated into the CLIL approach. The findings from the

open-ended responses provide valuable insights into the nuanced factors affecting the success of this approach, highlighting both the positive impacts and the specific barriers faced by students and lecturers.

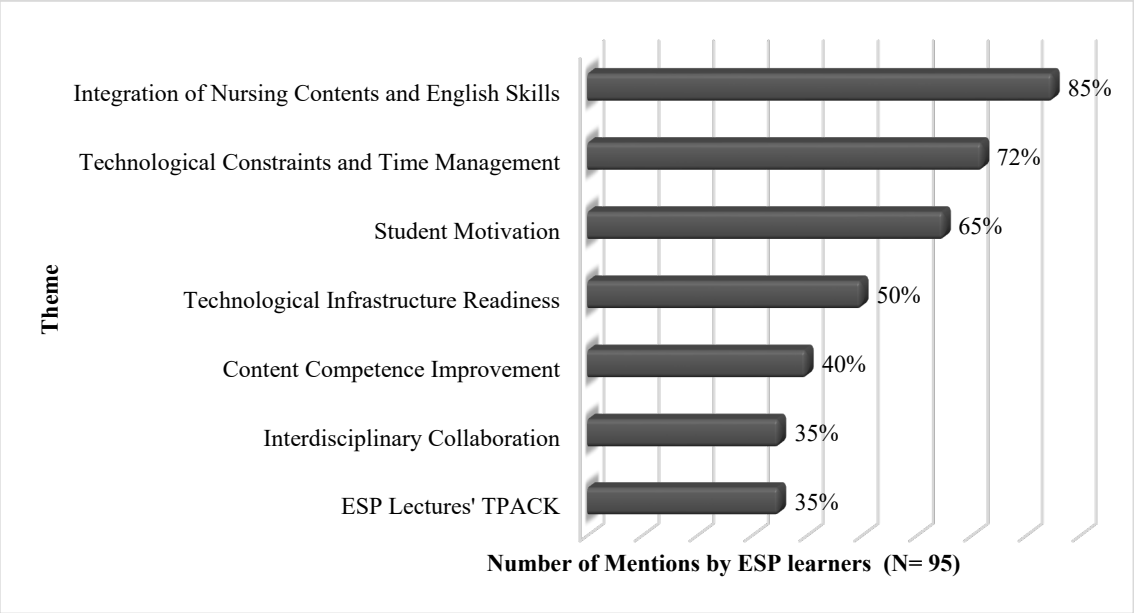

Figure 1. The perspective of ESP Students regarding the important factors of technology-enhanced TBLT integrated into CLIL in ESP instruction.

Figure 1 shows the graphic representation of the thematic analysis based on the findings from 95 nursing students' responses to open-ended questions. The theme 'Integration of Nursing and English Skills' received the most attention from the students. It indicates that the technology-enhanced TBLT integrated into the CLIL approach substantially improved their ability to integrate nursing theory and English language skills, as indicated by the data in Figure 1. The students perceived that language acquisition in a clinical setting strengthened their communication skills and content mastery. This perception is corroborated by research that indicates that the use of contextual language improves cognitive retention. This illustrates the efficacy of the methodology in fostering a more profound comprehension of clinical procedures and nursing terminology.

Subsequently, most students indicated that they faced significant difficulties in managing the complexity of technology-based tasks and time, reflecting that technological constraints and balancing nursing content with language mastery were prominent obstacles in their learning experience. This is in accordance with Cognitive Load Theory, which posits that abundant information can overload working memory capacity. Furthermore, 'Student Motivation' was a prominent theme, with 65% of students asserting that the task-based TBLT approach, which was directly relevant to their nursing practice, heightened their intrinsic motivation to actively participate in the learning process.

'Technological Infrastructure Readiness' was another theme that emerged, with half of the students asserting that infrastructure limitations are a significant barrier, particularly in regions with limited access to high-speed internet. This impacted their capacity to engage entirely in digital learning environments. In the interim, "Content Competence Improvement", "Interdisciplinary Collaboration", and "ESP Lecturers' TPACK" indicate that, despite their significance, additional assistance is required to improve interdisciplinary collaboration and increase the technical proficiency of lecturers to manage technology in the classroom effectively.

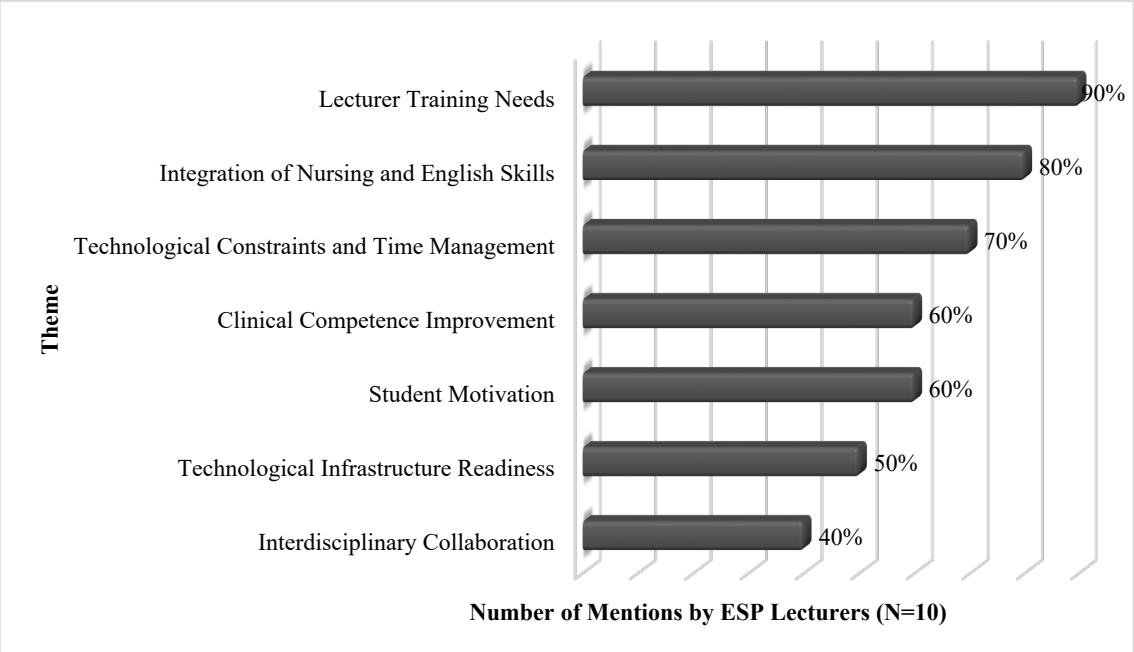

Figure 2. The important factors regarding the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction (ESP lecturers' perspectives).

The important factors from the viewpoints of ten ESP lecturers underscore numerous critical issues and focal points in implementing technology-enhanced TBLT integrated into the CLIL method in ESP learning. The predominant theme identified was lecturer training needs, indicating a consensus on the essential requirement for extensive training and support for professors to execute this strategy proficiently. The integration of nursing and English skills, along with technical constraints, was extensively examined, demonstrating that the challenges of integrating content with language learning and surmounting technology barriers are educators' primary hurdles. These themes underscore the need for institutions to invest in faculty development and connect the curriculum with professional language competencies to improve the educational experience for nursing students.

Other topics, including student motivation, content competence improvement, and technological infrastructure readiness, were referenced with moderate frequency, signifying their significance but with somewhat diminished emphasis relative to the primary themes. Simultaneously, interdisciplinary collaboration garnered limited references, indicating that although these elements are acknowledged, they may not be pressing concerns for educators. This investigation elucidates ESP lecturers' present priorities and obstacles, providing critical insights for enhancing technology-enhanced TBLT integrated into CLIL implementation strategy to guarantee its efficacy and sustainability in ESP instruction.

To sum up, the open-ended questionnaire findings from nursing students and ESP lecturers reveal significant insights into implementing technology-enhanced TBLT integrated into the CLIL approach in ESP instruction. Among nursing students, the dominant theme was the integration of nursing and English skills, suggesting that this methodology substantially enhanced their ability to merge nursing theory with language proficiency. However, technological challenges and time management emerged as significant barriers, highlighting difficulties in managing technology-based tasks. On the other hand, ESP lecturers predominantly emphasised the lecturer training needs, underscoring the necessity of comprehensive training to deliver this approach effectively. While themes such as student motivation, content competence improvement, and technological infrastructure readiness were noted by both groups, there remains a need for further support to address interdisciplinary collaboration and technical proficiency. These findings provide a comprehensive view of the strengths and challenges of technology-

enhanced TBLT integrated into the CLIL approach, offering valuable insights for enhancing its implementation and sustainability in the field of English for nursing.

4.2 The Acceptance toward Technology-Enhanced TBLT Integrated into CLIL in ESP Instruction

The findings of FGDs reveal the acceptance and challenges toward technology-enhanced TBLT integrated into CLIL in ESP instruction. The acceptance toward technology-enhanced TBLT integrated into CLIL in ESP instruction involves two parts of the acceptance, i.e., enhancing both nursing knowledge and English communication skills, and) facilitating a more contextual learning environment that aligns with students' professional needs. In addition, it facilitates in elevating the standards of English for nursing and improving the competitiveness of ESP graduates

4.2.1 Enhancing both nursing knowledge and English skills

Participants of FGDs acknowledged that technology-enhanced TBLT integrated into CLIL in ESP instruction can enhance both the nursing contents and English language skills. To support the finding, Excerpts (1) and (2) illustrate how the participants of two students (S) from focus group (G) described their experience. These excerpts provide concrete evidence of learners' positive perceptions toward the integration of content and language learning through technology-mediated tasks.

(1) I also feel that technology-based TBLT provides an opportunity to learn independently. We can access various learning resources, do assignments interactively, and collaborate with our peers through digital platforms. This really supports me to be better prepared for the world of work. (S4, G2)

(2) This approach helps me to better understand both the clinical content and how to communicate it in English. It feels like I'm learning two things at once, which saves time and is very practical for my future career. (S3, G3)

In addition, a head of a nursing program (H) emphasised the need for collaboration between nursing and language departments to create integrated learning materials that address both linguistic and clinical needs. One of the heads of nursing program emphasised the importance of interdisciplinary collaboration in ensuring that educational materials are both relevant and effective in bridging the gap between language learning and clinical competence. Excerpt (3) illustrates her perspective.

(3) We need close coordination between language and nursing educators to create learning materials that address both linguistic and clinical needs. Without this collaboration, we won't be able to maximise the benefits of this approach. (H3, G3)

4.2.2 Facilitating a contextual learning environment

The study found that five ESP lecturers reported that technology-enhanced TBLT integrated into CLIL in ESP significantly increased student motivation and engagement by allowing them to see the direct relevance of learning English, especially in terms of applying medical terminology in clinical settings. Excerpts (4) and (5) reveal that ESP lecturers emphasised a positive view of TBLT effectiveness in linking language learning with practical, real-world scenarios. This indicates that the integration fosters not only linguistic competence but also professional readiness among students.

(4) Students now see the relevance of learning English because they can immediately apply it in clinical contexts. (L3, G3)

(5) We still see gaps in students' basic language skills, especially when it comes to medical terminology. This slows down their progress and affects the quality of their performance in TBLT tasks. (L2, G2)

Moreover, nursing lecturers emphasised the value of virtual simulations in providing a safe and realistic environment for students to practice both clinical skills and communication in English. Nursing lecturers (NL) highlighted the perceived effectiveness of digital tools in enhancing clinical and language skills simultaneously, as reflected in Excerpt (6). This suggests that technology-mediated simulations can serve the link between theoretical knowledge and practical application in ESP learning.

(6) The simulations offer a safe environment for students to practice both clinical skills and communication in English, which is essential for future healthcare professionals. (NL2, G2)

The nurses involved in the discussions reported that students showed improved confidence and a better understanding of clinical concepts in patient interactions. One nurse (N) shared their perception about the positive impact of TBLT in helping students not only learn medical English but also apply it effectively in real-world clinical settings.

(7) These students are more comfortable using medical terms in English and demonstrate a better understanding of clinical concepts during patient interactions. (N1, G1)

4.2.3 Elevating the standards of English for nursing and improving the competitiveness of ESP graduates

The use of TBLT and CLIL was seen as a way to elevate the standards of English for nursing and improve the competitiveness of graduates. As one stakeholder (SH) noted, the growing importance of integrating language learning with clinical expertise prepares students for the global healthcare market. His opinion is reflected in Excerpt (8).

(8) This approach enhances English proficiency and improves the clinical competence of graduates, making them more competitive, especially in international settings. (SH4, G2)

4.3 The Challenges toward Technology-Enhanced TBLT integrated into CLIL in ESP instruction

The challenges toward technology-enhanced TBLT integrated into CLIL in ESP instruction involve three parts: (1) Balancing ESP content and technology mastery, (2) language proficiency and professional development, and (3) infrastructure and technological limitations. These challenges demonstrate the inherent complexity of bringing together new teaching approaches, subject knowledge, and digital skills. To overcome them, there is a need for ongoing lecturer development, stronger institutional backing, and dependable access to technology.

4.3.1 Balancing ESP content and technology mastery

Despite the positive acceptance of this approach, some challenges also emerged from the FGD data. The most prominent issue was the time constraints in managing tasks related to ESP content and overcoming the difficulties of mastering the technology tools used in the learning process. This conclusion is evident in Excerpts (9) and (10) from the ESP students' learning experience.

(9) Balancing between understanding clinical scenarios and mastering the technology is really hard. (S1, G1)

(10) We truly need more time or support to handle it properly. (S5, G2)

4.3.2 Lecturer and stakeholder concerns: Language proficiency and professional development

The lecturers also pointed out some challenges: limited basic language proficiency among students, particularly in medical terminology, which hinders their performance in TBLT tasks. As one lecturer underscored, there is a need for a stronger foundation in basic English skills to effectively engage with the specialised language required in clinical settings, as reflected in Excerpt (11). These challenges highlight the need for scaffolding strategies to build students' linguistic readiness prior to engaging in more demanding task-based learning.

(11) We still see gaps in students' basic language skills, especially when it comes to medical terminology. This slows down their progress and affects the quality of their performance in TBLT tasks. (L2, G2)

This excerpt highlights both the positive impact of TBLT on student engagement in clinical learning contexts and the challenges posed by insufficient language proficiency, particularly in medical terms, which can hinder students' progress and task performance. Another lecturer highlighted the need for ongoing training to effectively utilise digital tools in implementing technology-enhanced TBLT integrated into CLIL. Excerpt (12) is corroborated by the finding.

(12) Many of us still feel underprepared to fully utilise digital tools for CLIL-based TBLT. We need ongoing support to adapt to the new teaching environment. (L1, G1)

4.3.3 Infrastructure and technological limitations

Infrastructure and technological limitations are also found as the challenges of implementing technology-enhanced TBLT integrated into CLIL. Findings of FGDs reveal that stakeholders emphasised that not all institutions, especially in rural areas, have adequate technological infrastructure to support this learning model. This finding is reflected in Excerpt (13).

(13) Not all educational institutions, especially in rural areas, have the necessary technology to implement this learning model effectively. Investment in infrastructure is critical. (SH5, G1)

Moreover, nursing lecturers pointed out the need for continuous training to use digital tools effectively. In addition, they also mentioned the challenges which require professional development and infrastructure improvements, particularly in less-resourced areas. The challenges also involve the use of technology in complex clinical scenarios. As one nurse noted, the ongoing difficulty that students face when attempting to integrate technology into more advanced or complex clinical tasks, as reflected in Excerpt (14).

(14) Although they handle real-life clinical scenarios more easily and professionally, some students still struggle with using technology, especially in more complex scenarios. (N2, G2)

In short, the research findings strongly suggest that technology-enhanced TBLT integrated into CLIL holds great promise in enhancing both language competence and clinical skills among nursing students. However, its successful implementation is contingent upon addressing key barriers, including technological limitations, language proficiency issues, and the need for ongoing lecturer training. Educational institutions must strategically invest in the necessary infrastructure, foster interdisciplinary coordination, and provide continuous support to fully realise the benefits of this approach in preparing nursing students for the global healthcare workforce.

5. DISCUSSION

The findings of this study provide valuable insights into the implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction, highlighting the perceptions of both students and lecturers and the key factors that influence its effectiveness. The implementation of TBLT integrated into CLIL, supported by technology, has shown significant promise in enhancing nursing students' language competence and clinical skills. However, this study also identified several challenges and areas for improvement that must be addressed to successfully implement this instructional model.

5.1 The perspectives of Students and Lecturers Regarding Technology-Enhanced TBLT Integrated into CLIL in ESP Instruction

The study found that most nursing students perceived the implementation of technology-enhanced TBLT integrated into the CLIL approach as highly beneficial for integrating nursing theory and English language skills. The most prominent theme identified was the 'integration of nursing and English skills', suggesting that students felt the approach improved their ability to apply language skills in clinical contexts, enhancing their comprehension and communication skills. This finding is consistent with previous research, showing that CLIL fosters a deeper understanding of content through contextualised language use (Moore & Lorenzo, 2015). Their study emphasises that CLIL enhances content comprehension by embedding language learning within meaningful, real-world contexts, allowing students to develop both subject knowledge and linguistic proficiency simultaneously. Moreover, students also noted improvements in their motivation to learn, as the task-based nature of TBLT made the learning process more engaging and directly relevant to their future professional settings (Kamal et al., 2024).

On the other hand, the study found that ESP lecturers highlighted 'lecturer training needs' as a predominant theme, emphasising the necessity for comprehensive training in both the pedagogical and technical aspects of implementing TBLT integrated into CLIL. This is in line with Burns and Martínez Agudo (2023) who asserted that teachers require additional support to effectively design and implement TBLT activities that are aligned with content and language objectives. Furthermore, lecturers considered 'technical constraints' as a significant barrier, which resonates with Castillo-Cuesta et al. (2024) findings that technological infrastructure plays a critical role in the success of technology-enhanced teaching approaches.

5.2 Acceptance and Challenges toward Technology-Enhanced TBLT Integrated into CLIL in ESP Instruction

The study identified several key factors influencing the successful implementation of technology-enhanced TBLT integrated into CLIL in ESP instruction. First, 'technological infrastructure readiness' emerged as a significant theme, with both students and lecturers highlighting that inadequate technological resources, especially in regions with limited access to high-speed internet, hindered the effective application of this approach. This finding underscores the importance of investing in robust technological infrastructure to support digital learning environments, as proposed by Feddermann et al. (2024). The effectiveness of this approach is determined by the availability of reliable digital tools, strong internet access, and adequate institutional support to facilitate seamless integration.

Second, 'interdisciplinary collaboration' was identified as a crucial factor for aligning language and content objectives within the curriculum. However, both students and lecturers indicated that interdisciplinary coordination was limited, making it challenging to create integrated learning materials that address both linguistics and clinical needs. This aligns with Moore and Lorenzo (2015), who argue that collaboration between content and language teachers is essential for achieving the dual aims of CLIL.

Third, the ESP lecturers and nursing faculty emphasised the need for 'continuous professional development'. They stressed that ongoing training is required to build educators'

confidence in using digital tools and designing effective TBLT tasks within a CLIL framework. This finding is supported by Nguyen and Tran (2023) who argued that professional development is a key determinant of the successful implementation of integrated instructional models in specialised fields such as nursing.

5.3 Implications for ESP Instruction

Technology-enhanced TBLT integrated into CLIL can create a dynamic learning environment where nursing students construct knowledge and improve their language competence through realistic tasks (Tardieu & Dolitsky, 2012). This combination of methodologies is expected to bridge the gap between theoretical instruction and practical application by utilising learning technologies to make English for nursing more aligned with the demands of the healthcare profession. In essence, this combination can enable ESP learners to develop their communicative competence and professional expertise.

The findings of this study have several implications for ESP instruction, especially in English for nursing in Indonesia. First, institutions must prioritise investment in technological infrastructure and faculty development to ensure educators can effectively deliver technology-enhanced TBLT integrated into CLIL. As Castillo-Cuesta et al. (2024) noted, using digital tools in ESP teaching can foster active learning and better prepare students for real-world professional contexts. They asserted that the integration of digital tools in ESP teaching promotes active learning by enabling interactive, task-based engagement, which not only enhances students' linguistic and subject-specific competencies but also equips them with practical skills essential for real-world professional environments. Second, fostering interdisciplinary collaboration between language and content instructors is essential for developing cohesive curricula integrating language and clinical skills. This collaboration would help avoid a fragmented curriculum, thereby enhancing the overall educational experience for nursing students.

Finally, while this study has demonstrated the potential of technology-enhanced TBLT integrated into CLIL to improve language and content mastery, it also highlights the importance of addressing the cognitive load experienced by students. According to the Cognitive Load Theory, too many elements in a learning task can overwhelm students' working memory, leading to difficulty in processing information (Sweller, 2012). Therefore, educators should carefully design tasks to balance the complexity of language and content, ensuring that students can effectively engage with the material without becoming overwhelmed.

6. CONCLUSION

This study aims to examine how ESP students and lecturers perceive the critical factors influencing technology-enhanced TBLT integrated into CLIL in ESP instruction by recognising that their engagement and acceptance play a fundamental role in the success of this pedagogical approach. Furthermore, the present study also seeks to identify the key factors which impact the implementation of this integrated approach. These factors include aspects related to the acceptance and challenges in implementing this approach. The results show that integrating technology-enhanced TBLT integrated into CLIL can potentially transform English for nursing by enhancing both language competence and content knowledge. However, its successful implementation depends on addressing key barriers such as technological constraints, the need for professional development, and interdisciplinary collaboration. Educational institutions must strategically invest in the necessary infrastructure and support systems to fully realise the benefits of this approach. By doing so, nursing programs can better prepare students for the complex communicative and clinical demands of the healthcare profession, ultimately contributing to a more skilled and adaptable nursing workforce. This integrated approach is expected to bridge the gap between theoretical instruction and practical application, making English for nursing more aligned with the demands of the healthcare profession.

Although the findings effectively underline the important role of technological infrastructure in supporting innovative teaching methodologies, the present study also has two limitations. Firstly, this study acknowledges the existence of technological constraints. Still, it does not provide an in-depth analysis of the specific digital devices or platforms used in implementing technology-enhanced CLIL in TBLT. These limitations point to valuable directions for future research, which could investigate the impact of specific technological devices on learning outcomes and explore optimal strategies for integrating digital resources in ESP instruction. Furthermore, investigating the role of different technological tools in reducing cognitive load and improving learning outcomes in CLIL-based English for nursing would provide valuable insights for refining this instructional model. Secondly, the study was conducted over a limited period, providing a direct picture of the effectiveness of the technology-enhanced TBLT-assisted CLIL approach. Although the short duration provides valuable insights into the initial impact, the long-term impact on language proficiency and clinical skills of nursing students is still unexplored. Therefore, this limitation highlights the need for longitudinal research to assess sustainable outcomes and more profound impacts over time. Future research should examine the long-term impact on professional preparedness and develop strategies to enhance interdisciplinary collaboration to integrate language and content learning objectives seamlessly.

ACKNOWLEDGEMENT

We would like to express our gratitude to the Directorate of Research, Technology, and Community Service (DRTPM) under the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia for funding this research through the Research Grant based on Decree Number 0459/E5/PG.02.00/2024 and Contract Number 108/E5/PG.02.00.PL/2024.

REFERENCES

Adipat, S. (2021). Developing technological pedagogical content knowledge (TPACK) through technology-enhanced content and language-integrated learning (T-CLIL) instruction. *Education and Information Technologies*, *26*(5), 6461-6477. https://doi.org/10.1007/s10639-021-10648-3

Arnó-Macià, E., & Mancho-Barés, G. (2015). The role of content and language in content and language integrated learning (CLIL) at university: Challenges and implications for ESP. *English for Specific Purposes*, *37*(1), 63-73. https://doi.org/10.1016/j.esp.2014.06.007

Burns, L. V., & Martínez Agudo, J. de D. (2023). CLIL realities through the lens of English and content teachers. *Teaching English as a Second or Foreign Language--TESL-EJ*, *26*(4), 1-24. https://doi.org/10.55593/ej.26104a10

Castillo-Cuesta, L., Cabrera-Solano, P., & Ochoa-Cueva, C. (2024). Using Genially and Kahoot for implementing CLIL in EFL higher education. *International Journal of Learning, Teaching and Educational Research*, *23*(7), 250-270. https://doi.org/10.26803/ijlter.23.7.13

Charunsri, K. (2020). The challenges of implementing content language integrated learning in tertiary education in Thailand: A review and implication of materials. *Advances in Language and Literary Studies*, *10*(4), 125-129. https://doi.org/10.7575/aiac.alls.v.10n.4p.125

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.

Dao, P., Nguyen, M. X. N. C., & Iwashita, N. (2019). Teachers' perceptions of learner engagement in L2 classroom task-based interaction. *Language Learning Journal*, *49*(6), 711-724. https://doi.org/10.1080/09571736.2019.1666908

Dou, A. (2024). Language needs and learning strategies of ESP learners. *Frontiers in Educational Research*, *7*(5), 243-247. https://doi.org/10.25236/fer.2024.070537

Ellis, R. (2018). *Reflections on task-based language teaching*. Multilingual Matters & Channel View Publications. https://doi.org/10.21832/ellis0131

Feddermann, M., Baumert, J., & Möller, J. (2024). A replication study to assess CLIL effects on second language learning in Germany: More than selection and preparation effects? *International Journal of Bilingual Education and Bilingualism*, *27*(2), 173-186. https://doi.org/10.1080/13670050.2022.2164174

Francomacaro, M. R. (2019). The added value of teaching CLIL for ESP and subject teachers. *International Journal of Language Studies, 13*(4), 55-72.

Gallardo-del-Puerto, F., Basterrechea, M., & Martínez-Adrián, M. (2020). Target language proficiency and reported use of compensatory strategies by young CLIL learners. *International Journal of Applied Linguistics*, *30*(1), 3-18. https://doi.org/10.1111/ijal.12252

González-Lloret, M. (2015). *A practical guide to integrating technology into task-based language teaching*. Georgetown University Press.

Ho, R. (2013). *Handbook of univariate and multivariate data analysis with IBM SPSS* (2nd ed.). Chapman and Hall/CRC. https://doi.org/10.1201/b15605

Hyland, K. (2022). English for specific purposes: What is it and where is it taking us? *ESP Today*, *10*(2), 202-220. https://doi.org/10.18485/esptoday.2022.10.2.1

Isnaini, I., Rohmah, T., Saleh, M., Faridi, A., & Fitriati, S. W. (2020). The challenges in implementing content and language integrated learning: The head teachers' personal view of teachers' professional development. In F. Ahmadi, V. A. Kristianto, G. P. Widhanarto, & A. T. Hamdani (Eds.), *Proceedings of the International Conference on Science and Education and Technology (ISET 2019)* (pp. 536-539). Atlantis Press. https://doi.org/10.2991/assehr.k.200620.107

Kalaycioglu, I., Rioux, B., Briard, J. N., Nehme, A., Touma, L., Dansereau, B., Veilleux-Carpentier, A., & Keezer, M. R. (2023). Inter-rater reliability of risk of bias tools for non-randomized studies. *Systematic Reviews*, *12*(1), Article 227. https://doi.org/10.1186/s13643-023-02389-w

Kamal, M. A., Seraj, P. M. I., & Begum, F. (2024). Teachers' perceptions on corrective feedback in task-based language teaching (TBLT) and content and language integrated learning (CLIL) contexts in Bangladesh. *MEXTESOL Journal*, *48*(1), 1-21. https://doi.org/10.61871/mj.v48n1-8

Lopes, A. (2020). Linking content and language-integrated learning (CLIL) and task-based language teaching (TBLT) in an effective way: A methodological proposal. *Onomázein Revista de Lingüística Filología y Traducción*, *6*, 5-22. https://doi.org/10.7764/onomazein.ne6.01

Malmström, H., & Zhou, S. (2025). Language–subject teacher collaboration in English-medium higher education: Current practices and future possibilities. *RELC Journal*. https://doi.org/10.1177/00336882241313234

Merino, J. A., & Lasagabaster, D. (2018). CLIL as a way to multilingualism. *International Journal of Bilingual Education and Bilingualism*, *21*(1), 79-92. https://doi.org/10.1080/13670050.2015.1128386

Moore, P., & Lorenzo, F. (2015). Task-based learning and content and language integrated learning materials design: Process and product. *Language Learning Journal*, *43*(3), 334-357. https://doi.org/10.1080/09571736.2015.1053282

Mulyadi, D., Arifani, Y., Wijayantingsih, T. D., & Budiastuti, R. E. (2020). Blended learning in English for specific purposes (ESP) instruction: lecturers' perspectives. *Computer-Assisted Language Learning Electronic Journal*, *21*(2), 204-219. https://callej.org/index.php/journal/article/view/304

Mulyadi, D., & Candra, D. (2016). Developing English for nursing materials integrated with task-based language teaching (TBLT) and soft-skills. In A. F. Rohman (Ed.), *Proceedings of International Seminar on Education Technology (ISET)* (pp. 229-232). Universitas Muhammadiyah Semarang. https://jurnal.unimus.ac.id/index.php/psn12012010/article/view/1959

Mulyadi, D., Singh, C. K. S., Setiawan, A., & Prasetyanti, D. C. (2023). Technology-enhanced task-based language teaching toward their self-directed language learning: ESP learners' views. *Studies in English Language and Education*, *10*(3), 1326-1341. https://doi.org/10.24815/siele.v10i3.27910

Mulyadi, D., Wijayatiningsih, T. D., Singh, C. K. S., & Prastikawati, E. F. (2021). Effects of technology enhanced task-based language teaching on learners' listening comprehension and speaking performance. *International Journal of Instruction*, *14*(3), 717-736. https://doi.org/10.29333/iji.2021.14342a

Nguyen, T. U. N., & Tran, V. M. Y. (2023). Using CLIL in ESP teaching to enhance students' specialized knowledge. In V. P. H. Pham, A. Lian, A. Lian, & N. T. Hoang (Eds.), *Proceedings of the 19th International Conference of the Asia Association of Computer-Assisted Language Learning (AsiaCALL 2022)* (pp. 177-184). Atlantis Press. https://doi.org/10.2991/978-2-38476-042-8_16

Ortega, L. (2015). Researching CLIL and TBLT interfaces. *System*, *54*, 103-109. https://doi.org/10.1016/j.system.2015.09.002

Payne, B. D., & Manning, B. H. (1992). Basal reader instruction: Effects of comprehension monitoring training on reading comprehension, strategy use and attitude. *Reading Research and Instruction, 32*(1), 29-38. https://doi.org/10.1080/19388079209558103

Pérez Cañado, M. L. (2018). CLIL and Educational Level: A longitudinal study on the impact of CLIL on language outcomes. *Porta Linguarum Revista Interuniversitaria de Didáctica de Las Lenguas Extranjeras*, *29*, 51-70. https://doi.org/10.30827/digibug.54022

Pittas, E., & Tompkins, L. (2024). A systematic review of student learning outcomes in CLIL in LOTE. *Frontiers in Education*, *9*, 1447270. https://doi.org/10.3389/feduc.2024.1447270

Sweller, J. (2012). Cognitive load theory. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 601-605). Springer. https://doi.org/10.1007/978-1-4419-1428-6_446

Tardieu, C., & Dolitsky, M. (2012). Integrating the task-based approach to CLIL teaching. In J. de Dios (Ed.), *Teaching and learning English through bilingual education* (pp. 3-35). Cambridge Scholars Publishing.

Yaakop, N., Koh, D., & Yasin, R. M. (2023). A content validation of focus group discussions based on need analysis in a physical education training module for primary school teachers. *Retos*, *50*, 1115-1122. https://doi.org/10.47197/retos.v50.100191

Yabukoshi, T. (2021). Self-regulation and self-efficacy for the improvement of listening proficiency outside the classroom. *Language Learning Journal*, *49*(1), 27-40. https://doi.org/10.1080/09571736.2018.1472626

Yusof, Y. H. M., & Mohammed, N. H. (2024). Exploring mediating effect of technology readiness between community of inquiry and student digital competence among students. *Environment-Behaviour Proceedings Journal*, *9*(SI21), 71-81. https://doi.org/10.21834/e-bpj.v9isi21.6083