

Teaching English grammar for ESP students: An exploration of content based instruction

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Abstract

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This study examined two instructional methods of grammar teaching for polytechnic students: the traditional method of translation and memorization and Content-Based Instruction (CBI). By involving first-year students majoring in Cyber Security, this study measured the impact of each method using pre- and post-tests focusing on key grammar topics integrated into IT content. The results showed that students in the CBI class outperformed those in the conventional class, wherein 53.34% of the former group attained converted grades of A and B while only 26.67% achieved similar grades in the latter. The students' feedback collected through questionnaires indicated that they preferred CBI because it was more relevant and applicable to reality, thus motivating them and making the grammar understandable in context. CBI was effective in ESP settings because it combined language skills with subject matter, but it necessitated instructors to handle both language teaching and content area. The current study highlighted that CBI could be a more meaningful grammar instruction for providing better learning outcomes in technical fields.

Keywords: CBI, ESP, grammar, IT materials, teaching method

INTRODUCTION

Grammar is crucial for English language learning especially for ESP students who rely on correct usage of the language for their professional and future success ([Saengboon, 2022](#)). In specialized areas, grammatical structures provide a way in which information may be clearly conveyed ([Omar, 2019](#)). Since ESP students are required to present complex ideas in professional settings, it will be essential for them to understand various grammatical structures ([Apolonio, 2021](#)). Despite the significance of grammar, the mastery of it remains relatively low among many ESP students, partly due to the complex rules that this entails and partly because of the specialized language requirements unique to each field of expertise ([Thao & Tham, 2018](#)).

These complications could result in confusion and frustration since traditional grammar instruction perhaps does not fully prepare them for technical language or industry use ([Iswati & Triastuti, 2021](#)). Therefore, many ESP students have to face a number of challenges which might hamper their overall language proficiency ([Fălăuş, 2017](#)). ESP students are mostly adult students who engage in language learning with a clear goal in mind: to enhance their abilities in a particular profession for the needs of industry ([Enesi et al., 2021](#)). Unlike younger students, adult students bring prior knowledge, experiences, and a strong sense of motivation to their studies. ESP, as a field, relies on the concept that it is for adult language education ([Bortnyk, 2021](#)), which emphasizes practical application, relevance to real-world tasks, and self-directed learning. These principles are particularly important for adult students who seek to improve their English for immediate use in their careers or academic pursuits ([Lytovchenko et al., 2018](#)).

ESP students at universities are normally expected to learn both the skills of the English language and the content simultaneously ([Arnó-Macià et al., 2020](#)). This integrated treatment allows students to put learned language skills into practice in a meaningful way, be it in academic or professional settings ([Rahman, 2015](#)). This is because parallel development of language and content skills makes students effective in the use of English in their field of study whereby they shall be able to perform their academic assignment as well as carry out professional duties later on ([Mazdayasna & Tahririan, 2008](#)).

The translation and memorization method represents one of the most widely spread methods in language teaching ([Elmayantie, 2015](#)). Here, the teacher is expected to first present new forms or structures of language in an organized manner, whereas during the practice stage, controlled exercises are executed with the use of drills or gap-fill activities for the reinforcement of material. It is expected that students will use the language more rigidly according to translation, by applying what has been learned and memorized ([Chang, 2011](#)). The translation and memorization method gained wide usage because it is structured and sequenced, hence easy to follow by both teachers and students.

Other than translation and memorization, Content-Based Instruction (CBI) is an integrated method to language learning. The teaching in CBI is done through subject matter content delivery wherein students can achieve language skills and domain-specific knowledge simultaneously ([Martel, 2021](#)). It focuses on the use of authentic content pertinent to the needs of either the academic or professional student, including, but not limited to, English taught within the subjects of history, science, or business. By using content, CBI allows students to develop their language skills in a contextual setting which closely simulates real-life situations and creates an interesting, relevant learning process ([Toma & Rassul, 2023](#)).

CBI has certain advantages over the method of translation and memorization. [Heo \(2006\)](#) argued that It helps students appreciate the language more because they are exposed to authentic materials with real-world applications of English rather than in isolated

linguistic materials. [Cenoz \(2015\)](#) proposed that the integration of content with language enhances critical thinking and problem-solving skills in students as they go about developing language proficiency. Besides, CBI allows balanced development of all language skills when students work with a variety of content-rich materials ([Sariani et al., 2022](#)).

CBI is indispensable to the ESP students mainly because it adheres strictly to the very aim for which they have taken up learning English, namely, for specified academic or professional purposes. In addition, [Channa & Soomro \(2015\)](#) concluded that CBI ensures the content is directly relevant to the students' field of study or work and that they can use their language skills in a practical and meaningful manner. This is in line with [Vold \(2020\)](#) who argued that this technique provides a more lively and stimulating way of language learning where students would go beyond the mechanical aspects of language toward deeper and more substantial, content-based learning.

In recent years, several studies have explored the impact of CBI on language acquisition, particularly in the context of ESP. Researches by [Amrani \(2019\)](#) and [Shirav \(2023\)](#), have shown that CBI improves student motivation and engagement by connecting grammatical instruction directly to topics relevant to their academic or professional interests. These studies also indicate that CBI might result in a better mastery of complicated grammatical structures since students face them within real, subject-specific situations. Another important conclusion in the literature of CBI in ESP is that it generally improves the fluency of the language. [Chaves \(2022\)](#) and [Mohammed et al. \(2023\)](#) provided some findings indicating students taught in a CBI-based method often performed better than their peers in more traditional grammar instruction settings-particularly on applied language skills measures. The result of the studies showed that CBI provided a context-rich environment for students to hold on to grammatical knowledge meaningfully and make use of it, which proved considerably helpful for ESP students operating in various fields.

Although most of the studies on CBI in ESP settings so far have focused on quantifiable results such as improvement in language proficiency or grammar, there is still a gap in terms of research regarding how students perceive and experience this kind of instructional method themselves. The present study, therefore, attempts to make a descriptive comparison between the improvement of grammar acquisition by polytechnic students under two methods of teaching: the traditional translation and memorization method and the Content-Based Instruction method. In this study, attention has been paid to how students perform in the process of grammar acquisition using these two methods and which instructional method supports students to a greater degree in mastering complex grammatical structures. Emphasis will be given to how CBI impacts students' perspectives regarding grammar in terms of comprehension, practice, and then application in meaningful contexts. Such a method is a backbone of academic success and professionalism. Thus, the comparison will provide some hints on which one-structured sequence of translation and memorization method or CBI with its integrated, content-driven focus-is more effective for the students learning ESP.

This would prove to be particularly essential in a technical university setting, such as a polytechnic, since a large number of students enter such universities with relatively low levels of English proficiency, and their grammar skill is usually the most poorly developed ([Aziz & Shah, 2020](#); [Kho & Ting, 2023](#)). In technical fields of study, much effective and specific communication is dependent upon grammatical knowledge. With the different levels of English proficiency that enter every year, however, it remains important to determine the best method through which grammar should be instructed in order for the

students to improve their language competency ([Herrera-Rivas et al., 2023](#)). The research will therefore look into the two instructional methods in developing suitable recommendations on how best to support the students in developing their grammar skills for overall improvement of their language proficiency levels and preparation for their technical courses towards their future careers

RESEARCH METHOD

This study employed a descriptive quantitative method that analyzes data using descriptive statistics. This study involves summarizing numerical data, such as pre-test and post-test scores, and analyzing questionnaire responses using percentages and averages. According to [Loeb et al. \(2017\)](#) descriptive quantitative research is well-suited for studies aiming to summarize data through statistical methods, describe characteristics of a population, and provide insights into observed phenomena. This method allowed for an exploration of how grammar instruction can be integrated into content learning of ESP materials, providing insights into ESP student experiences and challenges while learning English for Specific Purposes in a technical polytechnic university setting.

The population for this study consisted of 132 students majoring in the Cyber Security program at Polytechnic University in Banten Province. However, the participants selected for the study were 30 first-year Bachelor degree students who had been studying English for Specific Purposes (ESP) for one semester. These participants were not chosen through randomized sampling; instead, purposive sampling was employed because all participants mostly have the same level of competence according to their GPA on the first semester. The students were then divided into two equal groups of 15 each: the traditional method, and the CBI (Content-Based Instruction) group.

Within this project, students learned four subjects that combined information technologies with English grammar for better technical knowledge and the ability to use a foreign language. They studied Jobs in IT, mastering the Present Simple tense, which allowed them to describe routine work and responsibilities in the IT sphere. In Computer Hardware, comparatives helped them compare hardware components with others; for example, one processor is faster than another. The topic Computer Software was put together with superlatives, allowing students to describe software as being of the highest degree, such as: "This is the most user-friendly app." Lastly, Working with Computers was combined with the Present Continuous tense with regards to actions happening at that very moment, for example: "I am installing an update." Both groups were exposed to the same topics and grammar points so that their learning of the material would remain consistent.

Traditional group subjects are learned through translation and memorization methods, such as translating English vocabulary and grammar rules related to IT topics into their native language and memorizing them. For example, they translated a list of IT job titles or hardware components and memorized grammar rules concerning, for example, the present simple tense or comparatives.

In contrast, the CBI group had student-centered learning using content-based materials. They were learning English by actually using the language in the context of IT topics, therefore making their process relevant and interesting for them. They were able to make comparisons of various computer hardware components using comparatives such as, "This processor is faster than that one," by using pictures and videos provided that encouraged them to use the language naturally.

For better understanding of the learning process, below is a lesson plan for the topic "Jobs in IT" focusing on the present simple tense, using the content-based instruction method. This lesson plan is adapted from English for Information Technology, a vocational English course book by [Olejniczak \(2011\)](#).

Table 1. Lesson Plan for First Meeting (IT Jobs)

Step	Activity	Materials
Warm-up	Initiate a class discussion about IT jobs. Ask questions like, "What IT jobs do you know?" and "What do these professionals do?"	None
Introduction to IT Jobs	Present various IT job titles and their roles using slides or a short video. Introduce vocabulary such as "developer," "network engineer," "data analyst," etc.	Projector, slides and video
Reading Activity	Students read a short passage about daily routines of different IT professionals, highlighting verbs in the present simple tense.	Printed handouts
Grammar Focus: Present Simple	Review the present simple tense forms and usage based on the reading material. Explain affirmative, negative, and question forms.	Whiteboard, Video
Pair Work: Sentence Creation	In pairs, students create sentences about IT jobs using the present simple tense, e.g., "A software developer writes code."	Worksheets
Speaking Activity	Pairs present their sentences to the class. Encourage correct pronunciation and provide feedback.	None
Listening Activity	Play an audio clip where an IT professional describes their job. Students answer comprehension questions using the present simple tense.	Audio clip, speakers
Vocabulary Game	Play a matching game where students match IT job titles to their descriptions.	Flashcards
Writing Activity	Students write a short paragraph about an IT job they are interested in, using the present simple tense to describe the job's duties.	Paper, pens

To describe the findings of the study between the two groups, students in each group were asked to complete the same test before the first lesson (a pre-test) and after studying the four topics (a post-test). The purpose of administering both a pre-test and a post-test was to measure the students' progress and the effectiveness of the teaching methods employed – translation and memorization for the traditional group, and content-based instruction for the CBI group.

The test focused on the target grammar topics covered during the lessons: Present Simple, Comparatives, Superlatives, and Present Continuous. These grammar points were

integrated into the context of Information Technology (IT) to align with the content of the four topics studied. The test consisted of multiple-choice questions and fill-in-the-blank tasks. For example, students might be asked to choose the correct verb form in a sentence like "A network engineer (monitor) the system daily," or fill in the blanks with appropriate comparative adjectives when comparing hardware components.

By using the same test for both the pre-test and post-test, it could be ensured that any changes in scores could be attributed to the students' learning during the study period. This method allowed for a direct comparison of the students' understanding before and after the instruction. The consistency in testing also helped in minimizing external variables that could affect the results.

The assessment of the tests was carried out using the institution's standard grading scale for academic achievement. The scale is as follows:

Table 2. The Score Scaling

Min	Max	Index	Grade
0	39.99	0	E
40	54.99	1	D
55	69.99	2	C
70	85.99	3	B
86	100	4	A

This grading scale helped to quantitatively evaluate each student's performance based on the percentage of correct answers. For instance, a student scoring 72% on the test would receive an index of 3, corresponding to a grade of B. This standardized assessment made it possible to compare the overall performance of the two groups objectively.

Data collected from the tests were then analyzed using descriptive statistics (percentages) to compare performance between the two groups. Descriptive quantitative analysis effectively summarizes patterns and trends, offering a clear comparison of group outcomes (Loeb et al., 2017). By comparing the pre-test and post-test scores within each group, it could describe the improvement in students' grasp of the grammar topics. Additionally, comparing the results between the two groups provided insights into which instructional method was more beneficial for learning English grammar in the context of IT.

An open-ended questionnaire was also distributed to the CBI group to find out the students' attitudes towards content-based instruction. This questionnaire included three questions designed to gather detailed feedback on their experiences with the CBI method. The questions were: "Did you enjoy learning English grammar using the IT-related content provided? Please explain your reasons." "In what ways did the content-based method impact your confidence and ability to use English grammar accurately in context? and do you have any suggestions for future lessons?" "Did you have any difficulties? if yes, can you tell me the difficulties?". Open-ended questionnaire responses were then thematically analyzed to identify recurring themes.

FINDINGS AND DISCUSSION

The results of the pre-test conducted before the study did not reveal any significant differences between the T&M (Translation and Memorization) group and the CBI (Content-Based Instruction) group. This lack of significant difference indicates that both groups started with a similar level of proficiency in the target grammar topics.

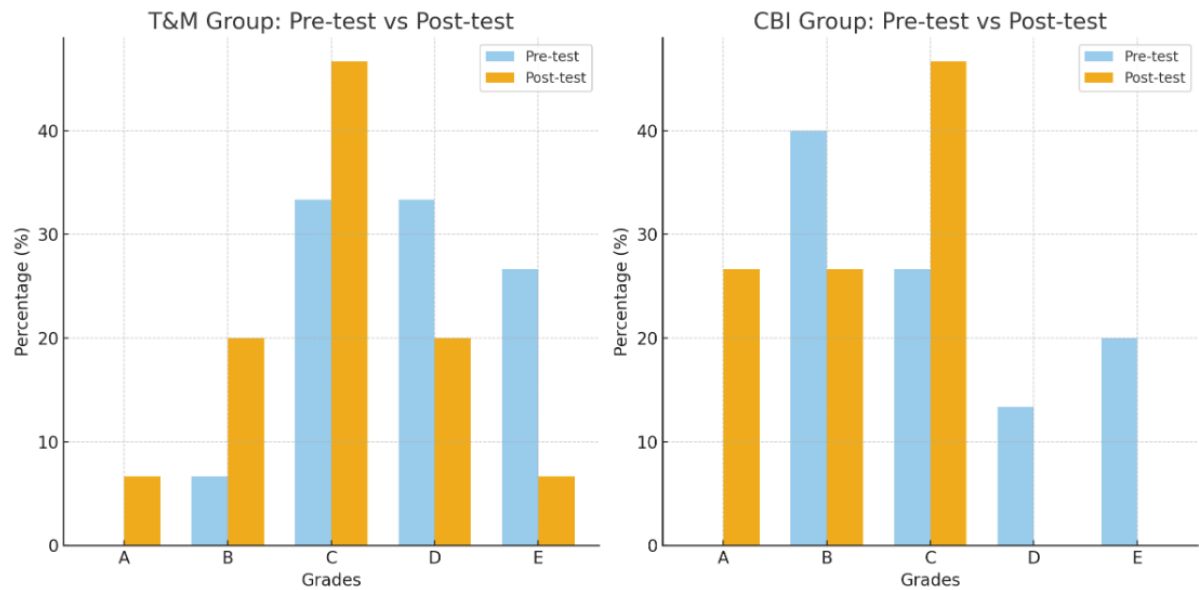


Figure 1. Both Groups Pre-Test and Post-Test Result

The graph summarizes the pre-test and post-test results for the Translation and Memorization (T&M) group and the Content-Based Instruction (CBI) group, showing the distribution of grades among students before and after the instructional period. In the T&M group, there was a slight improvement: the percentage of students achieving grades A and B increased from 6.67% in the pre-test (with only one student receiving a B) to 26.67% in the post-test (one student with an A and three with a B). However, a significant number of students remained at grades C and D. In contrast, the CBI group exhibited more substantial progress; the percentage of students attaining grades A and B rose from 40% in the pre-test to 53.34% in the post-test, with four students achieving an A (26.67%) and another four a B (26.67%). Notably, no students received grades D or E in the CBI group's post-test, indicating that content-based instruction had a more positive impact on student performance compared to the traditional method.

The results from the first question of the open-ended questionnaire "Did you enjoy learning English grammar using the IT-related content provided? Please explain your reasons." indicated that a significant majority of the participants found the experience enjoyable. Specifically, 13 out of 15 students (approximately 86.7%) reported that they enjoyed learning grammar through the IT-related content. The students highlighted several reasons for their positive experiences.

Firstly, they appreciated having clear examples of grammatical structures presented within attractive and relevant IT content, which made the grammar rules more understandable and engaging. The integration of language learning with IT topics helped them visualize how to use grammar rules in practical contexts, enhancing their ability to grasp and apply the concepts. Secondly, the use of multimedia resources, such as videos and images related to IT, aided in memory retention, making it easier for them to remember the grammatical structures. Additionally, the content-based method often involved group activities, allowing students to receive help from peers. The other two students however, prefer to study individually.

When the students were asked, "In what ways did the content-based method impact your confidence and ability to use English grammar accurately in context? And do you have

any suggestions for future lessons?", their responses overwhelmingly highlighted the positive influence of the content-based instruction on their learning experience.

A significant number of students, specifically 12 out of 15 (approximately 80%), reported that integrating English grammar lessons with IT-related content substantially enhanced their confidence and ability to use grammar accurately in real-life contexts. They expressed that learning grammar through topics relevant to their field of study allowed them to see practical applications of grammatical structures, which made the rules easier to understand and remember. For instance, by discussing real IT scenarios while learning the present simple tense or comparatives, they could readily grasp when and how to use these grammatical forms. One student remarked, "Learning grammar through IT topics helped me use English when talking about my studies."

The students also noted that this method increased their engagement and motivation during lessons. Another student mentioned, "I felt more interested in the lessons because they were about things I care about, which helped me focus on the grammar." As a result, they felt more confident when speaking and writing in English, particularly about IT subjects, as they had ample practice applying grammar rules in contexts they are likely to encounter in their academic and professional lives. For the feedback, they valued receiving feedback on their grammar usage and wanted more opportunities for personalized feedback from the instructor. The said that this would help them identify areas for improvement and track their progress. A student commented, "I appreciate when the teacher corrects my mistakes; more feedback would help me improve."

For the last question, "Did you have any difficulties? If yes, can you tell me the difficulties?" Out of the 15 students, 6 students (40%) reported encountering challenges with technical grammar. However, they noted that the presence of familiar vocabulary related to their IT field made it easier to overcome these difficulties. They found that knowing the vocabulary helped them grasp the context, even though mastering the grammar required more effort. The remaining 9 students (60%) expressed that their primary struggle was not necessarily with the technical aspects of grammar itself, but rather a need for more practice. They felt that more opportunities to work on grammar, especially through peer collaboration and interactive exercises, would help solidify their understanding. These students emphasized that working with their peers could provide additional support and allow them to engage in more practical, hands-on grammar learning sessions, improving their overall language skills in the context of IT.

These findings of the research imply that, being innovative and authentic, CBI is more effective than the Translation Method for teaching grammar to adult ESP students in technical universities especially in polytechnic setting. Two groups were used: one with traditional translation means and another receiving instruction with CBI in this research study on four topics each corresponding to grammatical items studied. A comparison of results from post-tests showed that students in the CBI group developed grammatical competence to a higher degree than their counterparts in the Translation group.

Answers to the questionnaire revealed that the majority of students in the CBI group enjoyed learning grammar through IT-related content, which was crucial in enhancing their motivation and giving them real help in acquiring grammatical structures. Quantitatively put, 86.7% liked the contextualized method, stating that the grammar rules were well explained and more interesting because the examples were clear and pertinent in IT. The multimedia support such as videos and images helped them memorize better and consolidated their learning of grammar in realistic contexts. Another finding on students' perceptions indicated that 80% claimed grammatical instruction coupled with IT-related

contents supported their confidence in grammatically correct usage. The learning of grammar was made more practical and meaningful if the application of grammar rules could be made in situations related to their studies. Some further suggestions from the students were for additional exercises in grammar, preferably with individual feedback, as this would further consolidate their knowledge and make them more confident in grammatical structure use. The application of CBI to teaching grammar to ESP students in an IT-related field can be effective and engaging.

The CBI places grammar instruction in a contextual setting of the students' field of study, therefore making learning practical and relevant. In this case, for example, industry-specific content in IT may include technical documentation, coding language structures, and discussions on cybersecurity or software development; therefore, application of grammar is more meaningful. These arguments are in line with many other researches ([Kittivorawit & Sucaromana, 2022](#); [Miller et al., 2021](#); [Sampelolo et al., 2023](#); [Toma & Rassul, 2023](#)) which concluded that the students, to clearly understand the relationship between the grammar, they are studying and what they will be doing later in their professional life. Such applications could be made in writing reports, making presentations, or even explaining technical procedures when students of IT learn grammar through CBI. For example, the use of conditional sentences can be taught using programming logic, while the passive voice can be explained from the perspective of process description in cybersecurity. The contextual learning here improves understanding of when and how grammar rules should be applied more effectively.

Furthermore, CBI allows for the usage of videos, coding simulations, and IT-related articles as multimedia resources that will help students retain information more efficiently, thus being more involved in the learning process ([Marcu, 2022](#)). For IT students, this method develops not only grammatical but also subject competencies, enabling them to master language and content as an integral part of one smooth process of learning. Furthermore, since it focuses on grammar as it arises naturally in IT contexts, students are more motivated to learn, seeing the relevance of their language learning to their particular academic and professional goals ([Mohammed et al., 2023](#)).

Early research in the teaching of grammar has focused on traditional methods such as translation and memorization methods. Although these are good for providing a systematic learning route, they can often neither excite the students nor even relate the grammar lessons to real life, particularly in such a technical area as IT ([Ciftci & Özcan, 2021](#); [Khodabandeh & Tharirian, 2020](#)). This study will fill this gap by applying the CBI method, where learning of grammar is situated within domain-specific contexts that would, therefore, relate grammatical knowledge to relevant applications in their professional fields.

These findings suggest that, although CBI enhances grammar acquisition, it does so in a motivational and engaging manner because grammar is introduced in meaningful, contextualized situations. This addresses a gap in the discussion by illustrating the way grammar instruction can be freed from traditional paradigms into subject-specific content. Moreover, while most of the available literature reports a positive effect for CBI on general language learning, this study will add an innovative perspective by focusing on grammar learning within IT-related contexts, which has not been given attention in previous research. The questionnaire responses were also in line with previous research ([Akramovna, 2023](#); [Natsir & Saragih, 2022](#)). It revealed that how CBI directly influences the students' level of confidence and the ability to apply grammar in professional settings, a subject on which there has been little research thus far.

This elaboration can have very important implications for research into the teaching and learning of ESP grammar through CBI. This study demonstrated how CBI could allow grammar learning to be better enhanced in ESP contexts. In CBI, students will learn grammar within relevant content—for example, IT topics—which leads to greater motivation and better retention and application in practical situations. These findings indicate that subject-specific content, such as IT in this experiment, integrated into language instruction enables students to contextualize grammar usage with meaning and, therefore, enables them to make the learning of grammar more engaging and relevant to their future careers. This can help ESP students in a number of technical and professional disciplines by aligning the language skills with field-specific needs. Teachers use this to great advantage, using real-world materials such as technical documents or case studies in industry-specific applications that give students better exposure to the language they need in their respective fields.

While Content-Based Instruction, or CBI, has a number of advantages for teaching grammar to ESP students, especially those in IT, it also has a number of limitations ([Chugu & Gladio, 2015](#); [Mahsar, 2021](#) [Mahsar & Mataram, 2020](#)). One of the disadvantages is the high specificity of the course material, which might not fully cover some essential grammatical points. Being fully integrated into IT-related content, grammar instructions might not include some important basic grammatical rules if they do not naturally fall into the subject taught. CBI often relies on authentic materials from the IT field, which at times may be too advanced or technical for students and lead to a kind of overload. This may shift students' attention from the grammatical focus because sometimes a student becomes overwhelmed with understanding the technical content instead of understanding the language itself. Last but not least, in CBI, instructors also have to be knowledgeable not only about language teaching but also regarding certain content areas, which may be challenging; not all language instructors can have technical knowledge about various subjects, and that may hinder them from conducting the course properly and explaining the relevance of such grammar ([Snow, 2022](#)).

CONCLUSIONS

Situating grammar instruction within relevant IT-related content provided opportunities for CBI to enhance not only the performances, as reflected in the increased percentage of students attaining grades A and B, but also the motivation and confidence in using grammar in appropriate contexts. Integrating grammar into authentic, subject-specific materials made learning more meaningful, engaging, and applicable to professional tasks. While CBI requires instructors to balance language teaching with subject expertise, its ability to contextualize grammar learning fits well with the practical needs of ESP students. The most salient feature that makes CBI effective is its potential to provide a meaningful context in which grammar can be learned. By embedding grammar instruction into the performance of IT-related tasks, such as writing hardware description, describing software, or discussing IT jobs, CBI shows to students how grammatical rules can be used for various purposes. This also creates an enhanced learning of grammar and contextualizes it for the students as to where in the real world they would use it—increasing, in this way, student participation and retention. Emphasis on work with meaningful and current content, instead of simple memorization, prompts students to practice grammar in their subject area and, therefore, to develop their language competence alongside their technical one. Consequently, CBI engenders a far more motivating and engaging learning environment, hence being especially suited for IT students in preparing them for real-life use of both language and technical knowledge.

The future applications of CBI would do well to consider scalability of the method across other technical disciplines and the challenges in the implementation. Future research should build on how CBI is integrated into areas such as engineering, medicine, or other fields to test its adaptability. Investigation of the long-term effects of CBI on grammar

retention and how it may blend with technology-enhanced tools, including AI-powered tools, would be some exciting developments. In addition, the investigation of instructors' challenges in balancing content and language teaching would lead to better teacher training regarding the CBI method within ESP settings.

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