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Enhancing ESP Writing Skills Through the Use of Termsoup: An Exploratory Study



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Abstract

As technology becomes increasingly integrated into educational settings, computer-assisted translation (CAT) tools are gaining recognition as valuable aids in language learning. This study introduces “Termsoup”, a CAT application, as a tool to support learners in bridging the gap between disciplines or subject areas within English for Specific Purposes (ESP) projects. The research focuses on use of Termsoup in a graduation project course, particularly emphasising its ability to generate a corpus for ESP writing. Ten senior students participated in the study and were tasked with composing a tourism-related text both with and without the artificial intelligence (AI) assistance of Termsoup. The findings demonstrated a significant improvement in the students’ use of descriptive sentence structures when employing the tool. Additionally, the study highlights how the corpus creation feature of Termsoup was effectively used to review student writing and promote learner autonomy. By examining students’ interactions with AI-assisted tools during the writing process, this study underscores the dual benefits of such technology: enhancing the quality of ESP writing and fostering learner independence. These findings contribute to the growing body of research on AI-supported language learning, suggesting that leveraging CAT tools can promote greater autonomy and improve ESP writing skills in interdisciplinary educational contexts.

Keywords: computer-assisted translation, learners’ autonomy, ESP writing skills

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Introduction

Background

With the increasing adoption of web-based platforms in educational settings, integrating technological tools into language pedagogy has become a critical concern for educators. The advancement of technology presents new opportunities for innovative teaching methods, particularly in language education where digital resources can significantly impact student engagement and proficiency (Godwin-Jones, 2011; Zhang & Zou, 2020). This study addresses this development through a dual focus. First, it investigates the role of English as a Foreign Language (EFL) students as social actors who engage with the application, Termsoup, to support their English for Specific Purposes (ESP) writing tasks. By using Termsoup, students can access specialised vocabulary, translation tools, and collaborative features essential for producing high-quality ESP texts. Termsoup's translation tool is critical for language learning because it enables learners to quickly access specialised terminology, foster deeper engagement with domain-specific language, and reduce gaps in comprehension. Additionally, by encouraging students to refine or adapt translations, Termsoup promotes learner autonomy and critical thinking—skills crucial for producing accurate, context-relevant texts in diverse professional fields. Second, the study examines how the use of Termsoup not only enhances EFL students' performance in ESP writing but also promotes the development of learner autonomy. The application encourages students to take initiative in their learning process, facilitating self-directed study and continuous improvement. Students often concentrate on mastering general academic writing in many educational contexts and frequently encounter significant challenges when transitioning to ESP writing because of its specialised nature and more complex linguistic demands (Hyland, 2006; Paltridge & Starfield, 2013). Therefore, integrating tools like Termsoup could bridge this gap by providing targeted support and resources.

However, ESP writing encompasses additional elements. ESP is a specialised branch of English language study and the aim of ESP instruction is to provide learners with fundamental language knowledge within a specific subject area and to enhance their ability to use English as a practical tool. In this context, educators emphasise ESP in communication, focusing on EFL students' ability to communicate effectively in professional contexts (Anthony, 2018).

Although multiple studies, such as Li (2018), Wang (2019) and Hoang and Hoang (2022), have demonstrated the benefits of web-based platforms in enhancing students' writing performance, there is a scarcity of research on the use of web-based computer-assisted translation (CAT) apps in interdisciplinary studies, particularly in foreign language teaching and learning. For instance, Wang (2014) argued that collaborative writing through wikis increased students' interest in language learning and improved their writing competencies and collaboration skills, which are essential for the future workforce. Similarly, Bikowski and Vithanage (2016) found that using Google Docs as an online wiki-like platform yielded comparable results. Hsu (2018) highlighted how wikis facilitated both collaborative and individual second language (L2) writing. This research aims to contribute to the field by highlighting the potential of technological tools in addressing the unique challenges of ESP writing and fostering autonomous learning among EFL students.

While most existing studies have used Termsoup primarily as a tool for CAT, this study aims to address a significant gap by integrating AI translation technology into ESP writing instruction. The research focuses on the potential of Termsoup not only as a translation aid but as an educational resource to enhance students' ESP writing capabilities. Specifically, the study investigates how the application can be used to foster learner autonomy and support the development of specialised writing skills required for ESP contexts. To achieve this, the researcher conducted an in-depth analysis of students' ESP writing generated as part of their final projects. These projects provided a comprehensive dataset to examine the interplay between technology use and writing performance. The web-based application

Termsoup was employed to facilitate various aspects of the writing process, including terminology management, translation assistance, and contextual feedback. Translation assistance was particularly vital in ESP writing due to the complex, field-specific language that demands precise, context-appropriate usage. All of these features are critical for producing domain-specific texts.

Aim and Rationale

This study seeks to integrate the application Termsoup as a platform to assist students in bridging the gap between different disciplines or subject areas in their writing tasks. EFL students often face significant challenges when attempting to master writing tailored to specific disciplines, as such tasks require a nuanced understanding of domain-specific language and stylistic conventions (Anthony, 2018; O'Hagan, 2020; Wong & Kit, 2012). The first part of this study emphasises learners' engagement with CAT tools, with a particular focus on Termsoup as a technological aid in overcoming these challenges. The second part of the study outlines the research methodology, including detailed descriptions of data collection processes and the methods applied in this study. By adopting a primarily qualitative approach, the study aims to offer comprehensive insights into the efficacy of Termsoup in improving writing performance and fostering learner autonomy.

The research question driving this investigation is as follows:

How can the integration of Termsoup as a CAT tool enhance EFL students' writing skills in ESP, particularly in connecting concepts across disciplines or subject areas?

In summary, the aim of the research runs as follows:

- (1) To refine traditional approaches to language teaching and learning by implementing explicit scaffolding strategies (e.g., targeted writing exercises, structured peer review, and feedback sessions) designed to foster students' autonomy and confidence in ESP writing.
- (2) To integrate language instruction with CAT tools—specifically Termsoup—guided practice, and reflective tasks. This integration seeks to promote independent thinking and enable students to engage more deeply with subject-specific vocabulary and conventions in ESP contexts.
- (3) To leverage web-based platforms as an evaluative medium for assessing the effectiveness of ESP writing practices, using data-driven insights (e.g., progress tracking, analytics on writing performance) to inform ongoing instructional adjustments and to provide immediate, targeted feedback to learners (see Figure 1).

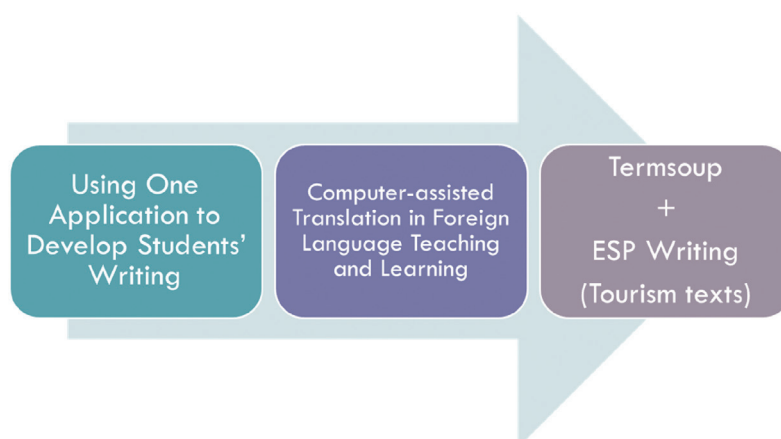


Figure 1 *Structure of the Study.*

The following section discusses relevant theoretical concepts that enhance the understanding of this study and provide a foundation for interpreting the data collection process. These concepts are critical in framing the research within the broader context of language learning and technology integration.

Literature Review

English for Specific Purposes (ESP)

ESP teaching focuses on imparting language skills with a specialised objective within a particular subject area. ESP is designed to meet the needs of learners in a specific field while simultaneously emphasising essential language skills such as grammar, lexis, and register (Fitria, 2024; Hyland, 2006; Paltridge & Starfield, 2013). ESP courses are often tailored for adult learners and aim to strengthen students' ability to use the target language effectively, with communication as a primary goal. These courses are professionally oriented, preparing learners to apply their English skills in future professional contexts. As ESP courses integrate language instruction with content from a specific field, learners must possess fundamental English skills and build on their content knowledge to succeed (Hyland, 2022).

In contrast to conventional English for Academic Purposes (EAP) writing, ESP writing involves simultaneous language acquisition and content learning, making it uniquely complex (Hyland, 2006; Paltridge & Starfield, 2013). ESP writing requires learners not only to develop proficiency in specialised terminology but also align their writing with the conventions of their specific fields, often under real-world constraints. Studies, such as those by Flowerdew (2015) and Anthony (2018), underscore the importance of integrating field-specific content into language instruction. Flowerdew (2015) discusses how analysing collections of texts within specific academic disciplines can reveal patterns and conventions unique to those fields. This approach aids in developing teaching materials that closely align with the linguistic and rhetorical demands of various academic domains, thereby enhancing the effectiveness of ESP instruction.

Anthony (2018) provides a comprehensive overview of ESP, focusing on its core components: needs analysis, learning objectives, materials and methods, and evaluation; then illustrates how ESP theories and practices apply in real-world academic and occupational settings. He also addresses contemporary debates within the field and provides insights into organising ESP courses and programs. This resource serves as an invaluable guide for both novice and experienced ESP practitioners, offering strategies to effectively tailor English language instruction to meet the specific needs of learners in various professional and academic contexts. Both works underscore the significance of aligning language instruction with the specific linguistic and communicative requirements of different disciplines, thereby enhancing the relevance and effectiveness of ESP education.

Moreover, as this study specifically investigates learner autonomy in connection with a CAT tool (Termsoup), ESP serves as the foundational context where specialised writing needs intersect with technology-driven strategies. Developing autonomy in ESP thus implies equipping learners with both subject-specific language competencies and the ability to self-regulate their writing processes—a goal that can be facilitated by tools like Termsoup. In light of this focus on subject-specific language needs and writing complexities, the following section will explore how CAT tools may address the challenges of specialised writing in ESP.

Computer-assisted Translation, CAT and Language Learning

To address the challenges of ESP writing, recent research has explored the potential of computer-assisted translation (CAT) tools in specialised contexts. CAT tools, such as Termsoup, have been shown

to facilitate the construction of terminology databases and improve linguistic precision in writing tasks requiring domain-specific language (Wong & Kit, 2012). These tools are particularly effective in reducing learners' cognitive load associated with manual terminology management, enabling learners to focus on developing content and refining their writing. Furthermore, studies emphasise the role of CAT tools in fostering learner autonomy. O'Hagan (2020) highlights how such technologies empower students to independently refine their work, promoting self-directed learning and continuous improvement. By providing features like real-time feedback, corpus analysis, and translation suggestions, CAT tools not only assist with linguistic accuracy but also increase learners' confidence in tackling complex writing assignments.

In the field of professional translation, CAT tools have become an essential component of many translator training programs offered in universities and specialised institutions (Olohan, 2011). Despite their growing popularity, the primary focus of CAT tools is often to streamline the translation process rather than to support language learning. Research on the application of CAT tools in language acquisition remains limited, highlighting a gap in the existing literature. CAT tools encompass a range of functionalities, varying in complexity and purpose. At a fundamental level, these tools commonly include features such as Translation Memory, which aids in reusing previously translated text, and Terminology Management, which ensures consistency in the use of specialised vocabulary. More advanced versions of these tools incorporate enhanced structures and expanded functionalities, allowing for greater efficiency and adaptability in the translation workflow (Fernández-Parra, 2016).

While extensive research exists on various strategies to enhance communicative skills—such as speaking, listening, reading, writing, and vocabulary acquisition—in the field of language pedagogy, the integration of CAT tools into language learning remains a relatively novel concept. Both foreign language learners and professional translators face a shared challenge in navigating vocabulary acquisition (Fernández-Parra, 2016; Nation, 2013; Olohan, 2011). Specifically, they must identify unfamiliar words, record and internalise them, recall their meanings, and comprehend their relationships with other words as well as real-world contexts (Nation, 2013). This shared difficulty highlights the potential of CAT tools as a bridge between translation and language learning, providing opportunities to support both vocabulary acquisition and contextual understanding.

Given the shared nature of tasks undertaken by translators and language learners, employing CAT tools to enhance writing skills represents a promising avenue for investigation. In professional translation, termbases are employed to manage terminological tasks efficiently as part of the translation workflow. Similarly, in language learning, termbases can serve as valuable resources for vocabulary acquisition, ultimately contributing to improvements in both reading and writing skills. This study focuses on exploring whether the integration of CAT tools can help students enhance their ESP learning by enabling them to structure their writing more effectively and express ideas with greater fluency and naturalness. By incorporating CAT tools into language pedagogy, the findings of this study have the potential to contribute to the growing discourse on the role of technological tools in fostering learner autonomy and improving language proficiency, particularly in specialised and interdisciplinary contexts.

To link these insights to the present study's focus on Termsoup and learner autonomy, it is essential to recognise that Termsoup's real-time feedback and terminology management can guide learners in making independent revisions. This self-directed revision process underpins the development of autonomy, as it prompts learners to evaluate their own writing decisions based on discipline-specific standards and the app's immediate suggestions—a mechanism especially pertinent in ESP, where precision and context-appropriate usage are crucial.

Technology in ESP Classes

Research in the field of ESP teaching and learning has highlighted the significant benefits of incorporating technology to support learning from various perspectives. For example, Kessler and Bikowski (2010) demonstrated that using wikis as an instructional tool can improve students' writing skills. Wikis provide a collaborative platform where students can communicate, share information, and co-edit documents within a shared digital space, fostering both linguistic development and teamwork (Boulous et al., 2006). The integration of Web 2.0 technologies into EFL instruction, particularly in ESP contexts, has also garnered attention from researchers and educators (Kuteeva, 2011). These tools have been used not only to facilitate language acquisition but also to support the construction of domain-specific knowledge. For instance, Alyousef and Picard (2011) developed a task within an ESP course that required students to complete four discipline-related questions based on an inquiry-based scenario, using a wiki as a central tool. This approach encouraged learners to engage deeply with both linguistic and disciplinary content, illustrating the potential of technology to address the dual goals of ESP: language development and specialised knowledge acquisition.

The integration of wikis into ESP classes highlights the potential of web-based technologies to transform language teaching and learning. For instance, Chen and Brown (2012) used Web 2.0 tools in foreign language instruction to investigate their impact on students' satisfaction, motivation, and audience awareness. Their findings suggest that such tools can enhance learners' engagement and responsiveness to communicative contexts. Similarly, Zorko (2007) demonstrated that incorporating wikis into an ESP course as a collaborative online platform for problem-based learning fostered significant collaborative behaviours. These included peer-to-peer learning, effective communication, and enhanced interaction between students and instructors.

To date, the integration of technology in ESP classes has become increasingly relevant as educators seek innovative methods to address the specialised needs of learners. Unlike general language courses, ESP classes require tailored approaches that combine linguistic training with domain-specific content, often within a professional or academic context. Technology, particularly digital tools and platforms, offers a range of possibilities for enhancing ESP instruction by providing personalised, interactive, and context-driven learning experiences. This section explores the role of technology in ESP instruction, with a focus on its potential to bridge the gap between language acquisition and specialised content learning. By examining practical applications and pedagogical implications, this discussion aims to highlight how technology can transform ESP classes into dynamic, learner-centred environments.

In this context, Termsoup represents an advanced technological application tailored to expedite and refine specialised writing tasks. By offering immediate feedback and data-driven insights, the tool supports learner autonomy, as students can independently track and address their weaknesses. When implemented in an ESP class, Termsoup's CAT-based features align closely with broader technological shifts in language pedagogy—shifts that favour guided, but self-directed, learning experiences aimed at mastering discipline-specific writing conventions.

Technical/ESP Vocabulary

Building upon the discussion of learner autonomy and the integration of CAT tools, it is essential to highlight the role of vocabulary acquisition within ESP instruction (Basturkmen, 2019; Webb, 2020). Vocabulary acquisition is fundamental in ESP learning, particularly for advanced English as a Second Language (ESL) and EFL students, as recent studies have shown (Nation, 2022), because it enables them to engage effectively with subject-specific content (Brooks, 2014). According to Nation (2022),

who expands on his earlier work (Nation, 2013), learners should transition from general vocabulary acquisition to specialised vocabulary once they have mastered 2,000–3,000 high-frequency English words. Recent research (Lin & Morrison, 2021) also supports a focus on specialised vocabulary once foundational lexicon is established.

Brooks (2014) classifies vocabulary into different types, including spoken and written vocabulary, core and non-core vocabulary, and discourse structuring and procedural vocabulary. Spoken vocabulary is often less dense than written vocabulary and consists of frequently repeated words, while core vocabulary comprises words that are neutral and widely applicable (McCarthy, 1990). On the other hand, subject-specific, technical, and semi-technical vocabulary is vital for ESP learners as these types of vocabulary relate directly to particular academic or professional fields (Carter & McCarthy, 1988), supported by Basturkmen (2019) in the ESP context.

ESP instructors are crucial in selecting and teaching vocabulary based on learners' academic or professional needs. Since vocabulary selection directly influences comprehension and communication, ESP teaching should be guided by learners' goals, whether they are studying for academic purposes or specialised professional fields (Basturkmen, 2019). Academic vocabulary, such as words found in the Academic Word List (Coxhead, 2000), remains essential for students in universities, where they must engage with complex texts and discussions across disciplines. Teachers must balance teaching high-frequency words with semi-technical and technical vocabulary relevant to students' studies (Dudley-Evans & St. John, 1998). However, while ESP teachers can introduce subject-specific terminology, the instruction of technical vocabulary beyond their expertise should be left to subject-matter instructors (Alexander et al., 2023).

By incorporating structured vocabulary learning strategies, such as contextual guessing, memory techniques, and repetitive exposure, educators can enhance students' retention and autonomous learning skills (Gairns & Redman, 1993), reinforced by Webb (2020). Vocabulary acquisition is not merely a supplementary aspect of ESP but a core component that underpins the effectiveness of discipline-specific writing and comprehension. Therefore, ESP instructors should scaffold students' learning across courses and academic years to ensure gradual mastery of specialised terms (Brooks, 2014). Recent studies (Karakas & Kartal, 2020) indicate that technology-assisted methods can further bolster motivation and long-term retention. These instructional strategies not only support vocabulary retention but also encourage students to apply their knowledge in practical contexts. This comprehensive approach to vocabulary instruction not only serves immediate educational needs but also empowers learners to achieve long-term linguistic proficiency (Basturkmen, 2019).

Methodology

This study adopted a qualitative research design to explore learners' practices in ESP contexts. The methodology included three key components: an introduction to the research site and participants, data collection methods, and data analysis procedures. Through triangulation of multiple data sources, the study offered a comprehensive and exploratory account of learners' behaviours and experiences.

Research Site and Participants

This study incorporated the CAT application, Termsoup, to examine its effectiveness in enhancing writing skills within ESP contexts. Unlike machine translation (MT) tools such as Google Translate, Termsoup is a professional CAT software originally designed to assist translators in producing texts more efficiently and collaboratively. In this study, Termsoup was repurposed as an instructional tool aimed at improving ESP writing across interdisciplinary subjects and disciplines.

Ten female senior students (aged 21–23) enrolled in an ESP graduation project participated in this research on a voluntary basis. They were all EFL learners with no specific IT/tourism expertise and were selected through convenience sampling, as they expressed interest in improving their writing within specialised contexts. Their linguistic background included intermediate to upper-intermediate English proficiency, reflecting the course requirements for senior-level ESP projects. Before data collection, each participant acknowledged an understanding of the study's objectives and confirmed their voluntary involvement. All participants were introduced to the functionalities of Termsoup and trained in its application for writing and revising ESP texts.

Research Design

The study required participants to first familiarise themselves with Termsoup's features. Subsequently, they engaged in writing activities comparing existing tourism texts with their own ESP writing. Participants were tasked with using Termsoup to analyse, revise, and improve their writing style, focusing on adapting their texts to align with professional and context-appropriate conventions.

Specifically, students learned to use Termsoup's side-by-side comparison feature to highlight segments of their drafts against relevant source texts, enabling quick identification of gaps in terminology usage and stylistic conventions. They also employed Termsoup's built-in terminology management tool to build a customised glossary for their projects, which helped standardise domain-specific vocabulary across multiple drafts. Figure 2 illustrates how students could view their draft and the reference corpus simultaneously, edit text directly, and track changes made to key terms and phrases. By engaging with these functionalities, students received real-time prompts and suggestions for more precise language choices, effectively reinforcing ESP writing skills.

Data Collection

The data were collected in terms of the following steps:

(1) Step one: Pre-Termsoup Writing Samples

The instructor began by asking the ten participants to form groups and collect texts from tourism guidebooks and other relevant tourism-related sources. To ensure broad coverage of authentic materials, students were encouraged to collect both printed and digital sources, such as published guidebooks (e.g., Lonely Planet) and official tourism board websites. All materials chosen were in English. Although most originated from professional or official organisations, it was not possible to guarantee that every text was written solely by native English speakers; however, each source was recognised by its publisher or authority in tourism-related information. Based on their chosen brochure focus, the participants gathered texts from three categories—attractions, food, and entertainment—resulting in a corpus of approximately 15,000 to 20,000 words (depending on each group's topic). This corpus captured commonly used language and terminologies within tourism discourse while remaining manageable for analysis and reference during the writing process.

Each group was tasked with gathering information aligned with their assigned itineraries, categorised into three key areas: attractions, food, and entertainment. Using these collected materials, participants were instructed to compile a corpus of tourism texts corresponding to these categories. Simultaneously, participants entered all collected texts into Termsoup, a CAT application. The resulting corpus of tourism texts served as the source data for subsequent analysis and writing tasks. This approach allowed for a systematic organisation of domain-specific texts, providing participants with a foundational resource for ESP writing and translation activities.

(2) Step two: Post-Termsoup Writing Samples

Participants revised and produced new ESP texts using Termsoup. ESP texts in the final project were collected in this study. The researcher firstly compared participants' writing before and after using Termsoup. Students' original drafts were loaded onto Termsoup, and they revised them by comparing their own writing with the ESP corpus they had built during the first stage. At the end, students completed their final ESP project with the aid of a CAT app. During this revision phase, participants followed parameters, including structural clarity, coherence, context-appropriateness, and tone and register appropriate for tourism-related discourse. These parameters were provided to students at the outset of the revision process to ensure consistency in their approach.

After producing their final project, students conducted peer review of their classmates' work using Termsoup again. For the peer review process, participants evaluated clarity of purpose, accuracy of domain-specific terminology, logical flow of content, and appropriateness of register and tone for tourism texts. Peers were instructed to highlight any discrepancies related to these elements and offered concrete suggestions for improvement, ensuring consistency across reviews. Students with similar topics and themes were assigned to the same pair. Within each pair, they reviewed and assessed their peers' ESP projects, providing subsequent feedback.

As can be seen in Table 1, the data sources come mainly from the following:

- (1) Pre-Termsoup Writing Samples (source texts): first of all, students built a corpus of tourism texts based on travel guides and official travel information websites. They then further produced their own tourism texts with selected tourist attractions. Subsequently, students were asked to complete a final project, in which any changes made after having the aid of the CAT application were traced and examined.
- (2) Post-Termsoup Writing Samples (target texts): participants' experiences with the CAT application and the resulting revisions were also traced and examined. To ensure the authenticity of English tourist guides and travel information, the instructor verified the sources and their legitimacy before participants incorporated them into the corpus. Figure 2 illustrates how the students compose the introduction to Chihkan Towers in Tainan by comparing the discourse in a tourist brochure with their own ESP writing. Students can highlight unfamiliar terms, view contextual translations, and insert or modify terms in real-time. This process enabled them to actively refine their writing and adopt more accurate domain-specific expressions for their ESP projects.

The researcher further analysed the discrepancies in the students' final tourism texts. These discrepancies were assessed using criteria similar to the peer review process, including clarity, domain-specific accuracy, stylistic consistency, and overall rhetorical effectiveness within the genre of tourism writing. By systematically applying these criteria, the researcher could identify specific areas of improvement

Table 1 *Types of Data*

Data Collection Method	Interpretation
1. Pre-Termsoup Writing Samples (source texts)	In the first stage, participants were asked to build a corpus of texts from travel guidebooks and from the official websites of the attractions they intended to introduce in their final project.
2. Post-Termsoup Writing Samples (target texts)	Students were asked to produce their first draft of tourism texts. Afterwards, they were required to upload their draft onto <i>Termsoup</i> and revise it using the corpus they built in the first stage based on the defined parameters of context, coherence, genre, tone, and register.

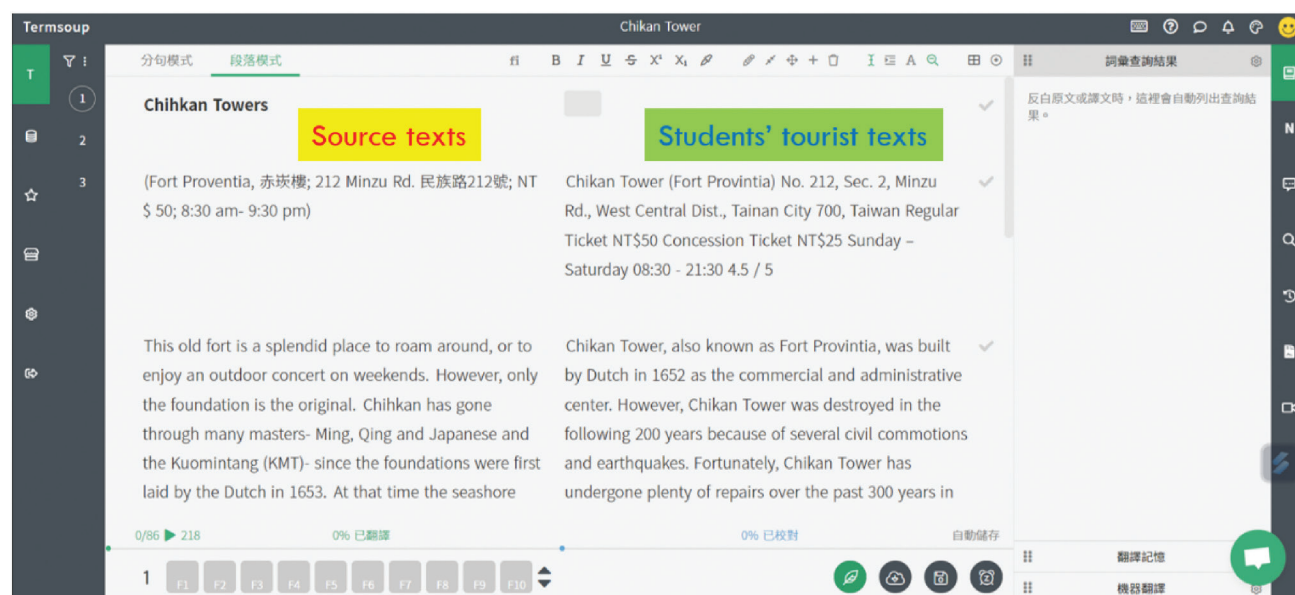


Figure 2 Layout of the Termsoup App. Source Texts and Target Texts.

and how Termsoup facilitated such enhancements. After generating the data, the researcher outlined the characteristics of the findings and explained how these characteristics contributed to a new form of learning in ESP contexts.

In this study, the researcher recruited all participants from a senior graduation project course. Ten participants were divided into four groups, resulting in a total of four ESP writing projects. Before starting their own ESP writing, participants gathered examples of 'model' ESP texts. The participants' final written projects and their revision processes were analysed as data to determine their learning effectiveness. After completing their written projects, students reviewed these projects using Termsoup.

The final project products are listed below (see Figure 3). However, in this study, the focus remained on the tourism texts. As shown in Figure 4, participants' ESP writing was completed with the aid of CAT.



Figure 3 Students' Final Project.

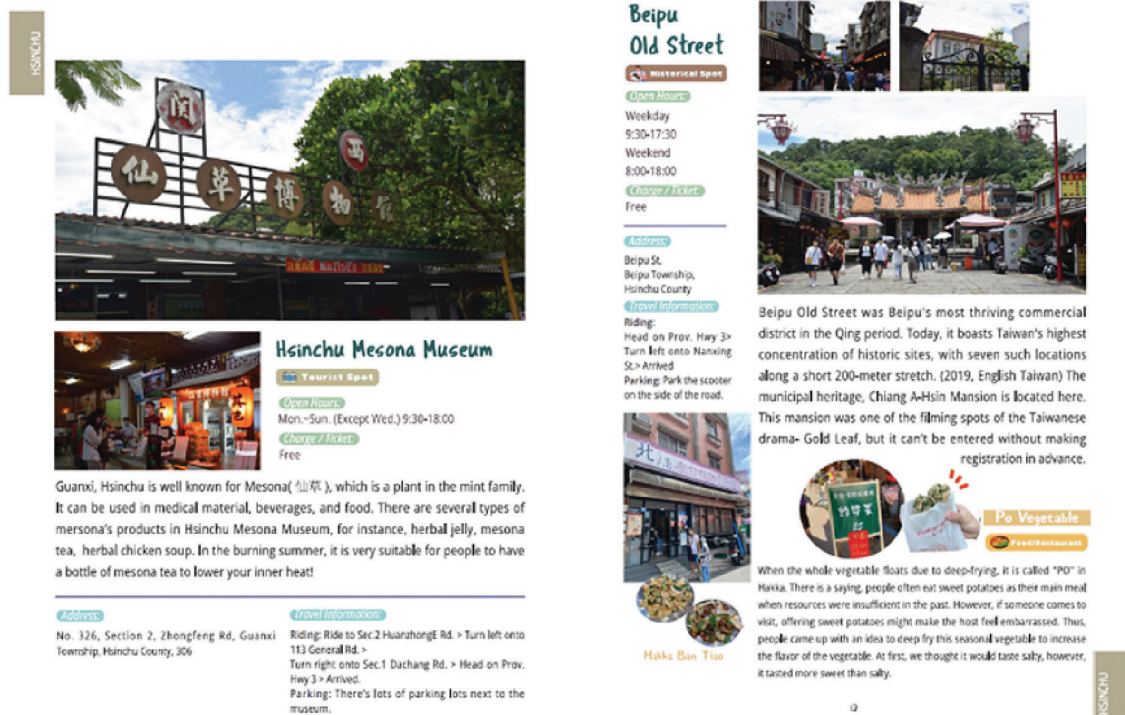


Figure 4 Students' Tourism Texts.

Procedures

Initially, participants brainstormed destinations and attractions that interested them the most. Once they selected a destination, they discussed which attractions, food, or entertainment to include in their project. The next step involved the writing process. Participants were instructed to gather information and texts related to tourism from a variety of sources. These sources consisted primarily of reputable guidebooks and official tourism websites, chosen for their established authority in providing English-language information. Any user-generated sites or unofficial sources were excluded to maintain a consistent standard of accuracy and reliability. For example, they collected materials from published guidebooks, official websites, tourist guides, and travel information about the attractions they planned to feature. At this point, they began constructing a corpus focused on the attractions they would later introduce.

After completing their first drafts, participants uploaded their texts to Termsoup and revised them using the corpus they had previously built. The study then explored how the CAT app supported students in improving their ESP writing. Termsoup functioned as a tool enabling students to revise and enhance their work. Its first role was to correct basic grammar errors, while the second aimed to assist students in improving their logical structure by comparing their ESP writing with conventional tourism writing. In this regard, students were reminded to consider genre conventions, appropriate tone, and register reflective of professional tourism discourse while revising their texts. These considerations were central to strengthening the authenticity and impact of their ESP writing. This process aimed to enhance students' ESP writing skills and foster independent learning.

Data Analysis

The data were analysed qualitatively to compare the textual features of participants' pre- and post-Termsoup writing. Particular attention focused on improvements in structure, coherence, and

context-appropriateness. Additionally, the analysis also encompassed genre adherence, tone, and register as key benchmarks for evaluating tourism-related texts. This multi-faceted approach provided a more comprehensive understanding of how effectively participants adapted and improved their writing to align with professional tourism discourse. The interdisciplinary nature of CAT was explored to assess how participants applied Termsoup to bridge boundaries across diverse fields, enhancing the teaching and learning of ESP writing. Through this approach, the study sought to evaluate the pedagogical potential of Termsoup in developing ESP writing skills and fostering interdisciplinary learning. The process involved several stages to evaluate the impact of using Termsoup, a CAT application, on participants' writing.

Stage 1: Initial Draft

Participants submitted an initial draft of their ESP writing. This draft was uploaded to Termsoup to serve as a baseline for comparison with subsequent revisions.

Stage 2: Corpus-Driven Revision

Participants revised their drafts by referencing the ESP corpus they had compiled at the earlier stages of the study. This corpus, comprising authentic tourism-related texts categorised into attractions, food, and entertainment, served as a resource for improving the linguistic and contextual quality of their writing. Using Termsoup, participants compared their drafts with the corpus texts to refine their work, focusing on coherence, accuracy, and context-appropriateness.

Stage 3: Final ESP Project

After completing their revisions with the aid of Termsoup, participants produced their final ESP projects. These projects reflected the integration of insights gained from the corpus and the CAT application.

Stage 4: Peer Review and Evaluation

Once the final projects were completed, participants conducted a peer review process using Termsoup. Students with similar topics and themes were paired together to review each other's work. Within these pairs, participants assessed their peer's ESP projects, offering constructive feedback and suggestions for further improvement. They were required to give comments in terms of clarity, accuracy, structure, tone, register, and adherence to the tourism genre. This collaborative writing and reviewing process aimed to enhance critical evaluation skills while utilising the capabilities of Termsoup for text analysis and comparison.

By following these stages, the study provided a structured framework for examining how computer-assisted tools and corpus-based resources support learners in producing high-quality ESP texts.

Results

In addressing the research question, the researcher focused on how learners' autonomy may develop through the use of CAT in language learning. Additionally, the study investigated the differences and potential improvements in students' final tourism texts. By exploring learners' experiences with CAT and the revision process, the researcher sought to gain insights into how students could benefit from and potentially enhance their autonomy in ESP learning with the support of CAT. Furthermore, the researcher discussed the findings in the context of existing theories on the use of CAT in language learning and teaching, with the goal of identifying potential future trends in ESP education.

Analysis of Texts

The initial analysis focused on the word level, examining elements such as spelling, grammar, and punctuation. Subsequently, the study sought to identify any potential changes students might make in

their ESP writing after using Termsoup. A comparative approach was adopted, in which the researcher analysed students' final written projects by comparing their original drafts, model tourism templates, and revised versions (see Figure 5). Various types of tourism-related texts were examined to assess Termsoup's potential impact on students' ESP writing. These texts were categorised into three main types (Skibitska, 2015):

Description: tourist texts, general descriptions of a destination, etc.

Information: this type of tourist text provides practical information on facilities, and services used and offered such as excursion itinerary, terms and conditions of service.

Professional communication: refers to tourist texts used to communicate information between tourism professionals, including price lists, application forms, reservation systems, ticketing terms and conditions, etc.

The findings suggested that students generally performed more strongly when composing texts that conveyed practical information about facilities, services, and related topics. In contrast, crafting descriptive texts for tourism purposes seemed to require additional time and effort. Within their ESP projects, students often used lengthy, inverted sentence structures and passive voice to describe attractions. This stylistic approach appeared to differ markedly from the more concise and active voice commonly employed in commercially available tourist guidebooks (Kress, 2003; Skibitska, 2015).

For instance, one student initially wrote sentences in an inverted and passive style: "Chikan Tower, also known as Fort Provintia, was built by the Dutch in 1653 as the commercial and administrative center. However, Chikan Tower was destroyed in the following 200 years because of several civil commotions and earthquakes." The student later revised this text to a more direct, active construction after comparing the text from the tourist guidebook through Termsoup: "Chihkan has gone through many masters - Ming, Qing and Japanese and the Kuomintang (KMT) - since the foundations were first laid by the Dutch in 1653" (Lonely Planet, 2020, p. 278). This shift indicates how Termsoup's suggestions may have helped students bridge the gap between their original drafts and professional tourism texts by encouraging concise sentence structures, the use of the active voice, and consistent tense usage.



Figure 5 Comparison of Students' Final Projects (Right) and Tourism Templates (Left).

Moreover, students reported (see Analysis of Participants section) that Termsoup's real-time feedback on style, grammar, and vocabulary enhanced their awareness of sentence variety, prompting them to align their writing more effectively with the intended tourism context. One participant noted, "I initially wrote in the past tense because of the site's historical relevance. However, after using Termsoup to compare authentic texts, I noticed that the present tense is more commonly used to create an immediate, engaging tone for tourists." These examples highlight how Termsoup directly influenced students' approach to sentence variety, tense usage, and tone, ensuring their writing more closely aligned with professional tourism texts.

In addition to textual content, other elements such as multimodality warrant consideration when examining ESP texts. Multimodality, rooted in communication and semiotics theory, encompasses the integration of textual, spatial, linguistic, and visual modes to convey meaning. Kress (2003) advanced the concept of multimodal analysis, emphasising that many texts are not solely reliant on written language but are constructed and communicated through multiple semiotic modes. He asserts that "it is now possible to make sense of texts, even of their linguistic parts alone, without having a clear idea of what these other features might be contributing to the meaning of a text" (Kress, 2003, p. 337), underscoring the growing importance of visual communication in contemporary contexts. Nonetheless, traditional multimodal analysis has predominantly centred on verbal or textual content, often neglecting the visual components within texts. Consequently, research exploring the visual dimensions of ESP texts remains sparse.

In multimodal and semiotic practices, those involved in meaning-making, such as teachers, writers, or students, are seen as "meaning makers" or "sign makers." Signs are elements that combine meaning and form, shaped by the interests and intentions of the sign makers. Meaning is constructed through various modes, each possessing distinct modal resources. For instance, writing encompasses syntactic and grammatical resources, graphic resources such as typeface, font, and size, and framing resources including punctuation. What qualifies as a mode is determined by communities based on their social and representational needs.

Traditional text-analysis methods often struggle to capture the multimodal and complex nature of new media texts. When examining online texts from a social practice perspective, researchers may need to consider elements such as relationships and identity, interaction, text production and consumption, and the role of mediating technologies (Davies & Merchant, 2007; Gillen & Barton, 2009). In the study of multilingual texts, it is also essential to address the multimodality and complexity facilitated by these mediating technologies.

By integrating these multimodal insights with the students' interview responses (see Analysis of Participants below), the study provides a more cohesive understanding of how CAT tools such as Termsoup might support textual revisions. However, unlike fully multimodal platforms, Termsoup does not provide direct visual or layout assistance. Instead, its textual feedback focuses on grammar, vocabulary, and style, enabling students to refine the linguistic dimension of their ESP writing. Students specifically mentioned that Termsoup's text-based recommendations helped them to structure their content more coherently, allowing them to make more informed decisions about the integration of visual elements in their tourism texts. Although the tool does not offer built-in support for organising images, charts, or layouts, the improvements in textual clarity indirectly contributed to a more effective multimodal composition. This linguistic refinement further strengthened their autonomy in ESP writing, as they became more conscious of how textual elements shape reader engagement in the tourism context.

Analysis of Participants

The analysis of the participants' perceptions drew on interview data, focusing on how these students interpreted their experiences using Termsoup in their ESP writing projects. One recurrent theme in the interviews revealed how Termsoup's real-time feedback helped students identify and revise passive voice constructions, inverted sentence structures, and tense inconsistencies. For instance, one participant explained, "I initially wrote all my descriptions in the past tense because I thought it sounded more formal. But after comparing source texts and target texts through Termsoup, I realised that using the present tense made my text more engaging and similar to professional tourism brochures." Another participant noted how the software's prompts encouraged them to shift from inverted or overly long sentences to more concise and active ones, thereby narrowing the gap between their drafts and the style of published tourism materials. The study aimed to identify the challenges they encountered and the strategies they adopted to overcome them. By integrating these participants' perceptions into the findings, the discussion more closely reflects how Termsoup may have directly influenced students' sentence variety, tense usage, and tone, potentially enhancing both readability and professional alignment in their ESP writing.

Regarding the peer review process mentioned earlier, its effectiveness was reinforced by using a structured evaluation guide. This guide prompted students to examine specific areas such as grammar, terminology accuracy, style, tone, and coherence. Before initiating the peer review, each participant received sample reviews from past projects to clarify the level of depth and type of feedback expected. Students then provided written comments and suggestions to peers through Termsoup's annotation features, focusing on strengths and areas needing improvement based on the criteria. This standardised approach helped maintain consistency and thoroughness in peer evaluations.

The foundational interview questions were categorised into three main themes (see Figure 6):

- (1) Conventional ESP learning and ESP learning with Termsoup,
- (2) Discrepancies with and without the aid of CAT, and
- (3) Learner Autonomy.

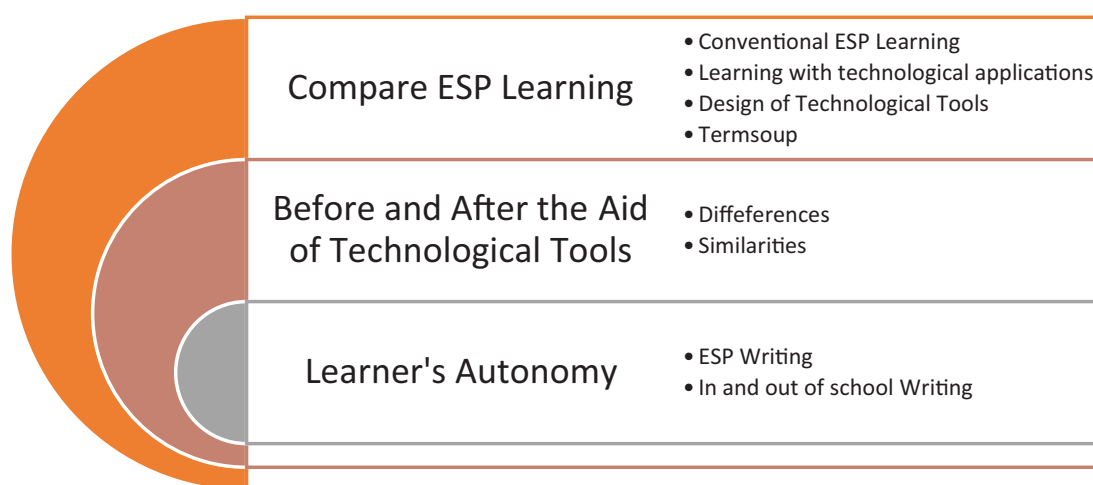


Figure 6 Interview Questions (3 Categories).

The interviews were conducted face-to-face in small groups of two to three students each. Each interview session lasted approximately 30 minutes and was audio-recorded with the participants' consent. After transcription, a thematic analysis was carried out, involving open coding, categorisation, and identification of recurrent themes. Direct quotations illustrate participants' personal experiences and perceptions and have been incorporated to support each of the main themes for further justification in Section 5.

Discussion

The current study investigated the use of the application “Termsoup” to potentially enhance students' ESP writing skills. While the data were drawn from a limited number of cases, the findings offer valuable insights for ESP teaching practices across diverse contexts. Additionally, to strengthen the credibility and reliability of the findings, the researcher subsequently invited a second individual, with expertise in applied linguistics, to review the identified errors and overall analysis, and a third individual with a background in technology in education, to further confirm the interpretations. Although these individuals were not involved in the data collection phase, their independent evaluations confirmed that the selected error-correction categories and findings were valid, thereby mitigating potential bias stemming from reliance on a single principal researcher. A comparative analysis highlighted notable differences in students' ESP writing with and without the support of CAT tools. Specifically, the use of Termsoup appeared to be associated with improvements in areas such as sentence variety, tense usage, sentence type, and tone, all of which were selected based on commonly referenced criteria for effective tourism writing (e.g., clarity, conciseness, and target-reader engagement) found in established ESP and EAP research (Anthony, 2018; Hyland, 2006). These error-correction categories were further validated by the researcher who confirmed that these specific linguistic and stylistic dimensions are central to producing professional, context-appropriate tourism texts.

For instance, several participants explained during interviews that Termsoup's real-time feedback prompted them to shift from using lengthy, passive constructions. Besides, students indicated that comparing their work to excerpts from tourist guidebooks helped them create more detailed descriptions. One student explained how this comparison offered a clear contrast between an original version and a more dynamic text. For example,

Original text: “This department store is a retro department store from the Japanese colonization in Taiwan. The department store used to be called ‘Five-Story Building’ by the local citizens. It was built in 1932 by Japanese colonization, and it was the first building in Taiwan to have an elevator.”

Suggested text: “This art deco department store from the 1930s has been so beautifully restored that it's worth going in just to ascend the sweeping staircase, peer through the geometrical window openings, and have a ride on the grandma lift with the dial floor indicator. There's even a viewing deck on the top floor where you'll find a Shinto shrine and evidence of the damage it suffered during WWII” (Lonely Planet, 2020, p. 277).

Students' writing tends to simply deliver historical details without attempting to engage the reader emotionally while the second sentence takes a more immersive and engaging approach, as it invites the reader to experience the place firsthand. This change not only reduced the overreliance on inversion but also aligned students' writing more closely with the concise, engaging style common in tourist guidebooks. The results suggest that integrating CAT tools into ESP instruction can contribute to the development of more sophisticated and contextually appropriate writing skills.

Students frequently compose sentences that rely on passive voice and inverted structures, contrasting with the writing style of published tourist guidebooks, which primarily employ active voice and

Table 2 *Comparison of Source Texts and Students' Texts*

	Source Texts	Students' Texts
Structure	Active/declarative	Passive/inverted
Tense	Present	Past
Tone of Voice	Humorous	Monotonous
Sentence Type	Simple/Complex sentences	Compound sentences
Tone	Engaging/action driven	Informative/less engaging
Clarity	Concise	Less fluid
Travel Guidance	Provides specific directions and highlights a museum	General recommendation but lacks practical details

declarative sentences. Another notable difference is the use of tense; students often favour the past tense, while guidebooks tend to utilise the present tense to convey immediacy and relevance. Additionally, students often rely on compound sentences, frequently connected by conjunctions such as “and,” “or,” and “so.” In contrast, guidebooks demonstrate a balanced use of sentence structures, combining simple and complex constructions. While simple sentences are prevalent in guidebooks for clarity and accessibility, complex structures, including noun clauses and adverbial clauses, are strategically incorporated to enhance depth and precision. Furthermore, guidebook texts are concise, direct, and engaging, using strong action verbs (e.g., “was a stronghold,” “captured,” “has been reconstructed”) and descriptive phrases (e.g., “impressive site”) to create a more vivid and dynamic reading experience. On the other hand, students’ original works tended to be less fluid with a neutral and informative tone but lacked a strong narrative or engaging descriptions. Moreover, students’ writing often omitted practical details, reducing its effectiveness in tourism contexts in tourism writing. The practical details are missing in students’ work. These differences highlight the stylistic and functional divergences between professional and student-generated texts in the context of tourism writing. Interview data further revealed that participants initially felt compelled to use passive and inverted sentence structures to project a formal tone but became more aware of the advantages of active voice when Termsoup flagged overuse of passive forms. One participant reflected, “I didn’t realise my sentences were so long and lacked engagement. Once Termsoup suggested concise, active phrasing, my writing became clearer and sounded more professional.”

Interpretation of thematic analytical results revealed that participants who used Termsoup to assist their writing gained several insights:

1. **Enhanced Awareness of Language Precision:** Students reported becoming more attuned to selecting accurate, context-specific terminology and phrasing that aligns with specialised fields like tourism. One participant stated, “Instead of using generic terms, I now choose context-specific words like ‘historic pavilion’, which better capture what tourists want to know.” This indicates heightened attention to precise terminology and phrasing, adhering to professional standards in tourism.” This enhanced awareness helped them produce texts that resonate more with professional standards.
2. **Improved Understanding of Genre-Specific Writing:** Through exposure to sample texts and templates available in Termsoup, students recognised and adopted common structures, stylistic choices, and conventions integral to tourism writing, thereby strengthening their genre awareness with professional norms. One of the students explained, “I didn’t realise how important an engaging introduction is in tourism materials. After comparing samples texts, I now use a more direct style like ‘Explore

- Tainan's restaurants...' rather than just stating facts." This shift demonstrates how Termsoup encouraged them to adopt stylistic conventions to the tourism genre.
3. **Increased Confidence in Professional Writing:** By providing a structured approach to vocabulary tailored to ESP contexts, Termsoup gave students the assurance that they could produce coherent and more professional texts. One student remarked, "Termsoup gave me the confidence to try more active participation, knowing that if something was off, I'd get immediate feedback. It felt like having a writing tutor." Students felt encouraged to adopt more direct, engaging sentence structures consistent with conventions of the tourism discourse. Moreover, this illustrates how real-time prompts helped participants refine the writing style while boosting self-assurance.
 4. **Recognition of Multimodal Text Elements:** Students acknowledged the importance of layout, visuals, and formatting when preparing tourism materials and credited Termsoup's suggestions with prompting them to think beyond text and incorporate visually appealing elements. For example, a participant noted, "Seeing sample texts reminded me that images and headings can really affect how readers perceive information, even if Termsoup mainly focuses on the words themselves."
 5. **Problem-Solving Skills in Writing:** Students encountered challenges with selecting synonyms, balancing descriptive and factual content, and maintaining consistent style. Termsoup offered immediate resources and prompts, fostering an environment where they could experiment with revisions to resolve issues. One participant explained, "I got stuck on which adjective best described our local night market – 'bustling, or 'lively.' Termsoup's suggestions helped me weigh my options before finalising the most suitable one."
 6. **Efficiency in Drafting and Revising:** With an integrated database of terminologies and real-time feedback, students indicated spending less time searching for correct expressions and more time refining their content, which contributed to a more efficient workflow as one participant explained, they used to open multiple browser tabs to find the right term. Now they can keep everything in one place, which saves time and improves their writing flow.

Despite these positive outcomes, the study faced several limitations. First, all participants were novices in using CAT tools, which initially required extra training sessions. While this training eventually facilitated independent learning, it also increased the time commitment needed to integrate Termsoup into classroom activities. Second, the authenticity and consistency of the tourism texts used for building the corpus, although verified for domain credibility, were not entirely standardised. This variability could influence the linguistic models participants relied on for writing and revision. Future research might collaborate with official tourism boards or adopt uniform selection criteria to ensure consistent reference materials. Third, this research was conducted with a small group of participants, which restricts generalisability beyond the specific educational setting. Nevertheless, these constraints highlight avenues for more extensive investigation of CAT tools in various ESP contexts, potentially involving larger samples and diverse academic or professional disciplines.

The role of lecturers has gradually shifted from active involvement to a more supportive role, positioning them as facilitators in the learning process rather than direct instructors. From the students' perspective, it is anticipated that the skills developed through this approach can be transferred to other domains or specialised ESP subjects, enhancing their overall adaptability and competence. Although personal assumptions and subjective interpretations are inherent in any analytical process, deliberate efforts should be made to minimise their influence. This is essential to ensure the validity and objectivity of the research findings, thereby contributing to more reliable and generalisable insights.

Conclusion

This study examined the use of CAT as a pedagogical tool to enhance students' ESP writing skills, aligning with the growing interest in interdisciplinary approaches to language education. The findings underscore the potential of technology to improve students' writing performance in ESP contexts. By utilising CAT tools, students not only develop and refine their writing skills but also engage in a more interactive and iterative learning process. A key focus of this research was to explore students' perceptions of this approach, particularly the extent to which it fosters enjoyment in independent learning and bolsters their confidence in achieving language learning autonomy. This investigation underscores the role of technology in empowering students to take greater control of their learning journey.

This study investigated the role of technology in language teaching and learning, with the aim of providing insights into its evolving applications within ESP contexts. Additionally, it sought to illustrate the possible impact of technological tools by presenting specific, data-driven examples. The features identified through this project contribute valuable insights that may inform future interdisciplinary research. The implications of this research are twofold: first, to encourage researchers to deepen their understanding of technological advancements in education; and second, to facilitate a broader awareness of how these developments might influence teaching practices and learning outcomes. This dual focus underscores the importance of integrating technology into pedagogical frameworks to advance educational methodologies.

In conclusion, this study demonstrates how Termsoup, a CAT, can enrich students' learning experiences in ESP contexts. By offering immediate feedback on vocabulary, grammar, and style, Termsoup prompts learners to revise their writing independently and adapt their skills to various genres. The findings suggest that integrating digital tools into language instruction can support more flexible, learner-centred pedagogies, particularly in higher education settings where students benefit from tailored, real-world applications of classroom knowledge. Moreover, this research illustrates how AI-driven resources can complement existing teaching methods, providing a balanced blend of technological support and instructor-led guidance. Overall, this interdisciplinary inquiry offers practical insights for educators seeking to employ CAT tools effectively, thereby fostering autonomy and confidence among ESP learners.

From a pedagogical standpoint, ESP teachers could integrate Termsoup into writing instruction by designing guided practice sessions in which students explore the tool's features, set writing goals, and receive real-time feedback on vocabulary, grammar, and style. Scaffolded tasks—such as peer-review practices where learners discuss Termsoup's suggested revisions—may foster collaborative learning and encourage critical reflection on writing choices, thus promoting learner autonomy. Instructors may also embed reflection journals or self-assessment checklists into the curriculum to help students monitor their progress, solidify newly acquired skills, and cultivate sustained independent learning habits. Furthermore, explicit demonstrations of how to adapt Termsoup's feedback for various ESP subfields (e.g., tourism, business, or engineering) could show the tool's flexibility and guide students in transferring their skills to different professional contexts.

To advance this line of inquiry, future research may investigate the application of Termsoup across diverse ESP fields, ranging from legal or medical English to technical documentation. Such studies might include larger or more heterogeneous participant groups, as well as multi-institutional collaboration, to explore potential variations in learners' responses and outcomes. Additionally, a longitudinal approach would help capture how students' writing skills evolve over multiple semesters or as they transition into professional environments. By examining the long-term impact of CAT-based instruction on autonomy and sustained skill development, researchers may gain further insight into optimising CAT integration

for specific academic and vocational contexts. These efforts will contribute a richer understanding of how technology-enhanced methods can support, expand, and transform ESP teaching and learning.

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