

Article

# From Human Guidance to Digital Assistance: EFL Thesis-Writing Students' Experiences of Support Before and After the AI Revolution

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**Abstract:** The emergence of Artificial Intelligence (AI) continues to disrupt the traditionally established processes in higher education institutions, including thesis supervision. While the challenges and benefits of AI use in academic contexts have been well documented, a knowledge gap exists in our understanding of how AI has changed students' approach to thesis writing and supervisor feedback. This study contributes to the knowledge of the AI-motivated issues in thesis supervision with insights from in-depth interviews with eight EFL thesis students at an English-medium-instruction university with a compulsory thesis component. Findings suggest that the traditional expectations of thesis supervision have changed due to AI use. As lower-order issues can be addressed with AI, students now expect content and research process-related guidance. While AI poses considerable challenges due to interaction patterns, information relevance, and accuracy, students are learning to successfully navigate these challenges while taking full advantage of editing and language instruction functions that AI provides, thus significantly reducing their and their supervisors' workload and logistics. Since these skills take time to develop, universities are advised to actively incorporate AI instruction in the Writing Center operations. Further suggestions on AI integration in the supervision process are provided.

**Keywords:** thesis supervision; AI scaffolding; student feedback; writing center

## 1. Introduction

Many university undergraduate programmes nowadays require a final year research component, also known as senior thesis. When such components are introduced to university curricula, they often meet with considerable opposition from students and faculty alike. These challenging propositions typically generate apprehension about the unknown, particularly for English as a Foreign Language (EFL) students who must navigate complex academic writing in a non-native language. Despite the competitive advantages that students can gain upon completing such projects (Anderson & Weiner, 2014), many found the task insurmountably challenging. For most undergraduates, these represent the first large-scale projects in their academic studies for which they are individually responsible, especially because EFL students have to face the additional burden of linguistic challenges that native speakers do not encounter.

While research indicates that thesis supervisors are central to the writing process, providing essential content and research expertise for topic selection, methodology conceptualization, and overall organization (Aydn et al., 2023), supervisors often lack time to provide feedback on language or style. Therefore, it is not uncommon for universities to delegate this task to writing centres (Ma, 2019)—a particularly crucial service for EFL students who require additional linguistic support.



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With the emergence of artificial intelligence (AI) tools, students now have alternative sources of language support. Despite ethical concerns, AI offers assistance in editing, article synthesis, idea development, and data management (Hong, 2023). For EFL writers, AI tools can address specific needs related to translation, mechanics, and lexical choices (Abuhussein & Badah, 2025; Al-Raimi et al., 2024), potentially filling gaps in traditional support systems.

Given the essentiality of language support in EFL thesis writing and the evolving role of technology in academic writing, there is a pressing need to evaluate the effectiveness of different support mechanisms. Understanding how students perceive and utilize these resources could inform more targeted and effective support strategies. Therefore, this study aims to assess the effectiveness of English support for undergraduate EFL thesis students with two objectives:

- (1) To compare students' perceptions of the effectiveness of English centre service (i.e., seminars and individual consultations) versus AI in supporting EFL thesis writing.
- (2) To suggest ways to improve the support of EFL thesis writing.

### *1.1. Thesis Supervision and EFL Students*

Large capstone writing projects like theses merge content application and advance writing with research in ways that can create overwhelming cognitive loads for students. For EFL students, this cognitive load is further increased by the demands of writing in a non-native language. Universities typically assign individual content supervisors who provide ongoing feedback throughout the process. Aydın et al. (2023) found that supervisors are perceived as central to successful thesis writing, with their content and research expertise particularly valuable for topic selection, methodology conceptualization, and overall organization. Timely, frequent, and constructive feedback helps students overcome time management challenges and address knowledge gaps in data analysis.

Research on supervision styles indicates that control-oriented approaches appear most effective. Mårtensson and Söderström (2025) found positive correlations between supervisor control, amount of written feedback provided, and increased scientific curiosity in students. Students are also more likely to complete theses on schedule when feedback is directive and content-focused (Syafi'i et al., 2024), particularly regarding study objectives formulation and methodology development (Strebel et al., 2021). However, content-level support is inadequate for EFL students, especially when supervisors prioritize offering feedback on matters other than the language (Ma, 2019). Unclear language, in turn, may interfere with the written communication, making content less comprehensible. These challenges sometimes result in added stress for EFL students (Okuda & Anderson, 2018). To mitigate their challenges, some institutions implement workshops or establish writing groups (Li & Vandermensbrugghe, 2011). The collaborative environments allow students to interact with peers in similar situations, exchange feedback in supportive settings, and learn from shared experiences. When sessions include periods of individual writing within group settings, students report increased motivation and benefit from "eavesdropping" on feedback provided to others (Jusslin & Widlund, 2024). Additionally, peer feedback exchanges help students develop reader awareness, improve text readability, and enhance overall language application. Given these benefits, group writing activities serve as valuable supplements to established thesis support programs (Li & Vandermensbrugghe, 2011), particularly for EFL students who benefit from additional language exposure and practice.

### *1.2. Student Needs and Institutional Support*

When undertaking extended writing projects, students initially face genre-related challenges: determining appropriate content for each section, establishing suitable detail levels, and organizing material effectively (Dugartsyrenova, 2020). For EFL students, these challenges are compounded by linguistic barriers and unfamiliar academic conventions. These necessitate clear frameworks outlining both essential and optional elements for the required writing type. To this end, discipline-specific samples for different sections effectively support students in understanding genre expectations (Dugartsyrenova, 2020).

The guidance is particularly crucial because writing conventions and thought patterns vary across cultures. When incorrectly applied, patterns acquired in a native language may violate unity and argumentation rules in an English academic context—a significant challenge for EFL thesis writers. Kim (2012) suggests that templates, which many universities offer, can significantly assist students in navigating these cross-cultural writing challenges. Kim also identifies insufficient lexical resources as a major obstacle, noting that academic writing typically employs low-frequency vocabulary. To address this, content-specific vocabulary banks and prefabricated academic language chunks are recommended resources for EFL student writers.

Apart from providing the one-size-fits-all template, higher education institutions offer various support services to assist students with academic writing, particularly thesis writing. These range from traditional

individual appointments at writing centres (Tiruchittampalam et al., 2018) to more specialized options, including writing community, consultations with faculty (Ma, 2019), online tutoring (Dugartsyrenova, 2020), group workshops (Jusslin & Widlund, 2024), and writing groups (Li & Vandermensbrugge, 2011). This diversity of approaches reflects institutional recognition of the complex challenges students face when producing extended academic texts, with EFL students requiring additional linguistic support beyond content guidance.

### *1.3. Writing Centre Support*

Students generally demonstrate a strong desire for written feedback, yet universities rarely possess sufficient resources to fully satisfy these needs (Sérór, 2009). EFL students face particular challenges adapting to English-medium institutions due to language proficiency limitations and cultural differences (Andrade, 2006). As stated, while all students may require assistance developing academic writing skills, EFL writers encounter the compounded challenge of basic English expression alongside advanced academic conventions. For this reason, universities commonly delegate these responsibilities to writing centres (Ma, 2019). These centres typically offer tutorials in both group and individual formats. However, group settings may prove inadequate for EFL academic writers unless specifically tailored to their linguistic needs. For instance, EFL students seeking writing centre assistance may primarily need help with lexical choices (Nakamaru, 2010), but they often encounter resistance when tutors refuse to address language errors, citing institutional policies against “editing” student papers. This mismatch between EFL student needs and service provision may lead students to perceive writing centres as unhelpful, resulting in discontinued attendance (Okuda & Anderson, 2018). Such an outcome is concerning given that writing centre utilization correlates with significantly higher essay marks (Tiruchittampalam et al., 2018), suggesting that EFL students who abandon these services may be at a disadvantage.

### *1.4. AI Use in University Writing Tasks*

Partly due to students’ perception of the inadequacy in writing centre support and partly due to its convenience, AI has become increasingly popular among EFL students (Al-Raimi et al., 2024; Hong, 2023). The integration of artificial intelligence in supporting university student writing remains a topic of debate in academic circles. While AI offers undeniable assistance in editing, article synthesis, idea development, and data management, ethical concerns necessitate transparent use, including full disclosure of AI utilization (Khalifa & Albadawy, 2024). Barrett and Pack (2023) found that teachers generally support students’ use of AI for brainstorming, outlining and language support purposes, but express reservations about its application for content generation. Nevertheless, the application of AI differs significantly between native and non-native language writers due to their varied support needs. EFL students face unique challenges in academic writing that extend beyond those experienced by native speakers, making AI tools particularly appealing for addressing language barriers.

However, without careful consideration and adequate training on the ethical use of AI, students risk developing inappropriate AI habits from language assistance to core content generation (Perkins, 2023), known as interference phenomenon. For the same reason, clear institutional policies are necessary to prevent students from assuming they can apply the same AI (language support) practices across all subjects or courses, potentially compromising academic integrity.

### *1.5. AI Applications in Language Support*

Al-Raimi et al. (2024) reported that EFL students most frequently utilize AI as a translation tool, spelling and grammar checker, idea generator, and essay drafting tool. Applications like Grammarly, specifically designed to assist with writing mechanics, have demonstrated measurable benefits. Comparative studies between control and experimental groups show that the usage of Grammarly, integrated with AI, could lead to improved word choice, grammar, spelling, and punctuation in student writing (Abuhussein & Badah, 2025).

For EFL writers, the primary function of AI may entail translation and mechanics improvements. Research indicates that AI-assisted writing typically results in clearer and more concise texts (Granjeiro et al., 2025; Martínez-Olmo & Catalán, 2024). However, these benefits come with significant concerns. As students increasingly rely on AI for writing tasks, they may experience reduced motivation to think independently, develop machine dependence (Mahapatra, 2024), and suffer diminished critical thinking abilities (Barrett & Pack, 2023). Additional risks include generating excessively standardized text with potential technical inaccuracies (Granjeiro et al., 2025; Mahapatra, 2024), raising serious questions about authorship. While AI may help EFL students complete writing assignments successfully, it may simultaneously reduce valuable language learning opportunities.

Overall, existing studies have largely demonstrated the effectiveness of writing centre support, as well as AI’s support in EFL writing, from the faculty members’ perspective. That is, they are positive about the need for

writing centre services, but they show mixed responses towards the use AI, citing unethical use and consequences of diminishing critical thinking abilities for the soon-to-be graduates.

### 1.6. Research Gap and Objectives

While extensive research has examined the roles of supervisors, writing centres, and various institutional support mechanisms, most studies have focused on the perspectives of educators, supervisors, and writing centre staff. Additionally, there is limited research examining how students—particularly EFL thesis writers—perceive and compare different support systems. This gap is particularly significant given the rapid adoption of AI tools among students. As Al-Raimi et al. (2024) noted, students are already utilizing AI for various writing tasks, but we have limited understanding of how they perceive the effectiveness of these tools compared to traditional support services. While research has documented the potential benefits and risks of AI use in academic writing, students' comparative evaluations of AI versus institutional support remain largely unexplored.

As such, there is a compelling need to understand students' perspectives on AI use and how they compare it against traditional writing centre support for EFL thesis writing. This understanding is crucial for several reasons:

- (1) It can inform more effective institutional support strategies that address students' actual needs rather than perceived needs from other stakeholders
- (2) It can help identify complementary relationships between AI tools and traditional support services
- (3) It can guide the development of ethical guidelines and best practices for AI integration in academic writing support

Therefore, this study aims to address the gaps by comparing EFL students' perceptions of the effectiveness of English centre services versus AI in supporting thesis writing. In-depth interviews were conducted with students before and after the popularization of AI. Meanwhile, the study is theoretically driven by Vygotsky's (1978) concept of scaffolding, which can help us understand language support in EFL thesis writing. Scaffolding refers to temporary assistance provided by more knowledgeable others that enables learners to accomplish tasks they cannot yet complete independently. As students develop competence, this support is gradually withdrawn, promoting autonomous performance. In thesis writing, scaffolding traditionally takes various forms—from structured templates and explicit guidelines to individualized feedback and face-to-face consultations. These scaffolds help EFL writers navigate complex linguistic and rhetorical challenges while developing their academic writing skills. AI tools represent a new form of scaffolding that offers immediate and accessible support for language enhancement. By comparing traditional writing centre scaffolding with AI-assisted approaches, this study examines how different scaffolding mechanisms address the specific needs of EFL thesis writers.

## 2. Methodology

### 2.1. Research Design

This study employed a qualitative research design to explore EFL students' perceptions of thesis writing support for a foreign language. A comparative approach was adopted to examine the experiences of students from two distinct time periods: 2017 and 2025. This design allowed for an investigation of how perceptions of writing support have evolved with the emergence of AI tools, which were basically not available to the 2017 cohort but are commonly used by the 2025 cohort. Qualitative methods are particularly appropriate for this research as they enable in-depth exploration of participants' experiences, perceptions, and meaning-making processes (Creswell & Poth, 2018).

### 2.2. Participants

Participants were purposefully selected using criterion sampling (Patton, 2015), with English language proficiency as the primary criterion. This sampling strategy was chosen to ensure representation of students with varying linguistic abilities, providing insight into how language proficiency might influence perceptions of different support mechanisms. No specific language tests were conducted on the participants, as they were all students that the two researchers had personally taught before. Therefore, the researchers were well-acquainted of their language capabilities in terms of oral conversation and writing proficiency. Further evidence from academic records and recommendations from their thesis supervisors were also obtained. This method of multiple indicators, instead of single proficiency test, is considered appropriate in assessing language proficiency for research purposes (Dörnyei, 2007). A total of eight undergraduate students in their final year (Year 4) participated in the study: four from 2017 and four from 2025.

The 2017 cohort consisted of two linguistically proficient students (CH and MA) and two students with lower English proficiency (SI and ST). Similarly, the 2025 cohort included two linguistically capable students (AD and KH) and two students with lower English proficiency (AF and GG). All participants were enrolled at the same university and were completing their undergraduate thesis as a degree requirement. The gender distribution across both cohorts was three males and five females. Table 1 provides an overview of participant characteristics.

**Table 1.** Participant information.

Participant Code	Year	Gender	English Proficiency Level
CH	2017	Female	Higher
MA	2017	Male	Higher
SI	2017	Female	Lower
ST	2017	Male	Lower
AD	2025	Female	Higher
KH	2025	Female	Higher
AF	2025	Female	Lower
GG	2025	Male	Lower

### 2.3. Interview Themes and Questions

Data were collected through in-depth, semi-structured interviews, particularly suitable for exploring participants' perspectives and lived experiences (Kvale & Brinkmann, 2015). The interview protocol was developed based on the research objectives and informed by the literature review. It included questions organized around four key themes:

#### (1) Evaluation of Support

- For the 2017 cohort: Questions assessed the effectiveness and usefulness of English support, seminars, written feedback, consultations, and the dual supervisor system (language and content supervisors).
- For the 2025 cohort: Questions evaluated the effectiveness of both traditional support services and AI tools, including how they compared to each other.

#### (2) Usefulness and Effectiveness

- Both cohorts were asked about specific aspects of support that were particularly useful or unnecessary, aiming to gather insights on the perceived value of different support mechanisms.
- The 2025 cohort was specifically asked about the relative strengths and limitations of AI tools compared to human feedback.

#### (3) Conflict and Overlap

- The 2017 cohort was asked about potential conflicts between English seminars and content supervisor feedback.
- The 2025 cohort was questioned about conflicts between feedback from content supervisors and AI tools, as well as how well these different support systems complemented each other.

#### (4) Suggestions for Improvement

- Both cohorts were asked for suggestions on how to improve support systems, whether related to seminars, written feedback, consultations, or, for the 2025 cohort, AI tools.

This thematic and comparable organization allowed for systematic exploration of participants' experiences while enabling meaningful comparisons between the two time periods. The semi-structured format provided consistency across interviews while allowing flexibility to explore unique aspects of each participant's experience.

Interviews lasted between 30 to 45 min and were initially planned to be conducted in English. However, considering the lower-proficiency participants' ability to accurately express themselves, researchers finally decided to use their native language, Chinese, to interview them. Higher proficiency interviewees expressed confidence in using English in the interview, so English was used to maximize faithfulness of their original expressions. This mixed language method follows the recommendations of Mann (2011) to balance between accurate explanations and mitigation of loss-in-translation.

Sample questions from the interview protocol included:

2017 cohort main question: *“How do you feel about the individual consultations for language support?”*

- How effective are they in general?
- Can you give any examples of their usefulness or lack of it?

2025 cohort main question: “How do you feel about using AI tools for language support?”

- Which AI tools have you used, and how effective were they in general?
- Can you give examples of how AI tools helped you improve your writing?

#### 2.4. Data Collection Procedure

All participants provided written informed consent before being recorded and interviewed. The consent form outlined the purpose of the research, procedures involved, measures to ensure confidentiality, and participants’ right to withdraw at any time without penalty.

Interviews with the 2017 cohort were conducted in person at the university campus in December 2017. Interviews with the 2025 cohort were conducted in a mix of in-person and telephone interviews in May 2025, considering some had just completed their final examinations and had returned to their hometowns.

Interviews were audio-recorded with participants’ permission and transcribed verbatim within one week of the interview. To protect participant privacy, all identifying information was removed during transcription, and participants were assigned code names for reporting purposes. Data were stored securely on password-protected devices, with access restricted to the research team. Field notes were taken during and immediately after each interview to capture non-verbal cues and initial analytical insights.

#### 2.5. Method of Analysis

The study employed thematic analysis to examine interview data from undergraduate thesis writers. Following Braun and Clarke’s (2006) six-phase approach, the analysis began with data familiarization through reading of transcripts. To ensure analysis reliability (i.e., dependability as per Lincoln & Guba, 1985), two coders conducted the coding individually after an initial discussion of potential directions and findings.

Initial open coding identified meaningful text segments related to language support experiences for example, “the most special is the individual meeting. It is one by one” (ST), “I think the online [modules] is unnecessary” (CH), “maybe the seminars are a little bit less useful than individual meetings” (MA).

Then, NVivo coding was performed, preserving participants’ original expressions. Codes were then systematically organized into potential themes through axial coding, which were then reviewed and refined to ensure internal coherence and clear distinction between themes. The final thematic structure was defined through an iterative process, identifying the essence of each theme and its relationship to the research questions about traditional and AI-based language support.

The analysis maintained trustworthiness through researcher reflexivity and transparent documentation of the analytical process (Lincoln & Guba, 1985). This approach allowed for rich insights into students’ experiences with different forms of language support during thesis writing.

### 3. Findings

#### 3.1. Writing Centre Language Support

Traditional writing centre support, while valuable, presents several challenges for EFL thesis writers, including coordination issues between the supervisor and the language supporter, difficulties in implementing feedback, and varying perceptions of different support types.

##### 3.1.1. Coordination Challenges

Students consistently reported challenges navigating the suggestions offered by the supervisor and those offered by the writing centre. While most valued having specialized support for both aspects, the coordination between these supporting faculty members/units created practical difficulties. “Sometimes we will meet the language support before we meet the content supervisor” (CH). This sequencing issue led to inefficiencies in the revision process, as one student explained: “After we changed our language mistakes; however, the content supervisor may delete all the things” (CH).

The lack of integration between language and content support created confusion about which feedback to prioritize: “I have some confus[ion] I need to follow which one” (SI). Further, students sometimes encountered conflicting feedback, requiring multiple revisions (ST).

Despite these challenges, most students valued the both types of support, “I think it’s good that we separate both [types of support]” (MA).

### 3.1.2. Face-to-Face Consultations for Clarification

All participants emphasized the critical importance of face-to-face consultations, particularly because they are non-native English speakers: “Consultation is really important for me, because English is not our mother tongue” (CH).

These meetings allowed students to clarify feedback they didn’t understand: “If they give us feedback, sometimes we don’t know what is that means. And we can meet face-to-face to ask them” (SI). Face-to-face interactions also enabled students to explain their intended meaning when supervisors misunderstood their writing: “Sometimes the supervisor may not understand what we have written about. So, we have to face to face explain to her” (CH). The immediate identification of problems was particularly valued: “The most effective is [the student] can know... what is the difficulty and what [he/she] [doesn’t] know immediately” (ST).

### 3.1.3. Varied Perceptions of Seminar Usefulness

Students had mixed views on the usefulness of group seminars compared to individual consultations. Some stated “the seminar lesson is quite good for the discussion” (CH), but others stated “maybe the seminars are a little bit less useful than individual meetings” (MA).

Some appreciated the practical exercises and structured guidance provided in seminars: “They have some exercises... We can clearly understand what we should do in this [writing] cycle” (CH).

However, others noted poor integration between seminars and individual meetings, suggesting that they “need to mix together” (ST) in a better manner to provide consistent assistance.

### 3.1.4. Grammar-Focused Support vs. Broader Writing Needs

Many comments indicated that the writing centre was primarily perceived as grammar correction: “The most helpful is that can improve my English... change the grammar” (ST) or “help us to check our grammar” (SI).

However, some students expressed needs beyond grammar correction, including vocabulary development and writing style: “Maybe can give more practice for the students to know more words” (SI). “Sometimes we use the same words. We use them ten times or twenty times” (SI). Likewise, one student suggested the writing centre could provide more comprehensive writing support: “They can point out some [more] problems in that student’s thesis, but not just point out the grammar mistake” (SI).

### 3.1.5. Time and Scheduling Concerns

Time-related issues were frequently mentioned, including consultation frequency and duration: “Some problem is the time. Some students said it’s too short” (CH). “I think maybe 40 min [instead of 30]” (SI).

However, students had different preferences regarding meeting frequency: “Two weeks with a consultation is quite good” (CH), “...more meetings [...] in each week is more useful” (ST).

Scheduling flexibility was also a concern: “Fixed schedule of the meeting is much better” (ST). Otherwise, it is more likely that students find available language support services conflict with their class schedules.

## 3.2. Language Support by AI

AI, on the other hand, may show unlimited potential for language learners (Hong, 2023). Interestingly, interviewees were not all positive about the use of AI, but expressed many rational concerns over the use of AI in supporting thesis writing.

### 3.2.1. AI as a Structural and Organizational Aid

Students consistently described AI tools as valuable for organizing thoughts, structuring arguments, and visualizing the framework of their writing. This organizational function emerged as one of the most valued aspects of AI support, particularly for complex thesis writing: “They assist me when I’m building the framework for my dissertation problems, giving me ideas and helping organize my data” (AF), and it can also help “visualize [the student’s] thoughts and ensure that [the student’s] arguments flow logically” (AF). Others also testify to its superb ability in organizing ideas: “The AI helps summarize and structure my ideas, which clarifies my thinking.” (AD). This organizational support appears particularly valuable for non-native English writers who may struggle with both content organization and language expression simultaneously.

### 3.2.2. Information Management and Filtering

AI tools were frequently used to manage the overwhelming amount of information students encountered during research. They helped screen literature, summarize content, and provide definitions for technical terms: “While writing my dissertation, I needed to collect hundreds of references. The AI tools helped me screen out articles that weren’t useful by analyzing their abstracts and titles” (AF).

Similarly, students appreciated AI’s ability to provide quick access to information: “One of their strengths is quickly providing accurate answers by gathering information from the Internet. This saves me a lot of time in the research phase” (AF). However, the apparent convincing tone of AI is not always helpful: “[AI] will write a whole paragraph [authentically], which doesn’t really correlate with what you want... And it actually messes with what you want to do” (KH).

### 3.2.3. Language Enhancement vs. Content Development

While AI tools were generally viewed as effective for language enhancement (grammar, vocabulary, expression), they were considered less valuable for content development because “[AI generated content] is very repetitive” (KH). Students recognized that thesis writing required their own ideas and that AI could not replace original thinking: “I don’t think AI [could teach] me new concepts about writing. It mainly corrects my mistakes” (AD) and remarked that “the assistance I get from AI largely depends on [students’] own abilities” (AD). In other words, the usefulness of AI depends on the ability of the students themselves.

Nevertheless, students valued AI’s contribution to language improvement: “I would still need AI to broaden my vocabularies because [...] they give you multiple choices of words” (KH).

### 3.2.4. Verification and Trust Issues

False references, fabricated content, and inaccurate information emerged as significant concerns across all interviews: “I often find false references, so I have to double-check them” (AF). Another student highlighted similar concerns: “One common issue is that AI sometimes adds fabricated content. If I don’t provide clear instructions or prompts, it can easily mislead me with false information” (AD). These trust issues led students to develop verification strategies and to approach AI-generated content critically.

Therefore, students described using AI as a starting point or foundation for their writing, not as a final product: “I read through what AI gives me and then after that, I try to put it into my own words and then after putting it into my own words, if it’s the same, then yeah, that’s good” (KH). They talked about using AI as a “base” in the conceptual process, not being able to replace their own writing process.

### 3.2.5. Interaction Challenges with AI

Students described frustrations with the interaction process, including the need for multiple rephrasing of questions and information overload: “Sometimes, certain questions can’t be answered by AI, and I find that I need to rephrase them for clarity” (GG). Another student noted that she had to “keep asking and asking and asking until I understand [AI’s explanation]” (KH).

These interaction challenges highlighted the limitations of AI as a communication tool compared to human interaction: “I often face challenges with AI providing inaccurate information or distorting my intended meaning. Sometimes, I have to rephrase my questions multiple times before getting a satisfactory answer, which can be frustrating” (AD).

### 3.2.5. Complementary Nature of AI and Human Support

All participants emphasized that AI tools work best when used alongside human support rather than as replacements: “They complement each other well. The AI tools address minor language issues, while my supervisor focuses on broader content and structure” (AF). Students recognized the distinct value of each support type: “Combining AI tools with human support provides double assurance, ensuring that I receive comprehensive assistance while minimizing errors” (GG). Another student articulated a clear division of labor between AI and human support: “AI tools can help address basic language issues, while my supervisor offers deeper insights” (AD).

However, despite AI’s convenience and 24/7 availability, all participants expressed a preference for human feedback: “I definitely prefer having human support. The personal feedback and nuanced understanding that a human can provide are irreplaceable” (GG). Students valued the contextual awareness and personalized guidance that human supervisors provided: “I learned more from [human guidance] than I learned from AI because AI is

basically just, you ask one thing, they give this, but they're not further explaining it" (KH). Therefore, the ability of human supervisors to understand context was particularly valued.

### 3.2.6. Strategic Use of AI Tools

Students used multiple AI tools for different purposes, recognizing that each had specific strengths and weaknesses: "I've used ChatGPT, DeepSeek, and Claude. In my experience, DeepSeek excels in Chinese contexts but lacks the depth needed for English research. ChatGPT is fantastic for helping me organize my ideas, while Claude is particularly effective in checking grammar and providing professional writing advice" (AD). Another student described a similar multi-tool approach: "I've used POE, DeepSeek, and Doubao. POE is particularly effective because it provides quick and coherent answers [...] DeepSeek is more conventional and has a slower response time, but it handles files well [...]" (GG). This strategic selection suggests a sophisticated understanding of AI capabilities and limitations.

Furthermore, students developed sophisticated strategies for interacting with AI to maximize its benefits: "Instead of asking AI to simply reword my text, I request feedback by saying, 'As an experienced scholar writing in English, what issues do you see in my expression?' This elicits more constructive feedback on what needs to be revised, rather than having AI directly edit students' original writing" (AD). Another student described using AI to generate student-level content for better comprehension: "Asking for AI to do it in student form is for me to understand it [better]" (KH). These strategies demonstrate how students are actively shaping their interactions with AI rather than passively consuming its outputs.

### 3.3. Comparisons across Groups

The comparative analysis of language support experiences between the 2017 and 2025 cohorts reveals both persistent needs and evolving approaches to thesis writing support. While the 2017 cohort navigated a structured but sometimes disjointed system of seminars and individual consultations, the 2025 cohort integrated AI tools as complementary resources alongside traditional support. Both groups consistently valued human interaction for its contextual understanding and personalized guidance. However, significant shifts emerged in how students approached language support. The 2017 cohort primarily sought grammar correction within fixed consultation schedules, whereas the 2025 cohort utilized AI for 24/7 assistance with broader language enhancement, organization, and information management.

This evolution reflects increased student agency, with 2025 participants strategically selecting different AI tools for specific tasks while developing sophisticated verification strategies to address AI's limitations of fabricated content and false references. Despite these advances, both cohorts emphasized the irreplaceable value of human feedback for deeper conceptual guidance, suggesting that optimal thesis support combines AI's accessibility and efficiency with in-person language assistance and human supervisors' contextual understanding and disciplinary expertise.

Nevertheless, common themes have been identified across both cohorts that highlight fundamental needs in thesis writing support regardless of technological advancement. Table 2 summarizes the common themes identified in both groups, while Table 3 and 4 display the unique themes and codes for each cohort.

**Table 2.** Common themes across both cohorts.

Theme	2017 Cohort (Traditional Support)	2025 Cohort (AI Support)
Support Structure & Organization	Focused on scheduling conflicts and integration between seminars and consultations <i>"The seminar and the meeting is it is not something equal to each other" (ST)</i>	Emphasized AI's ability to build frameworks and organize thoughts <i>"They assist me when I'm building the framework for my dissertation problems" (AF)</i>
Human Interaction Value	Valued face-to-face consultations for immediate clarification <i>"Consultation is really important for me, because English is not our mother tongue" (CH)</i>	Recognized limitations of AI and preference for human guidance <i>"I learned more from my supervisor than I learned from AI because AI is basically just, you ask one thing, they give this" (KH)</i>
Feedback Quality & Reliability	Appreciated detailed, categorized feedback <i>"My supervisor will categorise some mistakes and highlight with different colours" (CH)</i>	Concerned about false references and fabricated content <i>"I often find false references, so I have to double-check them. That's a major flaw in AI" (AF)</i>
Integrated Support Systems	Valued separation of language and content supervision despite challenges <i>"I think it's important to separate it two" (CH)</i>	Viewed AI and human support as complementary <i>"They complement each other well. The AI tools address minor language issues, while my supervisor focuses on broader content" (AF)</i>

Table 2. Cont.

Theme	2017 Cohort (Traditional Support)	2025 Cohort (AI Support)
Language Support Needs	Focused on grammar improvement and examples “The most helpful is that can improve my English... change the grammas” (ST)	Emphasized vocabulary expansion and expression options “I would still need AI to broaden my vocabularies because with AI they provide you with more ideas” (KH)
Accessibility & Convenience	Concerned about limited consultation time and scheduling “Some problem is the time. Some students said it’s too short” (CH)	Valued 24/7 availability and convenience of AI “The AI is always available for simple questions” (AF)
Information Processing	Noted repetition of content across seminars and courses “I think it was more of a repetition” (MA)	Used AI to filter and manage information overload “The AI tools helped me screen out articles that weren’t useful by analyzing their abstracts” (AF)
User Agency & Strategies	Developed self-correction abilities “I knew most of my mistakes and how to correct them” (MA)	Actively adapted AI outputs through paraphrasing and selection “I read through what AI gives me and then after that, I try to put it into my own words” (KH)

Table 3. Unique themes in 2017 cohort (traditional support).

Theme	Codes	Example Quote
Coordination Challenges in Dual Supervision	Scheduling conflicts, Conflicting feedback, Multiple revisions required, Feedback source confusion	“Did you receive conflicting feedback on the same thing from the two supervisors? ... oh sure” (ST)
Varied Perceptions of Seminar Usefulness	Seminar value, Seminars perceived as less useful, Practical application, Seminar content repetition	“Maybe the seminars are a little bit less useful than individual meetings” (MA)
Desire for Integrated Support	Poor integration of support elements, Desire for integrated support, Fixed schedule desire	“The seminar and the meeting it is, it need to mix together” (ST)
Grammar-Focused Support	Grammar improvement focus, Grammar checking focus, Repetitive word use concern	“The most helpful is that can improve my English... change the grammas” (ST)

Table 4. Unique themes in 2025 Cohort (AI support).

Theme	Codes	Example Quote
AI Tool Selection & Specialization	Multiple AI tools usage, Tool-specific strengths, File handling capability, Visual content generation	“I’ve used ChatGPT, DeepSeek, and Claude. DeepSeek excels in Chinese contexts but lacks the depth needed for English research. ChatGPT is fantastic for helping me organize my ideas, while Claude is particularly effective in checking grammar.” (AD)
AI as Starting Point	AI as foundation, Selective adoption, Paraphrasing necessity, Idea generation	“I need AI as my base... AI for basic, it’s for the ideas and then you have to cultivate it yourself.” (KH)
Interaction Challenges with AI	Multiple rephrasing necessity, Question rephrasing need, Conversational limitations, Information overcomplication	“With AI, I’d ask a question, and then they’d give one thing, and then I’d keep asking and asking and asking until I understand it.” (KH)
Learning Through AI Interaction	Writing improvement, Paragraph structure learning, Learning new words, Academic expression	“It taught me how to put my words into better use or sentences. They will give me a nice and clean paragraph and the grammar is good and it’s correct.” (KH)

#### 4. General Discussion

The findings from this comparative study of traditional writing centre support and AI-assisted thesis writing reveal a complex landscape of evolving student needs, technological capabilities, and pedagogical approaches. Both cohorts demonstrated a sophisticated understanding of their available support systems, adapting their

strategies to maximize benefits while mitigating limitations. However, the integration of AI tools has fundamentally transformed how EFL students approach thesis writing support.

The 2017 cohort, which did not have the support of AI, navigated a structured but sometimes fragmented system of seminars and individual consultations, facing coordination challenges between language and content supervisors. Their experiences align with Ma's (2019) observation that content supervisors often prioritize feedback on matters other than language, creating potential conflicts when language supporters focus primarily on linguistic features. Having language and content support provided by different people, while theoretically comprehensive, created practical difficulties for students who received conflicting feedback and struggled with multiple revision cycles.

In contrast, the 2025 cohort's experiences with AI reflect a more integrated approach to support, with AI tools serving as complementary resources alongside traditional human guidance. This integration addresses some of the coordination challenges identified by the 2017 cohort, as students can receive immediate language assistance through AI while reserving human consultations for deeper content and structural guidance. This finding supports earlier findings that AI offers valuable assistance in editing and language enhancement (Khalifa & Albadawy, 2024), though it introduces new concerns regarding verification and trust.

Both cohorts consistently valued face-to-face human interaction, confirming personalized guidance is particularly important for EFL students (Okuda & Anderson, 2018). However, the nature of this interaction has evolved. While the 2017 cohort primarily sought clarification of feedback and grammar correction from the writing centre, the 2025 cohort had the luxury to request more language support than those, such as improvements in writing style and logical flow. Still, both groups valued human supervisors for their contextual understanding and disciplinary expertise—areas where AI tools demonstrated significant limitations. This shift suggests that as AI addresses basic language needs, human support becomes more specialized, focusing on higher-order concerns that require disciplinary knowledge and contextual awareness.

The findings also reveal an evolution in students' agency and metacognitive strategies. The 2025 cohort demonstrated sophisticated approaches to AI tool selection, usage and prompt engineering, actively shaping their interactions rather than passively consuming outputs, which seems to support the general positive views of AI in ESL/EFL learning or support (Hong, 2023). The strategic approach also aligns with Perkins' (2023) concern about developing appropriate AI habits, suggesting that students are developing critical awareness of AI's capabilities and limitations. The verification strategies described by the 2025 cohort—checking references, paraphrasing AI-generated content, and cross-referencing information—indicate a level of critical engagement that counters concerns about diminished critical thinking raised by Barrett and Pack (2023).

Perhaps most significantly, both cohorts emphasized the complementary nature of different support types. The 2017 cohort valued both seminars and individual consultations despite coordination challenges, while the 2025 cohort articulated a clear division of labour between AI and human support. This complementary approach suggests that optimal thesis support combines multiple resources, leveraging the strengths of each while compensating for their limitations.

## 5. Theoretical Implications

This study suggests that the theoretical understandings of writing support is becoming much more complex owing to technological advancements. This study serves a pioneering role in combining endeavours to understating writing centre effectiveness (Tiruchittampalam et al., 2018) and AI applications in writing (Al-Raimi et al., 2024). Most importantly, the findings challenge simplistic narratives about AI replacing traditional support mechanisms. Instead, they suggest a highly complex interaction between the user (i.e., students) and support providers (i.e., supervisors, writing centre, AI). AI and human support seem to be able to serve complementary functions within an integrated system, which aligns with sociocultural theories of learning that emphasize the importance of scaffolding (Vygotsky, 1978), with AI providing basic but immediate scaffolding, writing centre providing targeted but limited language assistance, and human supervisors offering more advanced and contextually-sensitive guidance.

We acknowledge that this is not a theory-loaded research, but instead primarily aims to inform practice. The theoretical insights regarding scaffolding and complementary support systems serve to contextualize our findings within existing frameworks of understanding.

## 6. Pedagogical Implications

The findings from this study offer several important implications for supporting EFL thesis writers in the AI era:

- (1) **Integrated Support Systems:** Institutions should develop integrated support systems that combine AI tools with traditional writing centre services. Rather than viewing these as competing resources, they should be conceptualized as complementary elements within a comprehensive support framework. This might include writing centre tutors who are trained to help students effectively use AI tools while providing the contextual guidance that AI cannot offer.
- (2) **AI Literacy Development:** EFL thesis writers would benefit from explicit instruction in effective AI use, including prompt engineering, output verification, and integration with other forms of support. This can develop students' appropriate AI habits (Perkins, 2023) and could be incorporated into existing thesis preparation courses or writing centre workshops.
- (3) **Redefining Writing Centre Roles:** Writing centres may need to evolve their focus to address higher-order concerns that AI cannot adequately address, such as fact-checking information, critical thinking, and disciplinary conventions. This shift would address the limitations of AI identified in this study while leveraging the unique expertise of human tutors.
- (4) **Customized Support for EFL Writers:** The findings confirm that EFL thesis writers have specific needs that differ from those of native speakers, particularly regarding language support. Writing centres should develop specialized services for EFL writers that address these needs directly, rather than applying one-size-fits-all approaches that may prioritize higher-order concerns before basic language issues are resolved.
- (5) **Verification Skills Development:** Apart from the writing centre trainings, given the major concerns about AI-generated false references and fabricated content, students should be taught critical verification skills as part of the research method or other courses. This might include workshops on fact-checking, source evaluation, and critical assessment of AI outputs.
- (6) **Strategic Scheduling:** The timing and sequencing of different support types should be strategically planned to maximize effectiveness. For example, AI tools might be introduced early in the thesis process for brainstorming and organization, followed by writing centre consultations for further language enhancement (i.e., ensuring low AI detection rate if AI had been used), and content supervisor meetings for disciplinary guidance.
- (7) **Ethical Guidelines:** Clear institutional guidelines regarding appropriate AI use in thesis writing should be developed and communicated to students. These guidelines should distinguish between acceptable uses (e.g., language enhancement, organization) and unacceptable uses (e.g., content generation without attribution), addressing the ethical concerns (Barrett & Pack, 2023).

## 7. Limitations and Conclusions

This study provides valuable insights into the evolving landscape of EFL thesis writing support, but several limitations should be acknowledged. First, the small sample size (four participants in each cohort) limits the generalizability of the findings. Future research should include larger, more diverse samples to capture a broader range of experiences. Second, the eight-year gap between cohorts introduces potential confounding variables beyond the introduction of AI tools, including changes in institutional policies, writing centre practices, and broader educational trends. Third, the study relies on self-reported perceptions rather than direct observations of support utilization or objective measures of writing improvement.

Despite these limitations, this study should make a significant contribution to understanding how AI tools have transformed EFL thesis writing support. The findings suggest that AI has not replaced traditional support mechanisms but has instead created new possibilities for integrated support systems that leverage the strengths of both technological and human resources. The 24/7 availability of AI addresses many of the scheduling and accessibility concerns expressed by the 2017 cohort, while the personalized guidance of human supervisors remains essential for addressing the contextual and disciplinary aspects of thesis writing that AI cannot adequately support.

As a final remark, this study suggests that the future of EFL thesis writing support lies not in choosing between AI and traditional writing centres, but in developing integrated systems that combine these resources effectively. By leveraging AI for basic language enhancement, organization, and information management, writing centres can focus their limited human resources on providing the deeper, contextually sensitive guidance that remains beyond AI's capabilities. This complementary approach has the potential to address the persistent challenges faced by EFL thesis writers while taking advantage of technological advancements to provide more accessible, comprehensive support. For this reason, future research is recommended to explore the effectiveness of integrated support systems, develop and evaluate AI literacy curricula for thesis writers, and investigate the long-term impacts of AI use on language development and writing skills. As AI technology continues to evolve, ongoing research will be essential to ensure that support practices remain effective, ethical, and aligned with the needs of EFL thesis writers.

## Author Contributions

W.C.H.H.: conceptualization, methodology, software, data curation, visualization, investigation, writing—original draft preparation, writing—reviewing and editing; A.L.: conceptualization, methodology, data curation, investigation, writing—original draft preparation, validation. All authors have read and agreed to the published version of the manuscript.

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## Institutional Review Board Statement

Ethical review and approval were waived for this study as there was no formal ethical approval procedure during the conceptualization and implementation stages of the research. However, this research was initially authorized as a required project assignment of a research training course conducted by the Macao University of Tourism.

## Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

## Data Availability Statement

Data will be available upon request.

## Conflicts of Interest

The authors declare no conflict of interest.

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