TEACHERS' AND STUDENTS' PERSPECTIVES ON AI INTEGRATION IN EFL: A CASE STUDY

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Abstract

With the rapid advancement of AI, its integration into EFL education has become increasingly prominent. This small-scale study provides insights from a Taiwanese higher education context, drawing on both EFL teachers' and students' perspectives. Guided by Cognitive Load Theory (CLT), the study examines how AI is used to support language learning tasks, involving varying levels of cognitive load, and explores its potential role in managing learners' cognitive processing demands. A mixed-methods approach was employed, with quantitative and qualitative data collected through questionnaires. The study also explores patterns of AI usage, perceptions of its effectiveness, challenges encountered, and attitudes toward its future role in English education.

The findings indicate that AI has become a widely used support tool in EFL learning. Students primarily use AI tools, such as ChatGPT and Grammarly, for writing, information searching, and grammar support, i.e., tasks that typically impose high intrinsic cognitive load on EFL learners. In contrast, teachers mainly employ AI for lesson preparation, material design, and efficiency enhancement, thereby reducing extraneous cognitive load. Although both groups hold positive attitudes toward AI integration, teachers demonstrate a more cautious approach due to concerns regarding usability, pedagogical alignment, data privacy, and potential students' overreliance. From a CLT perspective, the results suggest that while AI can reduce extraneous cognitive load and provide procedural support, excessive dependence on AI may limit learners' germane cognitive load by reducing their active engagement in language processing. Students largely agree that AI cannot replace human teachers, particularly in areas involving emotional support, interaction, and guidance. The data indicate that effective AI integration requires institutional support, professional training, and the development of digital literacy to ensure a balanced, human-centered approach to AI-enhanced EFL education.

Keywords: AI/digital literacy; autonomous learning; ChatGPT; Cognitive Load Theory (CLT); extraneous/germane/intrinsic cognitive load, learners' efficiency.

1. Introduction

With the rapid advancement of technology, AI has brought unprecedented convenience to humanity and has gradually entered the field of education, offering new options for traditional teaching methods. “AI will allow every student to have a personal tutor and every teacher to have a teaching assistant” (Khan, 2023). For example, automated grading systems can help teachers assess essays and tests, reducing their workload and allowing them to focus more on teaching and interacting with students. Additionally, AI can analyze students’ learning data and provide personalized recommendations, helping teachers adjust their teaching strategies to better meet students’ needs. In English learning, AI not only enhances learning efficiency but also makes the learning process more personalized and interactive, providing both students and teachers with convenience.

The history of artificial intelligence (AI) dates back to the mid-20th century, when scientists first began exploring how to make machines simulate human intelligence. However, over time, AI development faced multiple waves of stagnation and setbacks. In the 1960s and 1970s, early AI researchers successfully developed basic problem-solving programs, but as technological limitations became apparent, much of the early AI research entered a period of dormancy, known as the "AI Winter." In the 1980s, AI experienced a resurgence with advancements in computational power and the rise of neural networks. During this period, the concept of deep learning began to take shape, and neural networks were applied in areas such as speech recognition and image processing, achieving significant progress. In the early 21st century, with the development of big data technologies and rapid improvements in computational power, AI entered a phase of rapid growth. Landmark achievements such as Google's AlphaGo defeating world champions in Go, and the widespread adoption of voice assistants like Siri, ChatGPT, DeepSeek, or Alexa, marked AI's entry into everyday life, which is now making a significant impact on education.

However, integrating AI into education also presents several challenges, including the issue of technological dependence, the cultivation of students’ self-learning abilities, and the need for teachers to maintain classroom interaction rather than relying solely on AI for instruction. Therefore, finding a balance between AI and traditional teaching methods to maximize their advantages will be a key issue in the future development of education.

This study mainly investigates the integration of AI into English education for English-major students and teachers of Wenzao Ursuline University of Languages in Southern Taiwan. The study questions are as follows:

- How is AI applied in English teaching by Wenzao teachers?
- How is AI applied in English learning by Wenzao students?
- To what extent do instructors accept the integration of AI into English teaching?
- To what extent do students accept the integration of AI into English learning?
- Which AI apps are commonly used in EFL classes?

The questions are studied through the lens of Cognitive Load Theory, analyzing AI’s positive and negative loads on English teaching and learning. To sum up, this study aims to explore the advantages of AI in language learning and teaching, as well as potential challenges it may present.

2. Literature Review

In recent years, the integration of Artificial Intelligence (AI) into English as a Foreign Language (EFL) education has garnered significant attention from numerous scholars and educators (Derakhshan, 2024; Gutai et al., 2024; Han, 2024; Huang et al., 2022; Jeon et al., 2024; Jiang, 2022; Shi et al., 2025; Wang et al., 2026; Zawacki-Richter et al., 2019, etc.). As global educational institutions strive to enhance language learning outcomes through technology, AI has emerged as a transformative force, offering innovative solutions for personalized learning, real-time feedback, and learner engagement.

Cognitive Load Theory (CLT) by J. Sweller (1988) provides a particularly suitable lens for examining AI integration in EFL contexts, as it focuses on learners' cognitive processing limitations and instructional design effectiveness. According to CLT, learning is constrained by the limited capacity of working memory, while long-term learning depends on schema construction in long-term memory. CLT distinguishes among *intrinsic cognitive load* (task-inherent complexity), *extraneous cognitive load* (inefficient instructional design or tool use), and *germane cognitive load* (productive mental effort devoted to learning). From this perspective, AI tools can be pedagogically beneficial when they reduce extraneous load and support germane processing, but detrimental when they introduce unnecessary complexity (i.e., increase intrinsic cognitive load) or replace learners' active cognitive engagement (i.e., decrease germane cognitive load).

Jiang (2022) identified six major categories of AI applications in EFL education: Automatic Evaluation Systems, Neural Machine Translation Tools, Intelligent Tutoring Systems, AI Chatting Robots, Intelligent Virtual Environments, and Affective Computing. These tools are designed to adapt to individual learning needs, support self-paced progress, and reduce the workload on instructors by automating repetitive tasks. From a CLT perspective, such tools may reduce extraneous cognitive load by minimizing time spent on mechanical processes such as error detection or information retrieval, allowing teachers and learners to allocate more cognitive resources to meaningful language use. This is particularly relevant in Taiwanese higher education institutions, where autonomous learning and multilingual competence should be more emphasized.

OpenAI's *ChatGPT* has become one of the most widely used tools in the EFL field, mostly approved by enthusiasts (e.g., Baskara & Mukarto, 2023; Bonner et al., 2023; Fryer et al., 2020; Hong, 2023; Ji et al., 2023; Kohnke et al., 2023; Li et al., 2023; Waschauer et al., 2023, see Han, 2024) and less withheld by critics (e.g., Barrot, 2023; Chomsky et al., 2023; Kern, 2024; Satariano & Kang, 2023). According to Gutai et al. (2024), ChatGPT enhances language learning by providing immediate corrective feedback, promoting learner autonomy, and facilitating interactive learning experiences. Similarly, Han et al. (2024) investigated large language models as writing assistants and found that such tools can provide customized feedback to learners, thereby improving their academic writing skills and boosting confidence in language production. From a CLT standpoint, ChatGPT can reduce extraneous load by offering linguistic scaffolding and examples, thereby helping learners manage the high intrinsic load associated with academic writing and grammar. Similarly, *Grammarly* has been shown to improve the accuracy and clarity of L2 writing by externalizing error detection processes, allowing learners to focus on content and organization (Dizon & Gayed, 2021). In addition, the use of AI tools can help address the diverse proficiency levels within a class, offering personalized guidance to complement traditional teaching methods. Future research could further explore the

impact of sustained ChatGPT use on language learning efficiency and cognitive skills, as well as the potential challenges related to over-reliance on AI.

The affective dimension of language learning has also seen increased focus in AI-related studies. The recent study by Zhang et al. (2024) found that an AI-powered speaking assistant significantly enhanced enjoyment and willingness to communicate among Chinese EFL students, while also reducing their speaking anxiety. From a CLT perspective, reducing anxiety may indirectly lower extraneous cognitive load, enabling learners to allocate more cognitive resources to language processing. This finding is particularly relevant to Taiwanese learners, who often experience high levels of anxiety when speaking a foreign language. Incorporating similar AI tools at Wenzao University could help ease students' speaking apprehension and foster a more supportive, confidence-building learning environment. Moreover, a systematic review by Liu et al. (2024) investigated Chinese EFL learners' use of AI for informal English learning (AI-IDLE), finding high engagement in activities like grammar help and conversation practice and leading to increased enjoyment, despite access challenges for some. Using mixed methods (surveys, interviews, Q-methodology), it revealed learners fall into optimistic, critical, or hesitant belief types, highlighting AI's potential for autonomous learning but also the need for pedagogical integration for broader impact. The study highlighted the growing importance of AI in enhancing student motivation and engagement in higher education EFL contexts. Motivation plays a critical role in language acquisition, and AI's interactive and adaptive nature can help maintain learners' interest and participation over time. These findings suggest that AI may support both cognitive and affective dimensions of learning when appropriately integrated. For a language university like Wenzao, which emphasizes student-centered pedagogy, integrating AI to increase motivation could align well with institutional goals.

However, the implementation of AI is not without challenges. Institutional support plays a pivotal role in successful AI implementation. Research by Tan and Yu (2023) emphasized the importance of infrastructure, teacher training, and pedagogical alignment in promoting the long-term effectiveness of AI tools in language education. So, there is a pressing need for comprehensive digital AI literacy training among both educators and learners to ensure effective and responsible use of AI in classroom settings. At Wenzao University, teachers frequently undergo various AI workshops to explore how AI tools like *ChatGPT, Gemini, NotebookLM, TTSMaker* (speech recognition system), etc. can be integrated into core EFL courses such as Academic Writing, English Listening & Speaking, English as a Medium of Instruction (EMI), or English for Specific Purposes (ESP). However, since Wenzao faculty members come from diverse language backgrounds and students often face varied levels of digital proficiency, more professional development workshops and curriculum support for teachers and students are essential for sustainable AI integration into EFL.

In addition, R. Baker (2021) raised concerns regarding the accuracy and reliability of AI-generated content, the potential for misuse or overreliance on AI tools, and the ethical implications related to privacy and data usage. Several scholars have also raised concerns regarding overreliance on AI-generated output that may obscure learners' understanding of underlying linguistic structures. Critics argue that when learners delegate idea generation, organization, and language formulation entirely to AI, germane cognitive load may be reduced, limiting opportunities for learning autonomy and schema construction (cf. Barrot, 2023; Chomsky, 2023; Derakhshan & Ghiasvand, 2024). These concerns align

closely with CLT predictions that learning effectiveness declines when productive cognitive effort is bypassed rather than supported.

In summary, prior research demonstrates that AI offers substantial potential to enhance EFL learning efficiency, personalization, and engagement. However, when viewed through the lens of Cognitive Load Theory, its effectiveness depends not on the technology itself, but on how it is pedagogically designed and regulated. This theoretical perspective provides a robust foundation for analyzing teachers' and students' perceptions of AI integration at Wenzao University and for interpreting the cognitive and pedagogical implications of AI-assisted EFL learning.

3. Research Methods

The results of this small-scale study were obtained through a quantitative and qualitative analysis of data collected from the English Department students and teachers at Wenzao University (Taiwan). To collect data, a Google Form was designed to survey students and teachers in the English Department. The quantitative data are presented numerically in the form of charts, whereas the qualitative data consist of descriptive information obtained from open-ended questionnaire items, allowing for deeper and more comprehensive analysis. The survey aimed to understand their perspectives on AI-assisted learning and teaching, respectively, and their experiences using AI tools. The achieved goal was to gather input from at least 60 English Department students and 10 English teachers. The questionnaire consisted of different questions, such as multiple choice, Yes/No, and open-ended questions, to gain a deeper understanding of AI implementation in EFL at Wenzao University. Relevant recent literature on AI implementation in English teaching and learning was reviewed and synthesized. Questionnaire results on AI integration in EFL education were interpreted through the lens of Cognitive Load Theory (CLT). In addition, classroom observations drawn from the investigator's long-term teaching experience provide illustrative examples of current pedagogical practices. Through this research, the findings contribute new insights into the application of AI in English language education.

4. Results and Discussion

4.1. Results of the Teachers' Survey

To investigate the usage of AI teaching tools among instructors in the Department of English at Wenzao Ursuline University of Languages, this study conducted a small-scale questionnaire survey, analyzing whether teachers frequently utilize AI in their English teaching practices. 11 Wenzao English teachers participated in this survey. Through this survey, the study aimed to understand Wenzao instructors' acceptance of AI tools and their actual usage in teaching to further explore the role and impact of AI in English language instruction. In addition, this research sought to investigate teachers' perspectives and suggestions regarding the future development of AI teaching tools, which may serve as a reference for future educational applications and resource planning. To achieve the above purposes, the questionnaire was designed around six core questions, focusing on the frequency of AI tool usage, the perceived necessity of AI integration, commonly used AI applications, specific purposes for using AI, obstacles to implementation, and the potential impacts of AI on English teaching. The results are presented in the form of diagrams and charts in **Appendix I.**

According to Q1, 54.5% indicated that they "*frequently use"* AI teaching tools. This suggests that half of the respondents have incorporated AI into their regular teaching routines, demonstrating a certain level of acceptance and hands-on experience. On the other hand, another half (45.5%) reported that they "*do not frequently use"* AI, indicating that there are still some reservations or challenges in adopting this technology. These may include insufficient technological resources, unchanged teaching habits, or concerns about the effectiveness of AI tools.

According to Q2, the majority believe that applying AI in English teaching is "*moderately necessary"*. The highest percentage (27.3%) selected the 41%–50% range, indicating that, while AI is generally seen as beneficial to teaching, most teachers still lean toward traditional methods, and AI has not yet become an indispensable tool in education. So, according to the answer to the second question, it is evident that the frequency of AI usage among Wenzao English teachers varies significantly. One teacher rated AI's necessity extremely low (1%–10%), while another rated it extremely high (91%–100%). This wide range suggests that teachers' acceptance of AI is influenced by multiple factors, such as personal teaching styles, prior experience with technology, and available support or training. Overall, while full integration of AI is not yet common, most teachers demonstrate an open attitude toward its use. This openness indicates a potential for future growth, especially if barriers such as training, ethical concerns, and content compatibility can be addressed. To facilitate this, the university or departments might consider offering more professional development opportunities, sharing successful case studies, and promoting collaboration among faculty to explore innovative teaching methods using AI.

In Q3, several widely used AI applications were provided as multiple-choice options. An additional "Others" option was included, allowing teachers and students to specify the AI applications they use. The survey results revealed that teachers have adopted a range of AI tools to enhance various aspects of English language instruction. Among these, *ChatGPT* stands out as the most widely used tool. Its ability to generate human-like text responses makes it especially useful for creating conversational practice, offering writing assistance, and providing instant feedback on language use. In addition, *TTSMaker* is also used by some teachers. This tool converts text into natural-sounding speech in MP3 format, supporting students' listening comprehension and pronunciation practice, which are critical skills for language acquisition. This program is popular because it is free and does not require any registration. Furthermore, the user can choose a male or female voice with an American or British accent. Other tools mentioned include *Grammarly* and *NoteBookLM*, each used by one teacher, respectively. *Grammarly* serves as a powerful grammar and writing correction tool that helps students improve the accuracy and clarity of their written English. *NoteBookLM*, on the other hand, aids in organizing study materials and generating summaries, thereby enhancing students' ability to manage and review learning content effectively. Lastly, *Whisper* was reported by one teacher. As an advanced speech recognition system, *Whisper* enables accurate transcription of spoken language, which is particularly valuable for listening exercises and the development of learners' note-taking skills. These findings indicate that teachers are not only relying on *ChatGPT* but are also actively exploring diverse AI tools to address various learning needs. This trend reflects the growing flexibility and adaptability of AI technologies in enriching English language education and catering to different aspects of language skills development.

According to Q4, most instructors reported using AI for information searching, indicating that AI serves as an effective tool for saving time and improving preparation efficiency. Additionally, some instructors stated that they use AI to create tests and design teaching activities, demonstrating that AI plays an important role in assessment creation and classroom activity planning. Moreover, half of the instructors reported using AI to create presentations, suggesting that AI is also helpful in the production of visual teaching materials. A few instructors mentioned using AI for instructional planning. Although the number is relatively low, it still indicates that there is a potential for AI to be further developed in the area of comprehensive lesson planning. Overall, instructors generally regard AI as a useful tool for enhancing teaching efficiency and creativity, especially in information searching and preparation of teaching materials.

According to Q5, among all the responses, the most frequently mentioned obstacle of using AI was *"too complicated to use,"* selected by 75% teachers. This indicates that user-friendliness and the ease of operation are key factors influencing whether teachers adopt AI tools. On the other hand, instructors need to enhance their own digital literacy through workshops and self-directed learning. In addition, half of the teachers stated that *"the teaching content is not suitable for AI",* suggesting that there may be a mismatch between the nature of certain subjects or courses and the application of AI. Other individual responses included:

- **"Concern about causing a distant relationship with students"**, showing that some teachers value the quality of teacher-student interaction.
- **"Concerns about data privacy"**, reflecting worries about information security, when using AI tools.
- **"Cost concerns"**, indicating that budget limitations may prevent some teachers from accessing advanced or paid AI tools.
- **"Worries about students relying on AI to generate writing"**, highlighting concerns about students' learning processes and academic integrity.

According to Q6, most teachers pointed out that AI can help save time spent on searching for and organizing teaching materials, making lesson preparation more efficient. It can also speed up time-consuming tasks such as translation and information retrieval, allowing teachers to focus more on lesson content and student interaction.

4.2. Results of the Students' Survey

This part presents the data evaluation of the surveys conducted on second- and third-grade students of the English Department at Wenzao Ursuline University of Languages, Southern Taiwan. The number of students participating in the survey was 62. The questionnaire included multiple-choice and open-ended questions. It aimed to understand students' frequency of AI use, their choice of AI programs, the difficulties they encountered while using AI, the potential impact and future direction of AI in education, and whether they are willing to continue using AI tools to support their English learning in the future. The results are presented in the form of diagrams and charts in **Appendix II**.

According to Q1, as many as 83.9% of the students answered "*Yes*," indicating that they have frequently used AI tools to assist their learning. In contrast, only 16.1% responded "*No*," showing that they have not yet fully incorporated AI into their learning process.

According to Q2, the frequency of students using AI for learning is quite diverse. Overall, most students fall into the mid-to-high usage range. Among them, the highest proportion, 19.4%, reported using AI at a frequency of 81% to 90%, indicating that this group has actively integrated AI into their learning and that AI has become an indispensable tool in their learning process. Following closely are the 31%–40% and 71%–80% ranges, each accounting for 17.7%, suggesting that many students see AI as a regular and stable learning support tool. The latter can solve problems independently, while also relying on AI when needed. In addition, 12.9% of students reported an AI usage rate of 51%–60%, and 11.3% fall within the 61%–70% range, meaning nearly a quarter of students are moderate to high users of AI. In contrast, only 1.6% of students reported a usage frequency of 1%–10%, showing that very few students rarely use AI for learning. This may be because they still prefer to rely entirely on their own abilities to solve problems during the learning process. Overall, the data reflect that most students have become accustomed to and dependent on AI for academic support and knowledge acquisition, with only a small percentage choosing to use it infrequently or not at all. This trend highlights that AI tools are rapidly becoming an indispensable part of modern learning.

According to Q3, *ChatGPT* is the most popular AI tool, accounting for 98.4% (61) of the total respondents. This indicates a high level of acceptance and practicality among English majors. *Grammarly* ranks second, with 24.2% (15) of students using it, showing that students heavily rely on such language-support tools for English writing and grammar correction. *Gamma* 11.3% (7), *DeekSeek* 9.7% (6), and *NoteBookLM* 6.5% (4) are used by fewer students and may serve different purposes, such as presentation design, data organization, or learning assistance. In fact, almost all students use *Canva* for their presentations, which was excluded from the list due to its widespread use. *TTSMaker* is used by only one student, while other AI tools like *Toko*, *MagicSchool*, *123apps*, *Felo*, *Whisper*, and *Vidnoz* were not chosen at all. This suggests that some AI applications are still not widely known or accepted by students, either due to low awareness or limited functionality. Overall, the data reflect a growing reliance on AI tools among students, especially multifunctional and user-friendly applications like *ChatGPT*, which has become an essential aid in English learning, probably due to its simplicity of use.

According to Q4, Searching Information 77.4% (41) and English Writing 75.5% (40 students) are the two most common uses of AI among students. This indicates that the capabilities of AI in information retrieval and writing assistance are highly valued by students, helping them save time and improve language and content quality. Reading 58.5% (31) and Creating presentations 37.7% (20) also show relatively high usage rates, suggesting that AI is definitely practical in enhancing reading comprehension and visual presentation. On the other hand, the use of AI for pronunciation practice 22.6% (12), speaking practice 15.1% (8), video creation 11.3% (6), and listening practice 5.7% (3) is comparatively lower. This may be related to the current immaturity of AI tools in oral interaction and multimedia production (e.g., robotic voice or poor students' speech recognition due to their low voice), or simply reflects students' usage habits.

According to Q5 about hindrance of using AI, based on the statistics, the most commonly reported issue is the need to pay a fee with 58.1% (36), indicating that the cost of subscription-based AI tools is the biggest obstacle for students. Many powerful AI platforms, such as *ChatGPT* or *Grammarly*, require a subscription or payment to unlock full features. For students with a heavy workload, the free versions may not be sufficient, which can reduce their learning efficiency. Secondly, lack of trust in AI with 35.5% (22)

is also a significant challenge. This may stem from concerns about the accuracy, reliability, or ethical implications of AI-generated content. The desire to complete assignments independently with 29.0% (18) shows that although some students understand the convenience of AI tools, they prefer to maintain their autonomy in learning and not rely entirely on AI assistance. In addition, not knowing how to use AI 8.1% (5) and not knowing what AI can be used for 19.4% (12) indicate that some students are still unfamiliar with the applications and functions of AI. This suggests a need for further guidance or instruction. Meanwhile, 16.1% (10) of students reported encountering no difficulties at all, indicating that they are already able to use AI effectively and integrate it into their learning.

According to Q6, 79% (49) believe that AI will not be able to replace teachers in the future, while only 21% (13) think AI may take over the role of teachers. It indicates that most students still hold a high level of recognition and trust in the role of teachers in education.

4.3. Data Analysis

According to the survey results collected from both teachers and students of the English Department at Wenzao University, artificial intelligence (AI) has gradually begun to play a role in English teaching and learning. However, their frequency of use, purposes, and concerns differ substantially. These differences can be systematically interpreted through the prism of **Cognitive Load Theory (CLT)**, which helps explain not only *how* AI is used, but *why* its adoption varies across stakeholder groups.

4.3.1. Teachers' Perspective

Based on responses from English Department teachers, slightly more than half reported that they *"frequently use"* AI teaching tools, while the rest use them less often or remain cautious. This suggests that the adoption of AI in English teaching is still in its adjustment phase, reflecting the ongoing balance between traditional pedagogy and technology-assisted instruction. The most commonly used AI tools are *ChatGPT* and *TTSMaker*, both of which were used by all surveyed teachers. These tools are mainly applied for data searching, test creation, and lesson design, indicating that teachers primarily view AI as a means to enhance lesson preparation efficiency and creativity. From a CLT perspective, teachers' use of AI primarily reflects an effort to **reduce extraneous cognitive load** associated with routine instructional tasks. The survey results indicate that instructors most frequently employ AI for information searching, test creation, presentation design, and lesson preparation. These activities are cognitively demanding yet pedagogically peripheral; by automating them, AI allows teachers to allocate more cognitive resources to higher-level instructional decision-making, classroom interaction, and pedagogical reflection.

Nevertheless, teachers also reported significant barriers to AI adoption, particularly the perception that AI tools are "too complicated to use." This finding suggests that, rather than reducing cognitive burden, some AI tools **introduce additional extraneous load** through complex interfaces, unclear functionality, or insufficient training. Concerns regarding data privacy, cost, and pedagogical incompatibility further compound this load, requiring instructors to expend cognitive effort on tool evaluation and risk management instead of teaching itself. Other challenges include incompatibility with teaching materials, concerns over data privacy, cost issues, and fears of students becoming overly dependent on AI.

While most responses emphasized the positive impact of AI on teaching, some teachers also expressed concern that overreliance on AI might weaken students' autonomous learning and language production abilities, or even become a source of distraction. From the perspective of Cognitive Load Theory (CLT), unregulated AI use may reduce learners' germane cognitive load, which is essential for learners' efficiency. When students rely excessively on AI-generated texts, particularly in academic writing, they may bypass the cognitive processes involved in formulating ideas, organizing them, and making linguistic decisions. It has been recently noticed that even in autobiographical writing tasks (e.g., narratives of 'my memorable event' or 'my influential person'), students' essays sometimes appear impersonal and formulaic, suggesting overuse of AI-generated language. To counteract this tendency, a two-stage writing design was implemented in the writing class by the investigator. Students first produce handwritten compositions in class without AI, which are later evaluated by the instructor's feedback on content, organization, and language use. Then they type and revise the text digitally (e.g., in Google Docs), using ChatGPT's prompts provided by the instructor only for 'suggestions for improvement', rather than direct correction or rewriting. A carefully designed prompt restricted AI output to highlighting potential issues and offering revision guidance, thereby requiring students to independently identify, evaluate, and implement changes. This approach positions AI as a cognitive scaffold rather than a substitute for learners' autonomy. From a Cognitive Load Theory perspective, this instructional design deliberately preserves learners' germane cognitive load by requiring independent idea generation and organization before AI-supported revision. AI was used as a scaffold for metacognitive reflection rather than a substitute for linguistic decision-making. As Han (2024) argues, AI in language education is most effective when embedded within well-designed instructional frameworks that preserve learners' active cognitive engagement. AI supports germane load only when learners actively engage with its feedback (e.g., revising drafts, evaluating suggestions, comparing alternatives, etc.). Therefore, the use of AI should be moderated and properly guided. Educators should not rely entirely on AI, but instead use their professional judgment to guide students in using technological tools appropriately.

Despite these obstacles, teachers generally hold a positive attitude toward AI, acknowledging its potential to save time, assist in curriculum planning, and encourage teaching innovation. Notably, many emphasized that AI should act as an assistant rather than a replacement. One teacher remarked, *"We are the masters of AI, not its slaves"*. This statement reflects a rational and balanced perspective, while embracing the potential of AI. Therefore, educators should still exercise professional judgment, foster human interaction, and uphold the core values of pedagogy.

Overall, the findings suggest that although AI integration in English teaching is still evolving, teachers are open to its growth. With clearer guidelines, better training, self-learning, and more intuitive tools, AI is likely to play an even greater role in supporting effective and innovative language education. But whether teachers will fully accept the integration of AI into teaching in the future depends on their motivation, which remains to be seen. The instructors emphasized that it is also important to remain aware of the risks associated with AI's convenience and to ensure that human interaction and professional integrity remain central to the teaching process. Future larger-scale research could further explore the specific ways in which AI is being applied, the obstacles teachers encounter, and the kinds of support systems they require. Such insights can help

develop more practical strategies to support teachers in effectively leveraging AI to enhance teaching outcomes.

4.3.2 Students' Perspective

A total of 62 English majors participated in the student survey, and the majority reported having used AI to assist their learning, indicating that AI has become part of their study habits. These data reveal that AI technology has gradually become integrated into students' learning experiences, serving as an effective tool for acquiring knowledge and overcoming learning difficulties. Students' responses indicate a substantially higher frequency of AI use compared to teachers, particularly for writing, grammar correction, and information searching. In EFL contexts, tasks such as writing and grammar correction require learners to coordinate multiple linguistic components at once, including lexical choice, syntactic accuracy, semantic coherence, and pragmatic appropriateness. Because these elements are highly interdependent and cannot be meaningfully separated, the intrinsic cognitive load of such tasks remains high, particularly for learners with limited language proficiency. From a CLT standpoint, AI tools help manage this complexity by reducing extraneous load through instant feedback, linguistic scaffolding, and efficient information retrieval, making learning tasks more cognitively manageable and thus enhancing learning autonomy. However, a small number of students still hold a reserved attitude toward using AI, possibly due to unfamiliarity with the technology or a preference for solving problems independently. Overall, the frequency of students using AI in learning is steadily increasing, particularly in terms of supporting personalized learning and addressing challenging problems. AI as a cognitive support system should facilitate understanding rather than replacing learning.

The most popular tools were *ChatGPT* and *Grammarly*, primarily used for English writing, grammar correction, and information searching. In contrast, fewer students used AI for speaking, pronunciation, or listening practice, which may relate to the current limitations of AI in oral interaction technology. Overall, the data show that students at Wenzao primarily use AI for text-based tasks and information gathering, with a strong reliance on AI for English writing and research. This not only highlights the academic value of AI tools but also suggests that teachers can further integrate AI technology into their curriculum design to support students' learning across listening, speaking, reading, and writing.

As mentioned above, recent studies have extensively examined the use of ChatGPT and related AI tools in EFL contexts, highlighting both pedagogical benefits and emerging concerns. Systematic reviews indicate that ChatGPT can effectively support language learning by enhancing writing quality, providing immediate feedback, and increasing learner autonomy, particularly in materials development and assessment (Al-Khresheh, 2024; Gutai et al., 2024; Koraishi, 2023). Empirical research further suggests that AI-mediated interaction may improve speaking performance and reduce anxiety, especially in low-stress practice environments (Çakmak, 2022). However, scholars also caution against uncritical adoption. Teachers express ambivalent attitudes, recognizing ChatGPT's instructional potential, while raising concerns about overreliance, reduced learner autonomy, and ethical issues related to academic integrity (Derakhshan & Ghiasvand, 2024). Han (2024) therefore calls for more systematic, theory-driven research to clarify how AI tools can be pedagogically integrated to support, rather than replace, core language learning processes. Overall, the literature suggests that ChatGPT is most

effective when used as a guided support tool within well-designed instructional frameworks.

Although most students have access to and are using AI to support their studies, some still face barriers related to cost for subscription, lack of trust, and a lack of knowledge. These challenges represent sources of extraneous cognitive load that may limit effective AI adoption. Learners must devote additional cognitive effort to verifying accuracy, managing access, or navigating unfamiliar tools, which can impede the learning-related processing. So it may be useful for the institution to offer instructional courses to enhance students' AI literacy and guide them in using AI tools responsibly and ethically. This could improve learning efficiency while maintaining academic integrity.

Although AI demonstrates great efficiency and accuracy in areas such as information retrieval, grammar correction, and assessment support, students generally believe that these functions cannot fully encompass the educational meaning and interpersonal value that teachers provide. Many students view teachers not only as knowledge transmitters but also as guides, motivators, and communicators. From a CLT perspective, teachers play a crucial role in regulating cognitive load, helping learners interpret feedback, prioritize learning goals, and engage meaningfully with content, which are the functions that AI currently cannot replicate. One of the most common explanations students gave was: "*Teachers have emotions, but AI does not.*" This is especially important in language learning, where interaction and cultural transmission between teachers and students are essential. Only a small number of students believe that AI has the potential to replace teachers in certain aspects in the future. These students may value AI's efficiency in grading, guiding autonomous learning, and providing personalized instruction. In particular, for repetitive or mechanical teaching tasks, AI can significantly reduce the workload of teachers. The future of educational technology should focus on collaboration between humans and AI, rather than full dependence on artificial intelligence.

Taken together, the results revealed that both teachers and students hold generally positive attitudes toward AI, but their frequency of use and dependence differ. Students are more familiar with and reliant on AI, viewing it as an important everyday learning tool. Teachers, on the other hand, adopt a more cautious approach, using AI selectively to enhance efficiency and lesson design rather than directly applying it to teaching interaction. Both groups recognize AI's potential to boost efficiency and creativity, while remaining concerned about its usability, cost, and risk of overreliance. These findings are consistent with previous studies mentioned above, which suggest that AI in education should function as a supportive and adaptive tool, assisting teachers in personalized instruction, reducing administrative workload, and enhancing learning outcomes. However, both teachers and students emphasized that AI should not replace the human element in education, stating that AI is *"just a tool—no more, no less"* or *"just a smart tool for learning"*. Future educational technology should move toward human-AI collaboration, allowing AI to assist teachers in providing real-time feedback and individualized guidance, while preserving the teacher's key role in emotional communication and pedagogical decision-making.

5. Conclusion

This study examined the integration of Artificial Intelligence (AI) in English education from both teachers' and students' perspectives. The findings indicate a growing

incorporation of AI into EFL teaching and learning, alongside clear benefits and persistent challenges. Teachers generally view AI as a supportive tool that reduces their extraneous cognitive load, such as time-consuming lesson preparation, instructional design, or mechanical language correction, while preserving and supporting germane cognitive load, which is essential for deep learning efficiency. For that purpose, tools such as *ChatGPT* are widely used for writing, speaking, listening, and information search by both teachers and students. However, instructors also expressed concerns regarding operational complexity, data privacy, misalignment with course content, and the potential risk of reduced student engagement, highlighting the need for professional training and institutional support. Unregulated AI use, particularly in productive language tasks, risks reducing learners' germane cognitive load and thus weakening their learning outcomes. Students, meanwhile, value AI for its instant feedback, personalized learning support, and flexibility, particularly in writing and information-based tasks, yet strongly affirm the irreplaceable role of teachers in emotional support, interaction, and guidance. The findings, therefore, highlight the importance of pedagogically guided AI integration, supported by institutional training, ethical guidelines, and AI literacy development.

Overall, the study suggests that a hybrid learning model, in which teachers provide cognitive regulation, emotional support, and pedagogical judgment, while AI functions as a carefully designed learning scaffold, represents the most sustainable direction for future EFL education.

6. Limitations

Despite the study's contributions, there are several limitations that should be acknowledged. First, it adopts a small-scale case study design conducted at a single higher education institution in Taiwan, which limits the generalizability of the findings to other educational contexts. Second, although Cognitive Load Theory (CLT) is used as the main analytical framework, cognitive load was inferred indirectly from task characteristics and participants' perceptions rather than measured through objective cognitive load instruments, and therefore, interpretations of intrinsic, extraneous, and germane cognitive load should be treated with caution. Such reliance on self-reported data may be subject to bias and may not fully capture actual classroom practice. Finally, given the rapid development of AI technologies, participants' experiences and attitudes toward tools such as *ChatGPT* and *Grammarly* may evolve over time. Future research employing larger and more diverse samples, multiple data sources, direct measures of cognitive load, and longitudinal designs would help strengthen the robustness and applicability of the findings.

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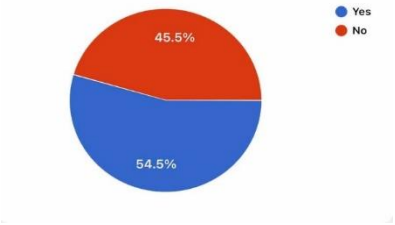
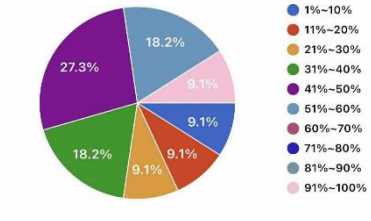
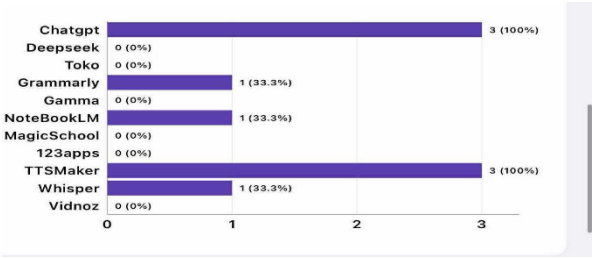
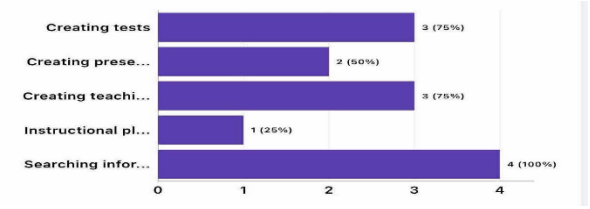
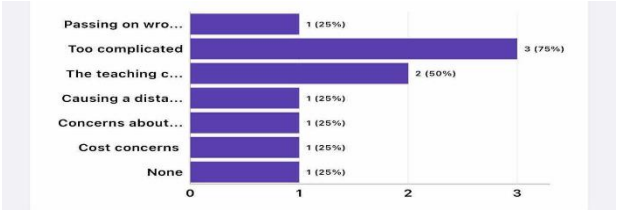
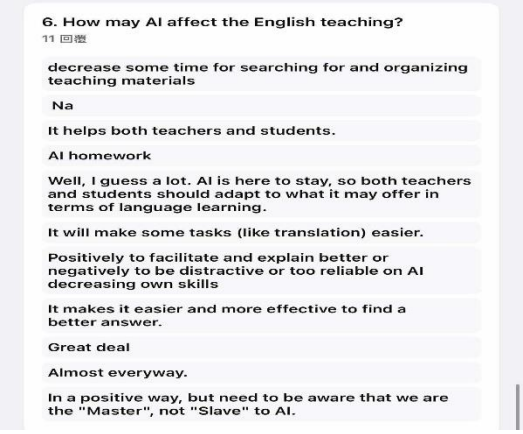
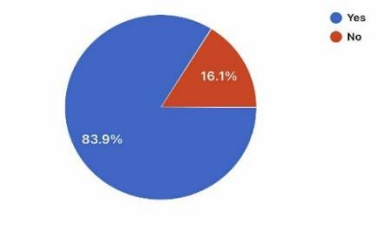
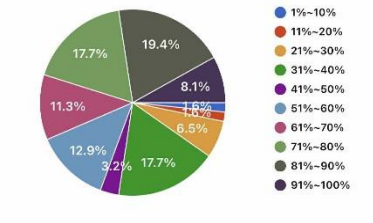
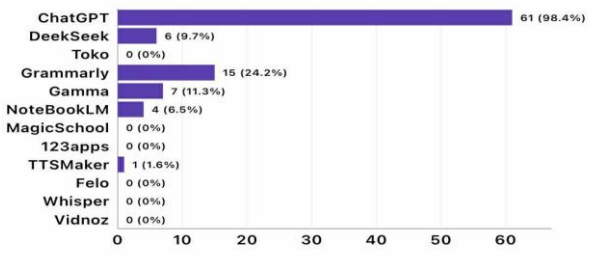
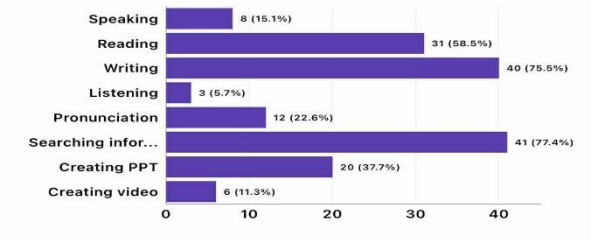
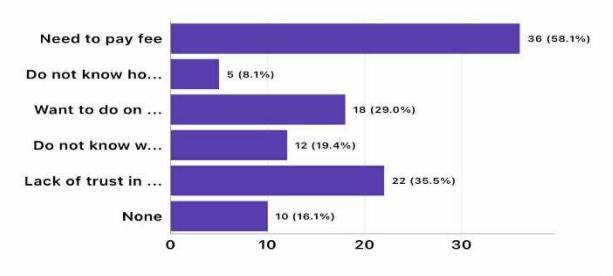
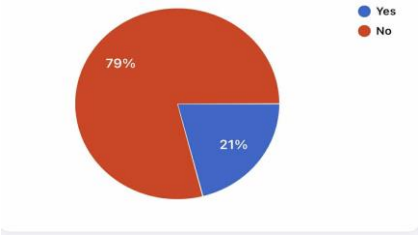
Appendix I: Teacher's Survey

1. Do you use AI often in teaching English?	
2.Rate the necessity of applying AI in English teaching?	 To better understand the data, the following interpretation outlines what each percentage range represents in terms of AI usage frequency in English teaching: 1%–10% (Blue): Teachers in this group almost never use AI in their teaching. This may reflect a lack of familiarity with AI tools or skepticism about their effectiveness. 11%–20% (Red): These teachers rarely use AI, possibly experimenting only on occasion. Their limited usage could indicate uncertainty or limited access to resources. 21%–30% (Orange): AI is occasionally integrated into certain lessons. This suggests a growing interest, but usage is still not consistent. 31%–40% (Green): AI tools are used in specific units or contexts, showing that these teachers are exploring targeted ways to incorporate AI when it fits the lesson content. 41%–50% (Purple): These teachers show moderate use, with AI involved in about half of their lessons, indicating a balanced but cautious adoption.

	51%–60% (Light Blue): AI tools are used in more than half of the lessons, suggesting a higher level of integration and reliance. 61%–70% (Peach-Red): Teachers in this category use AI in most lessons as a key support tool. This reflects a strong belief in the effectiveness of AI in facilitating learning. 71%–80% (Dark Blue): AI is used frequently, in nearly every class, indicating high confidence in AI's educational value. 81%–90% (Light Green): AI is seen as essential, with only a few exceptions. This may reflect teachers who have well-developed systems or strategies for using AI. 91%–100% (Pink): Teachers at this level have fully integrated AI into all aspects of their teaching, which may be driven by strong digital literacy or institutional support.
3. Which AI apps do you frequently use?	
4. What do you use AI for?	
5. What hinders you from using AI apps in your teaching?	
6. How may AI affect English teaching?	

Appendix II: Students' Survey

1. Do you use AI often in learning English?	
2. Rate the necessity of applying AI in English learning?	 To better understand what these percentages represent, here is a brief interpretation of each range in terms of AI usage frequency: 1%–10% (The dark blue part): Almost never use AI in teaching 11%–20% (The red part): Rarely use AI, only occasional experimentation 21%–30% (The orange part): Occasionally integrate AI in some lessons 31%–40% (The green part): AI is used in specific units or situations 41%–50% (The purple part): Moderate use; about half of the lessons involve AI 51%–60% (The light-blue part): More than half of the lessons use AI tools 60%–70% (The peach-red part): AI is used in most lessons as a key support tool 71%–80% (The light-green part): AI is used frequently, in almost every class 81%–90% (The dark-green part): AI is an essential teaching tool; only a few lessons do not use it 91%–100% (The black part): AI is fully integrated into all teaching activities
3. Which AI apps do you frequently use?	

4. What do you use AI for?	
5. What hinders you from using AI apps in your learning?	
6. Do you think AI will replace the teacher in the future?	 No (The red part): AI will not replace teachers in the future. Yes (The blue part): AI will replace the teachers in the future

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