

University of Tartu  
Faculty of Social Sciences  
Institute of Education  
Curriculum of Educational Technology

Dejan Adam, Mohamed Nidal Ouazzani

**NAVIGATING THE ALGORITHMIC ASSISTANT: EXPLORING THE POTENTIAL  
AND PITFALLS OF CHATGPT IN ESL WRITING FUTURES (A LITERATURE  
REVIEW)**

MA thesis

Supervisors:

Emanuele Bardone, PhD

Yaroslav Opanasenko, MA, Junior Researcher

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## Table of Contents

<b>Abstract.....</b>	<b>3</b>
<b>1 Introduction.....</b>	<b>4</b>
1.1 The Generative AI Wave in Education.....	4
1.2 Rationale and Purpose of the Study.....	4
<b>2 Theoretical Overview.....</b>	<b>6</b>
2.1 The Enduring Challenges of ESL Writing.....	6
2.2 Situating the Study: Relevant Theoretical Frameworks.....	6
2.3 The ongoing Evolution of AI in Language Learning.....	8
2.4 The Effects of AI on ESL Student Motivation and Self-Regulation.....	10
2.5 AI vs. Human Feedback in ESL Writing.....	12
2.6 Ethical and Pedagogical Challenges in AI-Assisted Writing.....	14
<b>3 Methodology.....</b>	<b>15</b>
3.1 Research Design: A Systematic Literature Review.....	15
3.2 Data Collection Methods: Source Identification and Selection.....	16
3.3 Data Extraction and Thematic Analysis Approach.....	18
3.4 Ensuring Reproducibility and Replicability.....	19
<b>4 Discussion: ChatGPT's Multifaceted Role in ESL Writing.....</b>	<b>20</b>
4.1 Synthesizing the Evidence: Key Themes from the Literature.....	20
4.2 The Upside - Reported Benefits and Affordances.....	21
4.3 The Downside - Identified Challenges and Limitations.....	22
4.4 Bridging the Gap - Pedagogical Approaches and Integration.....	25
4.5 Voices from the Field - Student and Educator Perspectives.....	26
4.6 How We Know What We Know - Methodological Landscape.....	27
4.7 Critical Evaluation: Weighing the Evidence, Addressing Gaps.....	28
4.8 Limitations of the Current Review.....	30
4.9 Final Thoughts: Navigating the Future of AI in ESL Writing Education (and Beyond).....	30
<b>Acknowledgments Pt. 1.....</b>	<b>32</b>
<b>Acknowledgments Pt. 2.....</b>	<b>33</b>
<b>Author's Declaration.....</b>	<b>34</b>
<b>Author's Contributions.....</b>	<b>34</b>
<b>Bibliography.....</b>	<b>35</b>

**Abstract**

This study attempted to explore ChatGPT's effectiveness in supporting ESL learners' academic writing, while addressing potential risks and ethical considerations. The study was accomplished by conducting a limited yet systematic literature review of academic articles in the field, published from 2023 onward and available on ResearchGate. On one hand, major findings indicated benefits such as improved grammatical accuracy and personalized feedback. On the other hand, significant challenges include overdependence, diminished critical thinking, academic integrity issues, potential bias, and feedback limitations. The discussion was extended then to aspects such as teaching and learning strategies, stakeholder perceptions, and the role of institutional leadership approaches. The study concluded with proposed guidelines for ChatGPT's responsible implementation highlighting ESL pedagogy, policy implications, and possible directions for the research in the future.

**Keywords:** ChatGPT, ESL Writing, Generative AI, Academic Writing, AI in Education, Feedback, Pedagogy, Academic Integrity, Critical Thinking.

## **1 Introduction**

### ***1.1 The Generative AI Wave in Education***

The last few years have encountered a remarkable increase in the power and availability of Generative Artificial Intelligence (GenAI), preparing the way for a major shift in technology with serious consequences for various segments of society on a larger scale. The use of AI technologies in education, more precisely in the context of language learning, has been gaining rapid momentum over a relatively short period of time (Yan, 2023; Adiguzel et al., 2024; ) In other words, since the release of OpenAI's ChatGPT in late 2022 and its availability for public use, Large Language Models (LLMs), have created substantial interest paralleling with many heated or even controversial discussions. Moreover, the exponentially growing adoption of ChatGPT as a tool capable of generating language-based answers, correcting grammatical mistakes, and enhancing student engagement, called for the systematic investigation of its true impact on educational practices (Guo & Wang, 2023; Marzuki at al., 2023; Meniado, 2024; Ivenz & Polakova, 2024) In other words, as GenAI tools are capable of producing text strikingly similar to human writing, answering questions, and summarizing content, they have the capacity to significantly transform the educational sector (Bonner at al., 2023; Escalante at al., 2023; Anson, 2024; Miranda, 2024; Kim & Detrick, 2025; Shi at al., 2025). These developments have globally led educators, researchers, and policymakers to reflect upon how these technologies can be used to improve the learning process while managing associated risks. Therefore, the relevance of GenAI tools to language learning education is important considering that tools like ChatGPT provide opportunities for supporting the acquisition, practice, and assessment of writing skills in innovative ways (Chan & Hu, 2023; Harunasari, 2023; Adiguzel at al., 2024; Wang & Dang, 2024).

### ***1.2 Rationale and Purpose of the Study***

The adoption of tools such as ChatGPT into the educational domain has accelerated with rapid proliferation, creating a space, or even a pressing demand, for thoughtful evaluation through scholarly inquiry. Presently, as AI innovations accelerate with fast pace, understanding the implications (especially long-term ones) of these tools and technologies on the writing skills of (ESL) learners require proper assessment (Chan & Hu, 2023; Imran & Almusharraf, 2023; Harunasari, 2023; Adiguzel at al., 2024). On a positive note, there is a permanently growing

body of literature focusing on the application of AI in education. However, in regard to the ESL writing-related scholarship, a body of research demonstrates that the emerging likewise the existing literature requires (at least to a certain extent) holistic approach and systematic mapping as individual authors focus on particular challenges by either analyzing advantages or drawbacks along with important considerations and risks. In addition, an impression is given that the diverse linguistic, cognitive, and emotional needs of ESL writers require targeted research on the intersection of these tools with their unique learning processes and difficulties. Last but not the least, as documented by several researchers pedagogical recommendations and best practices guidelines frameworks for the responsible and effective institutional integration of GenAI/ChatGPT require further attention (Guo & Wang, 2023; Miranda, 2024; Nazaretsky, 2024; Ninaus & Sailer, 2024).

This thesis attempts to systematically review and synthesize the most recent academic literature (published 2023 onwards) available foremost via ResearchGate. More precisely, it tries to analyze a certain number of publications focusing on the usage of ChatGPT for writing acquisition, integrating experiences from teaching ESL practices, pedagogy of AI in education, and automated feedback systems. By synthesizing current empirical findings concerning the benefits, challenges, and pedagogical strategies related to ChatGPT in the ESL writing domain, this study aims to propose a fresh view of the issues at stake. In other words, it represents a modest endeavor meant to evaluate evidence-based practices for educators navigating this new technological landscape, guide learners in using these tools ethically and critically (or vice-versa), and contribute to the development of related institutional policies. Last but not the least, it attempts to articulate thoughts on what should be researched in this fast changing landscape of technology and ESL writing education.

To navigate the complexity of the field, this study is guided by two central research questions:

1. How can ChatGPT be effectively leveraged to support ESL (English as a Second Language) students in overcoming the persistent challenges of academic writing?
2. What are the potential risks and ethical implications associated with integrating ChatGPT into the ESL writing domain, and how can these be mitigated to ensure responsible educational use?

## 2 Theoretical Overview

### 2.1 *The Enduring Challenges of ESL Writing*

The extent to which ESL learners can successfully cope with writing continues to remain a generally accepted challenge regardless of the advancement of linguistic teaching approaches. In other words, mastering writing requires more than having a general language fluency as there are numerous obstacles that ESL learners face at once (Moses & Mohamad, 2019). On the surface, they deal with appropriate grammar use, vocabulary, sentence structure, and other mechanical aspects of writing such as punctuation and spelling, which are sometimes influenced by the first language interference (L1) (Richards & Renandya, 2002). More advanced students, particularly those at higher levels of ESL learning, need to master coherence and argument building in addition to accuracy in grammar and vocabulary (Ferris, 2009). Equally complex and difficult to comprehend are academic disciplinary norms related to reasoning in presenting arguments, use of formal language, proper referencing, and compliance to specific standards for literature reviews or research papers. Often such norms and conventions are complex and randomly taught, if at all. In other words, conducting research in terms of drafting, writing, and critical revisioning require advanced cognitive skills that may be difficult to transfer across cultures and languages (Swales & Feak, 2012).

Furthermore, emotional components such as inadequate motivation, anxiety related to writing, low confidence, and difficulty related to forming an authentic authorship could create critical challenges for the learners. Such complex problems tend to be rather serious because having the ability to write academically is typically a prerequisite for successfully accomplishing goals in education and employment. In that regard, as many ESL students face challenges when attempting to write more advanced essays, the ability to construct complex arguments and sophisticated academic papers, makes the prospects of AI assistance highly relevant. (Marzuki et al., 2023; Cao & Zhong, 2024; Ivenz & Polakova, 2024; Miranda, 2024; Solovey, 2024; Kim & Detrick, 2025; Shi et al., 2025).

### 2.2 *Situating the Study: Relevant Theoretical Frameworks*

To analyze the complexity of interactions between ChatGPT as a teaching/learning tool and the educational environment, and their impact on ESL writers, the reviewed literature points to several relevant theoretical frameworks. Their purpose is to effectively broaden the empirical

findings on how ChatGPT influences ESL writing, providing interpretations that move beyond describing reported interactions with the tool to a more complex analysis of learning, behavior, and academic engagement.

- **Socio Cultural Theory (SCT):** Following Vygotsky’s work, SCT focuses on the social aspects of learning. In regard to SCT, two concepts are highly relevant. The first one is the Zone of Proximal Development (ZPD) describing the difference between what learners can achieve independently as opposed to the outcomes while being guided and supervised. The second one is the concept of scaffolding referring to a support provided by a More Knowledgeable Other (MKO) (Mahn & Fazalehaq, 2020; McLeod, S., 2025). ChatGPT, for example, could act as an MKO while doing scaffolding for multiple writing activities. The ZPD and the independence of the learners determine the effectiveness of the support given meaning that it must be carefully crafted to decrease dependence, not the other way around. Therefore, SCT explains learning in the context of interaction and mediation (Algaraady & Mahyoob, 2023; Shi et al., 2025).
- **Technology Acceptance Model (TAM):** TAM (Davis, 1989) and its extensions have been utilized frequently to explain user’s adoption and use of new technologies. The model suggests that perceived usefulness (the extent a user believes the technology will positively affect their performance) and perceived ease of use (the extent to which a user thinks putting effort into the technology is unnecessary) are major parameters of intention for actual usage. This model helps explain factors associated with the acceptance versus rejection of ChatGPT by students and teachers, including obstacles associated with usability and/or perceived insufficiency of benefits (Yilmaz et al., 2023; Campoverde-Quezada et al., 2024; Chen et al., 2024).
- **Academic Literacies Framework (ALF):** This framework considers academic writing not as a single set of transferable skills, but rather as a variety of social practices located within particular disciplinary and institutional settings (Lea & Street, 2006; Akhtar et al., 2019). This framework encourages critical evaluation of how students engaging with technologies such as ChatGPT might reinforce dominant norms of participation or offer new ways to navigate academic discourse. ALF is meant to encourage critical inquiry into whether these tools assist in enabling students to better participate in academic practices or simply better reproduce expected forms of texts. (Alsaedi, 2024; Anson, 2024).

- **Feedback Theories:** Good feedback in ESL writing emphasizes principles such as timeliness, specificity, clarity, focus (on meaning and form), and its role in supporting metacognition. In the context of AI-generated feedback, the alignment with these principles is crucial. With ChatGPT, the concern is whether the feedback is truly formative and constructive instead of summative, or more corrective in nature without encouraging proper understanding or revision skills. (Chen et al., 2024; Huang & Mizumoto, 2024; Chan & Hu, 2023; Ali et al., 2023) The contrast of feedback given by AI and a human, be it either a teacher or peer, is a matter of an important discussion. (Huang & Mizumoto, 2024; Yan, 2023; Lo, 2023).

### *2.3 The ongoing Evolution of AI in Language Learning*

The evolution of AI integration in language education has been rapid from the adoption of early grammar checkers to implementing sophisticated generative models like ChatGPT. The teaching of English as a second language (ESL) used to depend upon human feedback which was (supposed to be) comprehensive, however, not instantaneous because of the large class sizes (Nazaretsky et al., 2024; Ninaus & Sailer, 2024). Chronologically speaking, the adoption of AI in ESL classrooms was, at first, focusing on automating monotonous activities like vocabulary drills or grammar exercises. These were non-interactive systems that provided context-free and impersonalized static corrections. The subsequent development particularly epitomized by ChatGPT enabled dynamic human-like language generation and gave learners the opportunities to participate in real conversations in real time while receiving context-appropriate feedback (Özçelik & Ekşi, 2024; Seelro & Khan, 2024; Rüdian et al., 2025). Such development represented a shift toward personalized learning as students could have received immediate customized help, which would otherwise not be available through conventional teaching (Adiguzel et al., 2024; Wang & Dang, 2024; Shi et al., 2025).

At present, modern AI systems provide well-detailed linguistic feedback with attention to grammar, vocabulary, cohesion, and even content structuring. The collective findings of several studies reveal that the use of generative AI was found to reduce long-standing issues in ESL tutoring, such as feedback delivery and personalization, noting remarkable advancement in the EFL writing competency of ChatGPT feedback users versus non-users (Song & Song, 2023; Zou

& Huang, 2023; Ivenz & Polakova, 2024;). However, one has to bear in mind that ChatGPT, an advanced LLM that has the capabilities of acting as a powerful writing support tool, is not to be considered as Deus Ex Machina even though it appears to address successfully and comprehensively some of the primary challenges faced by ESL writers.

On one hand, ChatGPT as a teaching and learning tool powered by artificial intelligence, can provide immediate feedback on written assignments due to its potential to assist with several difficult areas of knowledge acquisition for ESL learners (Chan & Hu, 2023; Harunasari, 2023; Abduljawad, 2024; Adiguzel et al., 2024). In other words, ChatGPT can be beneficial when correcting the grammar and style, offering vocabulary suggestions, assisting in brainstorming ideas, helping to structure text, and even generating explanations or examples when needed, which decreases the necessity for human grading and evaluation (Harunasari, 2023; Imran & Almusharraf, 2023; Cao & Zhong, 2024; Solovey, 2024). In that regard, research from several sources suggests that the potential advantages in enhancing linguistic precision, personal assistance, and even motivation through tailored interactive engagement are even pointing toward increased effort on learners' behalf. Last but not the least, such an individualized, dynamic, and repetitive feedback system greatly influences the learning refinement process (Marzuki et al., 2023; Ivenz & Polakova, 2024; Miranda, 2024; Kim & Detrick, 2025; Shi et al., 2025).

On the other hand, the integration of GenAI/ChatGPT in the ESL writing domain poses various challenges because it utilizes, in a sense, unlimited and unethical application of powerful technology. The collective findings of several studies reveal their concerns about the risk of overdependence on technology that leads to learners' neglecting effective skill development in writing and critical thinking, as well as impacting both authenticity and authorship (Zou & Huang, 2023; Yan, 2023; Akgun & Greenhow, 2024; Shakil & Siddiq, 2024). Students' writing skills are further exposed to risk, as AI-generated feedback is less comprehensive than teacher and peer feedback. Although the latter is often delayed, it provides richer guidance regarding argumentation, coherence, and critical thinking. On the contrary, feedback provided by AI is immediate, consistent, and scalable but lacks depth (Algaraady & Mahyoob, 2023; Ali et al., 2023; Guo & Wang, 2023; Gultekin, 2024; Nazaretsky et al., 2024). Over-reliance on AI can hinder learners' ability to analyze and construct clear responses. Moreover, with increased dependence on AI tools comes the rise of shallow communication that borders with plagiarism.

Additionally, the content produced by AI lacks credibility, as it can be filled with inaccuracies, biased outputs, and factual inconsistencies framed as truths. Last but not the least, educators remain increasingly skeptical about the usefulness of ChatGPT in grading complex types of writing assignments, including analytical and argumentative essays (Escalante et al., 2023; Anson, 2024; Campoverde-Quezada & Valdiviezo-Ramírez, 2024; Meniado, 2024).

Therefore, using ChatGPT to teach writing to ESL learners may, at first glance, be useful. However, the risk of AI bias caused by the lack of contextual comprehension, originality, and integrity, among other problematic issues, positions the tool towards being disadvantageous. The risk of using it raises additional questions regarding blurring the borders of what constitutes legitimate help as opposed to plagiarism implying a growing need for questioning ethical implications of data privacy, algorithmic bias, and equitable access (Bonner et al., 2023; Chan & Hu, 2023; Marzuki et al., 2023; Akgun & Greenhow, 2024; Anson, 2024;). This duality between the possibility of easing enduring challenges associated with ESL writing and existence of risks to learning, critical thinking, and academic integrity concerns will be further elaborated in the discussion segment.

In short, to achieve successful outcomes with ChatGPT in writing instructions among ESL learners, careful attention to pedagogical design is essential so that superficial use of feedback automation is not permitted. It is the teacher's responsibility to help students engage more deeply with the context by enabling them to critically approach AI-generated suggestions. This suggests that the most effective approach to instructional design for teaching ESL learners writing comprehension, which incorporates AI feedback, still requires human intervention (Ali et al., 2023; Chan & Hu, 2023; Guo & Wang, 2023; Cao & Zhong, 2024; Ivenz & Polakova, 2024;).

#### ***2.4 The Effects of AI on ESL Student Motivation and Self-Regulation***

Motivation and self-regulation are important aspects of learning that influence the success of language acquisition, particularly when it gets to more advanced levels. Motivation activates learners' willingness to invest sustained effort into meeting language requirements, while self-regulation helps learners plan, execute, supervise, and self-assess learning activities in a productive manner (Zimmerman, 2002). Recent advancements in Artificial Intelligence, particularly in the area of generative AI with the emergence of systems such as ChatGPT, have

shown remarkable potential in improving these domains of language learning and consequently engagement, autonomy, and motivation among learners (Guo & Wang, 2023; Hawanti & Zubaydulloevna, 2023; Huang & Mizumoto, 2024; Özçelik & Ekşi, 2024).

One of the advantages of using ChatGPT in the contexts of ESL writing classes is the enhancement of motivation through favorable feedback. In the past, ESL students have complained about delays in receiving personalized feedback negatively affecting their motivation. ChatGPT solves this problem by giving learners the opportunity to receive feedback of grammatical, lexical, syntactical and textual errors instantly. This type of response changes the learning atmosphere by diminishing the anxiety and increasing the motivation (Imran & Almusharraf, 2023; Lo, 2023; Ivenz & Polakova, 2024; Kim et al., 2025).

Apart from this focus, GenAI/ChatGPT also may foster a shift towards self-regulated learning (SRL) which gives more autonomy to ESL learners in regard to their language learning (Zimmerman, 2002, and Miranda, 2024). Incorporating ChatGPT in scaffolded writing tasks facilitates self-directed revision loops. Students filter not only linguistic errors but also analyze the language behaviors, thus fostering essential metacognitive consciousness. Such self-regulation is one of the key parameters for successful language learning, especially at more advanced levels, where learners need to be critically self-aware and able to evaluate themselves (Mizumoto & Eguchi, 2023; Mahapatra, 2024; Özçelik & Ekşi, 2024; Mo & Crosthwaite, 2025; Rüdian et al., 2025).

In addition, several authors encountered tangible evidence that highlights ChatGPT's influence on learner motivation and self-regulation as feedback given via ChatGPT resulted in better students' advancement. Likewise, students noted that they felt more ownership with respect to their writing processes, meaning they were more willing and able to autonomously fix mistakes (Ali et al., 2023; Bonner et al., 2023; Chen et al., 2024; Guo & Wang, 2023; Hawanti & Zubaydulloevna, 2023; Mizumoto, 2024; Kim et al., 2025). These findings complement closely with Zimmerman's self-regulation theory, which describes self-regulation as the process where learners actively participate in goal setting, executing, reflecting and adjusting through ongoing learning loop. Moreover, several authors considered the use of ChatGPT to be motivationally positive. Revision and editing done by ESL students seemed to be voluntary and self-motivated due to the ease of AI powered corrections. These empirical results serve as evidence to support the claim that well designed AI tools have the potential to profoundly change the ESL writing

education for the better, and foster environments where learners can willingly engage and learn (Chan & Hu, 2023; Escalante et al., 2023; Harunasari, 2023; Kohnke et al., 2023; Mahapatra, 2024; Ninaus & Sailer, 2024; Mo & Crosthwaite, 2025; Rüdian et al., 2025)

However, even with motivational benefits, researchers also caution. The teacher's role should still be retained as the primary provider of learning content. The combination of AI's rapid phonological correction with the more sophisticated, context-sensitive input from the teacher constitutes a blended pedagogy which enhances the learners' motivation but also requires more active engagement (Cao & Zhong, 2024; Far-hat & Ouchoud, 2024; Seelro & Khan, 2024; Solovey, 2024; ). In other words, as far as the motivation is concerned, the learners benefit the most when they are offered help with their assignments through ChatGPT together with constructive suggestions from teachers who encourage students to think critically and analyze their responses.

To wrap up, employing AI, particularly ChatGPT, into ESL writing improves student engagement with the language acquisition while fostering self-regulating skills needed for language learning, in particular on more advanced levels due to the constant personalized feedback provided. However, the best motivational and self-regulatory results are achieved with good (pre) planning, which carefully balances the use of automated AI feedback and instructor comments. Last but not the least, students who were given blended feedback demonstrated more motivation, self-confidence, and independence as compared to those receiving purely human feedback or AI feedback (Song & Song, 2023; Campoverde-Quezada et al., 2024; Ivenz and Polakova, 2024; Kim et al., 2025).

### ***2.5 AI vs. Human Feedback in ESL Writing***

Due to the rise of educational technologies like ChatGPT, the distinction between artificial intelligence feedback and human-generated feedback is becoming an important issue of concern in teaching ESL writing. Literature suggests that both AI and human feedback are valuable in their distinct ways, but both have weaknesses that negatively influence the quality and the kind of writing each ESL learner develops (Meniado, 2024; Solovey, 2024, Cao and Zhong, 2024; Kim et al., 2025).

In the absence of ChatGPT and other AI tools, one could argue that feedback was given based on description that was generated from notes taken based on template design (Özçelik &

Ekşi, 2024). Immediate feedback is the most beneficial component of human-like AI education. In many aspects of AI-assisted instruction there are powerful advantages as ChatGPT provides corrective feedback instantaneously, enabling students to achieve greater accuracy in the use of language, the organization of written pieces and appropriate use of words. (Kohnke et al., 2023; Imran & Almusharraf, 2023; Cao & Zhong, 2024; Chen et al., 2024; Adiguzel et al., 2024). Research results indicate that students do appreciate the instant feedback given by AI compared to the feedback given by teachers which takes a long time to process because instructors are usually overwhelmed with marking papers and teaching numerous classes. ChatGPT minimizes the cognitive burden experienced by students and improves their writing through the ease with which they are able to make revisions (Ali et al., 2023; Song & Song, 2023; Mizumoto & Eguchi, 2023; Ninaus & Sailer, 2024; Shi et al., 2025).

Next, AI-powered feedback systems guarantee neutrality in all evaluations. This presents a major benefit towards reviewing fairness and uniformity within the assessment processes as human evaluators tend to differ in their feedback because of personal biases, exhaustion, and various teaching styles (Akgun & Greenhow, 2024; Farhat & Ouchoud, 2024). As such, the reliability that AI offers is helpful in defining rigid evaluative standards, which is especially crucial in the context of large scale evaluation (Ali et al., 2023; Abduljawad, 2024; Cao & Zhong, 2024).

A common critique about AI is its rigidity within parameters set by users. The literature is clear, though, on the AI-generated feedback quality, especially with multi-level argumentative and analytical processes, which is something that accompanies higher levels of the language acquisition. ChatGPT-generated feedback is unable to gauge deeper analytical thinking and the quality of critical arguments (Imran & Almusharraf, 2023; Shakil and Siddiq, 2024). In other words, the learners lacking ability to actively engage in critical thinking, which is essential for advanced level of ESL writing, are too often met with assistance resulting from AI-generated corrections, simplistic and uninspired in their nature, thereby preventing engagement in complex evaluations (Chan & Hu, 2023; Escalante et al., 2023; Mahapatra, 2024; Mo & Crosthwaite, 2025).

Overall, to take full advantage of the benefits of AI and human feedback, ESL teachers need to develop pedagogical designs with cycles of AI linguistic support followed by detailed human feedback.

### ***2.6 Ethical and Pedagogical Challenges in AI-Assisted Writing***

The use of advanced artificial intelligence programs, including ChatGPT, creates new ethical dilemmas and pedagogical problems in teaching ESL writing. While these automatic programs offer timely educational services like language feedback, encouraging student participation, and instructional aid, they also create grave circumstances for academic dishonesty, learner reliance, critical thinking decay, prejudice, and disparity in evaluation (Chan & Hu, 2023; Akgun & Greenhow, 2024; Shakil & Siddiq, 2024; Shi at al., 2025).

One significant ethical problem extensively discussed in the literature refers to academic integrity and plagiarism. ESL teachers are becoming more concerned that students will use ChatGPT to create whole texts and then pass off the documents as if they wrote them. This kind of submission of synthesized assignments due to unrestricted AI access leads to a scenario where malpractice undermines proper language learning, stunts learner development, and creates ethical challenges to authorship, including the use of AI-generated materials in higher education (Chan & Hu, 2023; Imran & Almusharraf, 2023; Alsaedi, 2024; Anson, 2024; Seelro & Khan, 2024;).

Another teaching concern revolves around student dependency on AI. While ESL students highly benefit from the corrective feedback offered by ChatGPT, reliance on such machine-made edits can unwittingly erode students' ability to critically evaluate and assess their work. Over-dependence on AI services can cause passivity in learning, lower cognitive effort, and ultimately negatively affect analytic and problem-solving abilities. The same authors warn that without adequate reflection or critical evaluation, AI-based instruction might be the cause of implementing superficial approaches to learning (Marzuki at al., 2023; Ivenz & Polakova, 2024; Özçelik & Ekşi, 2024; Kim at al., 2025; Mo & Crosthwaite, 2025; Shi at al., 2025)

Another important ethical issue that comes with the use of AI is the possibility of having machine-generated feedback stereotypes algorithmically woven into it (Zou & Huang, 2023; Akgun & Greenhow, 2024; Solovey, 2024;). AI systems like ChatGPT work based on an array of data, which is not always guaranteed to be trained free of biases that can be harmful. The provided corrections are likely to perpetuate some stereotypes by putting certain sections of learners at a disadvantage by reinforcing rather than mitigating linguistic or cultural discrimination. To ensure fair and equal learning experiences for all ESL students, educators must be on the lookout for potential biases in AI-generated responses and closely monitor

outputs (Ali et al., 2023; Akgun & Greenhow, 2024; Cao & Zhong, 2024; Nazaretsky et al., 2024).

Overall, evidence from multiple studies reviewed suggests structured guidance and teachers' mediation in allowing students to ethically use AI with little to no risks as there is an increasing need to incorporate teaching AI literacy into effective pedagogical strategies. Likewise, the needs for institutional policies, which incorporate ethical use of AI, prevention of plagiarism, and boundaries on AI writing assistance must be implemented (Guo & Wang, 2023; Farhat & Ouchouid, 2024; Miranda, 2024; Nazaretsky, 2024; Ninaus & Sailer, 2024).

### **3 Methodology**

The methodology used in this literature review research paper is structured to allow for thorough and methodical analysis of the relevant literature, and to ensure the possibility of reproducibility and replicability. This chapter dives deeper into the research design, data collection methods, and the thematic analysis process.

#### ***3.1 Research Design: A Systematic Literature Review***

This thesis uses a systematic literature review (SRL) methodology to integrate research around ESL writing instruction in the context of ChatGPT and analyze results critically. A systematic review integrates a wide variety of prior studies and identifies whether there are overlapping conclusions, differences, patterns, thematic trends, methodological approaches, and critical gaps which, in turn, enhance the phenomenon in question and subsequently aid in research or practice (Boell & Cecez-Kecmanovic, 2015; Booth et al., 2021; Booth et al., 2016; Gough et al., 2012; Kitchenham, 2004). This process follows the steps of being systematic with resource selection to eliminate bias, and categorically synthesizing the results to produce well-founded and well-supported conclusions (Boell & Cecez-Kecmanovic, 2015; Booth et al., 2021; Booth et al., 2016; Gough et al., 2012). The SRL methodology implemented for this research makes use of the PRISMA model (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to ensure the use of reporting standards, enhance transparency and clarity of methods used, support research reproducibility, and increase the overall value of the systematic review (Page et al., 2021; Booth et al., 2021).

### 3.2 Data Collection Methods: Source Identification and Selection

The identification and selection of relevant literature followed a structured process designed to capture recent, high-quality academic work that is pertinent to the research questions being investigated.

**Database Search.** ResearchGate was the key database for identifying relevant publications due to its accessibility and ease of use. Researchers find a multitude of articles, preprints, and even conference papers and book chapters hosted on ResearchGate, making it easier to access work from fast-growing fields such as AI in education. Though ResearchGate was the primary focus, other major academic databases such as Google Scholar and Education Resources Information Center (ERIC) were searched during the initial exploration phase of the provided research material. Most of the research efforts, however, were centered around ResearchGate links.

**Search Terms.** A particular set of keywords and their variations were utilized to search the ResearchGate database. The core terms include: “ChatGPT”, “Generative AI”, “GenAI”, “Large Language Models”, “LLM,” and contextualized with the skills: “ESL writing”, “EFL writing”, “L2 writing”, “second language writing”, “academic writing”, “language learning”, “writing instruction”, “feedback”, “pedagogy”, “student perceptions”. Search refinements were made using Boolean operators (AND, OR). The Google search engine was also leveraged to search through ResearchGate with its advanced searching capabilities. For instance, the search term “ResearchGate ChatGPT and ESL Writing” would be searched directly on Google, with the word “Writing” being encapsulated in double quotes to ensure that only results containing the word would appear. For the most part however, most of the search queries were inputted directly into ResearchGate and not from a third-party search engine.

**Inclusion and Exclusion Criteria.** The criteria and rules for including or excluding sources is listed in Table 1.

**Table 1**

*Criteria for including or excluding sources*

Criterion	Inclusion Conditions	Exclusion Conditions
a) Publication Type	Peer-reviewed scholarly journal	Non-academic, such as news

	articles, published book chapters, or substantial conference papers available on ResearchGate.	articles, blogs, and opinion pieces without scholarly evidence, unless they were included in an academic study which was cited as a source.
b) Publication Date	Published in 2023 onwards to ensure the new research focused on the post widespread release and adoption of ChatGPT. Exceptions were made for sources that discuss theoretical foundations with relation to ESL instruction or self-regulated learning and are still of high relevance and/or serve as foundations for newer research. Exceptions were also made for methodology-related papers that discuss the SLR process and models.	Published prior to 2023, unless the study falls within the exceptions made in the inclusion conditions for this criterion.
c) Purpose of Study	Focuses on the use, impact, or perceptions, and pedagogical integration of ChatGPT or similar GenAI tools within the context of ESL/EFL/L2 writing instruction or development.	Focuses on AI in education without a particular emphasis on ESL/L2 writing, and/or concentrating only on LLMs from a non-educational viewpoint.
d) Language	Published in English.	Published in a language other than English. This was done to prevent the risk of meaning being lost through translation.

**Screening and Selection Process.** Screening for relevance was done using the inclusion/exclusion criteria on titles and abstracts of retrieved studies. Those studies deemed potentially relevant underwent full text evaluation for definitive inclusion. Due to this review, the corpus compiled is strictly compliant with the prescribed criteria, guaranteeing a sound foundation for the SLR being performed.

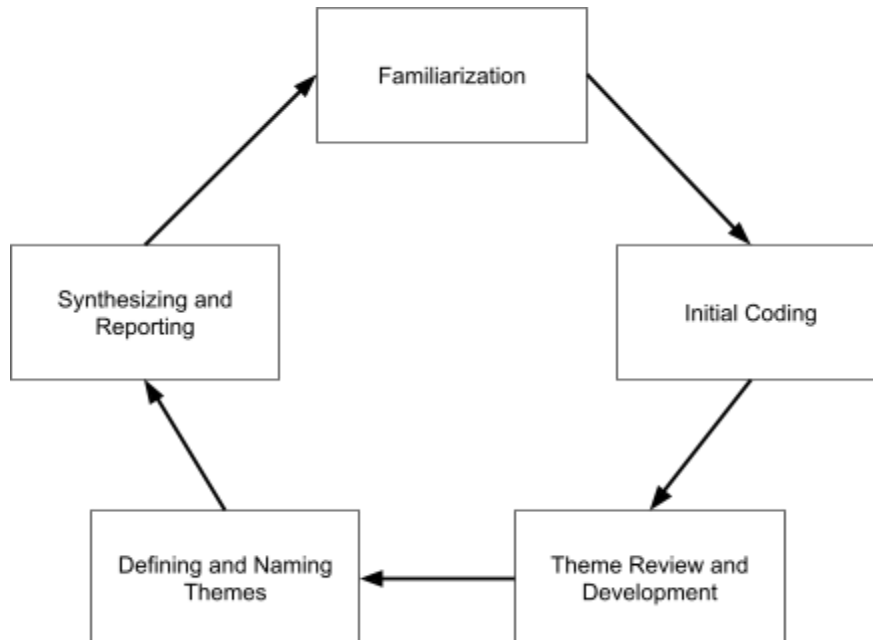
### *3.3 Data Extraction and Thematic Analysis Approach*

Systematic data extraction was conducted for each source once the final set of studies had been chosen. It was possible to capture relevant information from each source and address the thesis' research questions using study aims, context (e.g. educational level and country), participant description (e.g. ESL learners and teachers), specific AI tools employed (mainly ChatGPT in this case), employed research methodologies, pedagogical interventions or integration strategies, reported benefits, identified challenges or limitations, key perceptions from students/teachers, as well as empirical outcomes such as the impact on writing quality and motivation.

The data retrieved was later analyzed thematically, which is a standard approach for qualitative and mixed-methods research synthesis, to identify, analyze and report patterns (themes) within data (Braun & Clarke, 2021). This involved an iterative process as illustrated in Figure 1.

**Figure 1**

*Thematic Analysis Process Implemented*



**Familiarization.** This first step pertains to developing a deep understanding of the details of the content of the studies through multiple readings.

**Initial Coding.** The second step is systematically coding the data by marking excerpts relevant to the research questions under specific grouping tags or codes such as: benefits, challenges, pedagogical techniques, feedback issues, and so on. Both deductive (predetermined like “benefits”, “challenges”, or “pedagogy”) and inductive (emerging directly from the data) codes were used.

**Theme Review and Development.** Next, these codes were collated and transformed into potential themes and sub-themes. This was done by searching for repeating patterns in the codification results, connections between different studies, and ideas across the various studies.

**Defining and Naming Themes.** Once potential themes were beginning to formulate, a comprehensive title for each theme was defined and developed.

**Synthesizing and Reporting.** The next step consisted of constructing a summarized narrative of the thematics explored in the theoretical overview, providing evidence from the literature to support the themes and arguments made. To highlight and make sense of the patterns that stand out, converging and diverging points across the various themes were also noted and summarized. This step helped in forming a compare and contrast analysis across the different research papers covered.

As a whole, this process rigorously guarantees that the review is based on the literature that has been selected and systematically integrates what is already known about ChatGPT and ESL writing with relation to the research questions targeted in this paper.

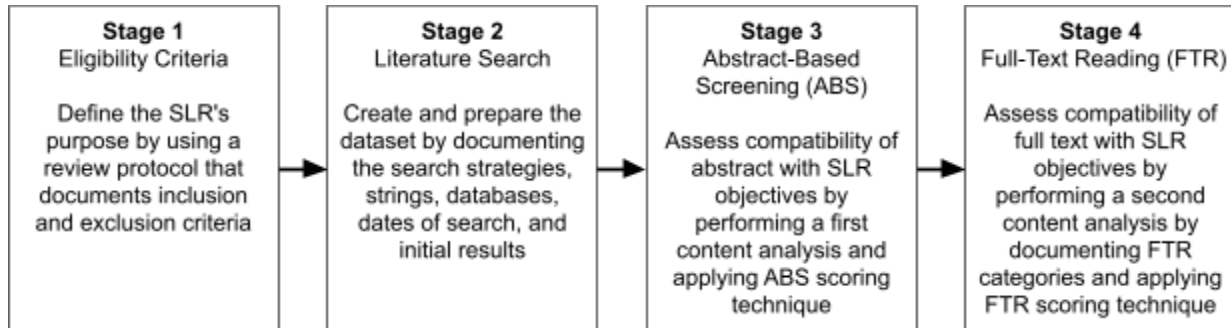
### ***3.4 Ensuring Reproducibility and Replicability***

All the steps and aspects of the methodology presented thus far are in accordance with the Standardized Sampling for Systematic Literature Reviews (STAMP) method developed by Rogge et al. (2024). Data collection plays a crucial part in the reproducibility and replicability of this study, and due to the nature of this qualitative-data-centric research and the wide range of available theories, models, and methods, even a small difference in how another researcher would search for sources and collect data could result in slightly different results - not to mention the rapidly evolving landscape of generative AI in education and the increasingly high number of new studies being published in this field. Therefore, a systematic and well-documented data collection and analysis approach, one that scopes the boundaries and conditions of this research, is necessary to ensure successful replication and support of the findings in the future. STAMP

follows a simple but effective four-step process based on score-based screening decisions for data collection and source processing as illustrated in Figure 2.

**Figure 2**

*The 4 stages of the STAMP method*



By keeping track of simple yet often overlooked items such as dates of searches and initial results, it would be easier for this study to be replicated successfully in the future as these parameters essentially would define the complete scope and context under which this research was executed, attempt to recreate the same exact experience, and yield similar results. Reproducibility and replicability are two primary factors that determine how reliable and credible a research study is, hence the major focus given to them in this research design (Booth et al., 2016; Rogge et al., 2024).

## **4 Discussion: ChatGPT's Multifaceted Role in ESL Writing**

### ***4.1 Synthesizing the Evidence: Key Themes from the Literature***

This chapter contains the key integration of the systematic literature review, correlating findings from the earliest 2023 studies assessing the relationship of ChatGPT (and associated GenAI) with ESL writing education. The analysis reveals a multifaceted picture where significant potential coexists with substantial challenges. The discussion is structured around five primary themes which were most advocated in the literature:

1. Documented advantages and benefits of incorporating ChatGPT into ESL writing;
2. The known challenges, constraints, and dangers of its use;
3. Pedagogical frameworks and action plans designed for effective and responsible

incorporation;

4. Perceptions and experiences of the learners and the educators;
5. The methodological profile of research done in this concern.

#### ***4.2 The Upside - Reported Benefits and Affordances***

A body of visited research maintains that there is a perceived and empirically validated range of benefits for the ESL writers when using platforms such as ChatGPT. To enhance workflow, these include linguistic refinement, process assistance, emotional impact, and time efficiency.

**Enhanced Accuracy of Edit and Proof Work.** Findings from several sources suggests that ChatGPT is often mentioned as a tool capable of assisting learners in correcting various aspects of grammar, syntax, spelling, and punctuation related issues and provide appropriate recommendations. Such feedback regarding the form assists learners in recognizing mistakes and enhancing accuracy. (Harunasari, 2023; Imran & Almusharraf, 2023; Cao & Zhong, 2024; Solovey, 2024). It is reported that ChatGPT assists and enhances the learners with organizing their ideas systematically, developing logical outlines, and creating coherent paragraphs or drafts. This literature review supports these claims considering the increased grammatical and mechanical accuracy observed as a major advantage for ESL writers utilizing ChatGPT (Bonner et al., 2023; Özçelik & Ekşi, 2024; Seelro & Khan, 2024; Rüdian at al., 2025).

**Custom and Prompt Feedback.** In contrast to fellow or instructor-based feedback sessions, ChatGPT provides instantaneous and round-the-clock feedback (Song & Song, 2023; Zou & Huang, 2023; Ivenz & Polakova, 2024; Kim et al., 2025). This immediacy can aid learners greatly as they are able to resolve problems during the writing stage rather than after, receiving input during the process. Feedback is often provided based on user queries and needs which makes some students describe it as a personal tutor or learning partner. Such immediate availability coupled with customization could mitigate the acute writing apprehension, often triggered by the need to interact with human assessors for feedback (Bonner et al., 2023; Wang & Dang, 2024; Zou & Huang, 2023; Seelro & Khan, 2024).

**Improved Efficiency Along with Acceleration.** ESL students face an even greater disadvantage in terms of workload. Through automating various tasks such as editing and information collection, ChatGPT automates work by alleviating and accelerating the writing processes. ESL students stand the most to benefit as their workload becomes faster and easier

while focusing more on cognitive resources or time (Chan & Hu, 2023; Harunasari, 2023; Adiguzel et al., 2024; Meniado, 2024; Mizumoto, 2024).

**Enhanced Self-Regulation, Motivation, and Engagement.** According to multiple articles reviewed, the use of ChatGPT has a positive impact on students' self regulation, motivation, engagement and their overall confidence. Authors argue that the immediate, personalized feedback provided by ChatGPT concerning all sorts of errors helps with reducing writing anxiety and boosts motivation. In other words, the participatory nature of ChatGPT empowers self-regulated learning, autonomy, and a greater sense of ownership among the learners in the writing process, ultimately influencing positively metacognitive awareness, in particular among advanced learners (Ali et al., 2023; Bonner et al., 2023; Chen et al., 2024; Guo & Wang, 2023; Hawanti & Zubayduloevna, 2023; Mizumoto, 2024; Kim et al., 2025). In other words, by prompting the tool for feedback and deciding how to apply suggestions, students practice planning, monitoring, and evaluating their own writing. This process is seen as key to developing greater student ownership and essential metacognitive awareness, enabling them to more effectively manage their learning and independently improve their writing skills. Nevertheless, the reviewed literature suggests a balanced and combined approach to learning. ChatGPT's motivational and self-regulatory prospects are the most useful when combined with the nuanced, context-sensitive guidance provided by the teacher. This balanced approach yields the most acceptable learning outcomes. (Song & Song, 2023; Campoverde-Quezada et al., 2024; Ivenz and Polakova, 2024; Kim et al., 2025).

**Flexibility and Adaptability.** Findings from various studies show that ChatGPT is capable of tailoring text generation as well as providing feedback to specific writing styles, tones, genres, and formats, including academic essays as well as other creative works. This adaptability facilitates student participation in diverse contexts allowing them to receive appropriate assistance (Harunasari, 2023; Imran & Almusharraf, 2023; Cao & Zhong, 2024; Solovey, 2024; Seelro & Khan, 2024).

### ***4.3 The Downside - Identified Challenges and Limitations***

While discussing the disadvantages, the literature refers to several major challenges, constraints, and risks related to the use of ChatGPT within the framework of ESL writing. They are as follows:

**Over-reliance and Diminished Learning.** An overarching concern is that acute dependence on ChatGPT might impede students' independent mastery of essential writing skills. When students utilize the tool as a primary text generator instead of an aid to think and write, an ability to think critically and creatively, to solve problems, and to construct and defend arguments develops (Barrot, 2023; Anson, 2024; Seelro & Khan, 2024; Kim et al., 2025;). In addition, students may also face a risk of learning loss because they may automatically move toward the cognitive drafting and revising effort or refinement stage, which solidifies skill mastery (Yan, 2023; Zou & Huang, 2023; Akgun & Greenhow, 2024; Shakil & Siddiq, 2024). There is, however, a tension because the tool designed as a scaffold becomes a harmful support if used improperly. Increasing ease of text generation could dampen an essential benefit of intrinsic motivation to engage deeply with the writing process (Marzuki et al., 2023; Zou & Huang, 2023; Anson, 2024; Kim et al., 2025; Shi et al., 2025).

**Accuracy and Reliability Issues.** ChatGPT and other LLMs are noted for their generation of credible-sounding but untrue information, invented references, and reasoning errors (Chen et al., 2024; Wang & Dang, 2024; Kim et al., 2025). Students, especially those not well-versed in the intricacies of a subject or lacking in critical evaluative skills, are likely to overlook these discrepancies and may unknowingly integrate inaccuracies into their work (Escalante et al., 2023; Anson, 2024; Seelro & Khan, 2024; Kim et al., 2025). As argued elsewhere, the nuance needed to construct sophisticated academic arguments is often absent, making the content superficial or generic (Campoverde-Quezada & Valdiviezo-Ramírez, 2024; Chen et al., 2024; Meniado, 2024; Kim et al., 2025).

**Concerns Regarding the Precision of Feedback.** The automated systems such as ChatGPT have the capability of providing feedback instantly. However, as previously noted, the quality of such systems is very often questioned. Such feedback tends to focus inordinate attention to surface issues such as grammar and mechanics while ignoring deeper analysis of content, argumentation, or rhetoric. (Imran & Almusharraf, 2023; Kohnke et al., 2023; Cao & Zhong, 2024; Chen et al., 2024). It often fails to grasp the broader context, resulting in misunderstanding the writer's intent and making suggestions that either shift the argument from its original stance, or change the voice without offering workable principles. Feedback as given tends to be monotonous, overly general, lack emphatic explanations and illustrations, and devoid of errors. Furthermore, these explanations are especially compounded with lack of fluency

amongst non-native speakers. The burden of excessive feedback has also been noted to be a burdensome one. (Escalante et al., 2023; Chen et al., 2024; Mahapatra, 2024; Mo & Crosthwaite, 2025).

**Academic Integrity and Plagiarism.** The potential of ChatGPT to create text that appears original poses a major concern regarding the preservation of academic integrity. It is nearly impossible for educators to determine whether students have AI-generated text masquerading as their own work due to the sophisticated nature of large language models. To some degree, this has prompted re-evaluation of examination frameworks and institutional AI policies (Chan & Hu, 2023; Imran & Almusharraf, 2023; Alsaedi, 2024; Anson, 2024; Seelro & Khan, 2024).

**Consequences for Authorial Style and Originality.** The integration of AI into the writing process muddles an author's originality and homogenous writing that lacks individual flair and viewpoint. If students increasingly rely on AI to generate phrases or offer ideas, it may hinder their development of a distinct, unique authorial voice (Marzuki et al., 2023; Zou & Huang, 2023; Ivenz & Polakova, 2024; Seelro & Khan, 2024). Research analyzing the outputs of large language models (LLMs) and comparing them to human writing suggests that, relative to human authors, AI models tend to employ a more limited and formal selection of language, particularly with respect to stance-taking and reader engagement. Preserving originality in situations where peers are likely using the same tool for the same prompt presents challenges as well (Özçelik & Ekşi, 2024; Seelro & Khan, 2024; Kim et al., 2025; Mo & Crosthwaite, 2025; Shi et al., 2025).

**Bias and Equity Concerns.** The datasets scraped for training LLMs are sourced from the internet, which reflects existing societal biases, such as cultural, gender, racial, and linguistic discrimination. Such biases are capable of producing texts or providing comments that generate reinforcing feedback that perpetuates disadvantageous stereotypes. A model's inclination to project the dominant English spoken by the Caucasian population will, in turn, result in worsening of ESL writers' diverse linguistic creativity while eroding their linguistic identity (Ali et al., 2023; Akgun & Greenhow, 2024; Wang & Dang, 2024). In addition, more advanced AI tools behind paywalls could worsen underlying disparity gaps in education (Cao & Zhong, 2024; Nazaretsky et al., 2024).

Therefore, all the issues mentioned above highlight the fact that ChatGPT cannot

single-handedly solve the problems ESL students have with writing. The integration of such tools requires balancing the potential harms to learning and the ethics and equity of AI use within pedagogy. The ethical issues, especially academic dishonesty, bias, and equity, cannot be considered solely technical afterthoughts; they should be embedded in any AI pedagogical framework design (Zou & Huang, 2023; Anson, 2024; Barrot, 2023; Seelro & Khan, 2024; Wang & Dang, 2024;).

#### ***4.4 Bridging the Gap - Pedagogical Approaches and Integration***

Balancing the pros and cons of ChatGPT uses requires careful attention in pedagogy for integrating the tool into ESL writing classes. The focus should not be on banning or permitting its use but rather on teaching students to use the tool responsibly, ethically, and with critical thinking skills. There needs to be a pedagogical focus change where the writing process, metacognition, and new digitally mediated AI literacies are emphasized (Anson, 2024; Kim et al., 2025; Seelro & Khan, 2024; Wang & Dang, 2024). From the reviewed studies, the following approaches can be synthesized.

**Developing Critical AI Literacy.** Effective and ethical engagement with LLMs such as ChatGPT hinges on understanding how they function. This includes their architecture, training data, and probabilistic nature (Ninaus & Sailer, 2024; Wang & Dang, 2024). Education regarding ChatGPT should address not only what it can do but also its limitations: bias, inaccuracy, lack of true understanding, ethical implications (plagiarism and data privacy), and societal impact (Guo & Wang, 2023; Anson, 2024; Nazaretsky, 2024; Ninaus & Sailer, 2024; Kim et al., 2025). This form of literacy allows students to utilize the tool with a critical lens instead of passively accepting output as truth.

**Teaching Prompt Engineering.** The effectiveness of ChatGPT's output is contingent upon the effectiveness of the input prompt. It is essential for educators to instruct students on how to compose appropriate, accurate, and tailored prompts that will result in the appropriate level of assistance, including brainstorming, providing feedback, or generating text. This covers the concept of role setting and context tailoring alongside AI interaction refinement through iterative engagements (Song & Song, 2023; Ninaus & Sailer, 2024; Wang & Dang, 2024).

**Focusing on Process, Not Just Outcomes.** Concerning ChatGPT's functions, it is vital to view it as an assistant for particular phases of the writing process. This view must be held as it

is used solely as a generating tool for final products (Song & Song, 2023; Zou & Huang, 2023; Huang & Mizumoto, 2024; Wang & Dang, 2024; Kim et al., 2025) For example, brainstorming with ChatGPT (Wang & Dang, 2024), getting outlines (Kim et al., 2025), early drafts feedback (Huang & Mizumoto, 2024), sentence phrasing exploration during revision (Song & Song, 2023). Students must be encouraged to independently work with AI and critically assess revision suggestions so that they claim the authorship of the outcomes (Song & Song, 2023; Chen et al., 2024).

**Merging AI Feedback with Human Feedback.** Understanding the shortcomings of AI, many practitioners support a blended model that mixes human with machine input. AI tools like ChatGPT can be employed for the first pass at grammar corrections and drafting summary-level feedback, but this should always be strengthened with teacher or peer feedback that is more nuanced and responds to deeper issues of content, argumentation, and voice (Cao and Zhong, 2024; Huang & Mizumoto, 2024; Meniado, 2024; Solovey, 2024, Kim at al., 2025). AI feedback (or at least its parts) can serve as one input in the revision process.

**Creating Defined Regulations.** Lack of clarity about what is permissible and what is not leads to both confusion and misuse. Schools and individual teachers must create rules that define when and how students can or should engage with Generative AI tools during class, particularly in regards to academic honesty. As always, the visibility of processes is very important (Marzuki et al., 2023; Akgun & Greenhow, 2024; Seelro & Khan, 2024).

**Teacher Training and Support.** Integrators of technology within the educational framework not only require proper training, but also continual assistance in applying AI tools within the teaching practices. Additionally, AI should cover the balance between ethics and tool functionalities like teaching, assessment modifications, and stratifications in education. Unsupported teachers are a risk to students as they lack the necessary guidance to tackle the convent risks of AI (Guo & Wang, 2023; Yan, 2023; Chen et al., 2024; Nazaretsky, at al., 2024; Wang & Dang, 2024).

#### ***4.5 Voices from the Field - Student and Educator Perspectives***

Comprehending the attitudes and experiences of the key stakeholders - students and teachers - regarding ChatGPT is essential in assessing its actual impact and the possibility of its successful integration. These studies show nuanced, parallel, and sometimes conflicting perspectives.

**Student Perceptions.** According to research, ESL learners have a generally favorable attitude when it comes to using ChatGPT for language learning because of its efficiency and multiple-correction capabilities (Bonner et al., 2023; Chan & Hu, 2023; Seelro & Khan, 2024; Solovey 2024; Kim et al., 2025). Learners appreciate immediate feedback and brainstorming and grammar checking sessions (Seelro & Khan, 2024; Kim et al., 2025). Other learners voice frustrations over concerns regarding ChatGPT’s precision, shallow evaluation, and ethical questions surrounding ownership (Moses & Mohamad, 2019; Chan & Hu, 2023; Zou & Huang, 2023; Seelro & Khan, 2024). Elements like past encounters with AI technologies and teaching contexts also shape perceptions (Yilmaz et al., 2024; Kim et al., 2025). Moreover, AI-generated feedback is often positively received as long as it does not become overly formulaic (Rüdián et al., 2025). While these aspects can help create frameworks for safe and responsible AI use, other factors, such as thoughtless copying, underline the need to strengthen protective measures (Moses & Mohamad, 2019; Seelro & Khan, 2024; Shi et al., 2025).

**Educator Perceptions.** There seems to be no consensus among language educators. Some regard ChatGPT positively as it can be leveraged as an educational technology that adapts lessons, provides tailored feedback, and intelligently supplements tasks (Yan, 2023; Nazaretsky et al., 2024), while critics express concern over ethical and academic issues involving integrity, assessment quality, authenticity, and a possible reduction in students’ writing and analytical skills (Guo & Wang, 2023; Marzuki et al., 2023; Chen et al., 2024; Shakil & Siddiq, 2024). Moreover, there remains concern about the AI’s trustworthiness and the effects on the relationship if it automates too much of the communication (Marzuki et al., 2023; Shakil & Siddiq, 2024). There seems to be a lack of sufficiently targeted professional development and policy frameworks aimed at instructional AI to address the emerging shifts these technologies pose (Meniado, 2024; Miranda, 2024; Nazaretsky, 2024).

#### ***4.6 How We Know What We Know - Methodological Landscape***

There has not been much research on the use of ChatGPT in ESL writing instruction. The earliest relevant studies date to 2022. The AI-assisted methods used for teaching writing skills have not yet been fully and concretely understood, in part due to the complexity and experimental nature of the use of AI in ESL.

**Predominance of Qualitative Methods.** Research undertaken underscores that

interviews and focus groups are the most used methods in classroom AI research. The focus on qualitative methods can be explained by the subjective and personal perceptions of AI in education (Yilmaz et al., 2023; Özçelik & Ekşi, 2024; Solovey, 2024; Rüdian et al., 2025).

**Emergence of Quantitative and Experimental Approaches.** Recent and emerging quantitative research described self-report surveys to assess students' attitudes, motivation, and self-efficacy using the TAM, L2 Motivational Self System, and relevant self-efficacy scales (Yilmaz et al., 2023; Campoverde-Quezada et al., 2024; Chen et al., 2024; Huang & Mizumoto, 2024; Shi et al., 2025). Some researchers conducted experimental and quasi-experimental studies comparing writing skills and various affective components between AI-supported and control groups and evaluated the results using ANOVA or ANCOVA (Shi et al., 2025).

**Mixed-Methods Designs.** Recent studies have been adopting mixed-methods designs which incorporate both quantitative and qualitative data to cross-validate findings (Chen et al., 2024; Huang & Mizumoto, 2024; Mahapatra, 2024; Shi et al., 2025). This method is useful for achieving both wide-ranging assessments of impact in addition to understanding learners' experiences on a deeper level. To illustrate, quantitative data may indicate gaps within the writing scores, and qualitative data helps make sense of them (Shi et al., 2025).

**Systematic Literature Reviews.** As the primary research corpus expands, systematic literature reviews are emerging as a key methodology for synthesizing findings, identifying trends, and mapping the state of the field (Lo, 2023; Meniado, 2024; Wang & Dang, 2024). These reviews assist with bolstering the knowledge base and steering research initiatives.

The methodologies used to study the impact of new technologies in the fields of GenAI and ESL writing suggests that this is an active field of inquiry. The predominance of qualitative and mixed methods indicates that GenAI's role in teaching ESL writing extends beyond mere technical functions or minimal learning achievements.

#### ***4.7 Critical Evaluation: Weighing the Evidence, Addressing Gaps***

Even though the relatively recent literature has helped shed light on this topic, the so-called evidence at hand requires deeper scrutiny and critique.

**Small Sample Sizes and Context Specificity.** Numerous studies are characterized by limited participant populations, often drawn from a single course or a single institution. The contextual setting such as “higher education in X country” serves as a primary determinant of the

outcomes, and the research outcomes would not easily apply to K-12 education contexts, workplace settings, or cross-cultural scenarios.

**Short Intervention Durations.** In experimental research, participants are often subjected to interventions lasting a few weeks. It will be impossible to evaluate long-term impacts of ChatGPT on writing skills development, motivation, or potential dependencies.

**Novelty Effect.** The initial thrill or dread of interacting with technology such as ChatGPT can skew participant behavior and attitudes in short-term studies. It is not clear whether benefits or engagement reported during these studies would remain the same once the initial novelty has faded.

**Concentration on General Skills of Writing.** A writing assessment focuses on quality and grammar holistically. It is less common to explore the effects of these elements on identifiable sub-skills in academic writing, such as argumentation, source blending, awareness of the writing genre, or on varying writing tasks (Anson, 2024).

**Unreliable Outcomes.** Earlier conversations indicate that certain research results, for instance, the effects of motivation or the quality of feedback, do not consistently align (Huang & Mizumoto, 2024; Ivenz & Polakova, 2024; Solovey, 2024; Kim et al., 2025; Shi et al., 2025). This implies that the situational factors and the specifics of how the research was carried out are more intricate than what has been claimed. This points to significant gaps that are left to be explored in future research.

**Longitudinal Studies.** There is a clear gap in systematically observing students in relation to their writing skill along with their attitudes toward AI over several terms. Understanding long-term effects, shifts in dependence, or changes in strategy is particularly notable.

**Diverse Contexts and Populations.** Studies are lacking when it comes to other educational contexts (K–12, vocational and professional training, language aid centers), regions, and learners in relation to diverse and varying levels of language proficiency.

**Defined Skills and Genres of Writing.** Performances across other academic genres should be targeted with cross in-depth analysis on the impacts of ChatGPT on its capability in enhancing specific academic writing skills, the synthesis of critical analysis, and development of a disciplinary voice.

**Cognitive Processes.** Further investigation of the cognitive processes concerning student

interactions with ChatGPT during the writing requires examination of planning, drafting, and revision strategies through think-aloud protocols or keystroke logging.

**Comparative Studies.** There is a need for more comprehensive studies examining other GenAI tools besides ChatGPT and exploring other models of pedagogical integration for comparison.

Therefore, filling these gaps through systematic research will enable the creation of a well-informed and sophisticated approach to strategically harness GenAI tools such as ChatGPT in fostering and supporting ESL learners' writing skills while ensuring the practice is done responsibly.

#### ***4.8 Limitations of the Current Review***

This review aims for rigor, yet still has limitations. Primarily, it critically evaluates the published research available post-2023 and within the scope of the primary database—ResearchGate. It is impossible to completely ignore potential publication bias where studies with significant findings are published more often. Other studies possibly in different languages could be omitted due to only the English publications being considered. While adhering to the total source limit, potentially relevant studies may have been left out. Additionally, the ever-evolving literature on GenAI due to rapid technological advancement means this review may become obsolete almost soon.

#### ***4.9 Final Thoughts: Navigating the Future of AI in ESL Writing Education (and Beyond)***

The emergence of ChatGPT and other generative AI capabilities also known as the “algorithm-enabled scribes” heralds an era of profound change for ESL writing instruction. It comes with a rich array of pedagogical opportunities, but at the same time raises deep ethical concerns. This review argues that pedagogical frameworks that seek to leverage these new technologies will fail if they embrace ‘tech hype’ or (educational) future(s) of single or multi-AI-hero adoption. Rather, every learner, educator, researcher, and institution must step into the breach and engage critically and collaboratively in evidence-informed and critique-driven dialogue alongside iterative design processes. The most notable paradox around these technologies is the value they bring in enabling learners alongside the risks being managed. This

effort requires an unwavering commitment to enable human agency, foster critical thinking, reflective contemplation, and ethical discernment, while bound by responsibilities. Focus needs to shift from “when” AI is integrated into the educational ecosystem to “how” it can be applied most effectively to serve as a catalyst for meaningful learning, diverse student expression, and advocacy for educational ideals, especially in an AI-dominated global landscape. The answer to exploring AI's true impact and optimal methods for teaching ESL writing continues to evolve yet is apparently approaching the point of no return where ChatGPT is viewed as a solution to every challenge that oversimplifies the existential realm.

The effectiveness of these tools in fostering meaningful interaction among ESL learners is not inherent but dependent on how they are implemented; specifically, on how they are integrated into instructional paradigms that emphasize student self-reliance and real communication competencies rather than superficial skills like prompt crafting. These reflections on AI and technology's impact on ESL writing bring forth more probing questions regarding the directions in which education is evolving. The concern of carbon-based classrooms being replaced with silicon ones forces us to contemplate the very essence of a learning as an experiential, ongoing journey and the human interactions that accompany it. In any such profound change, the idea of true “conviviality” as put forth by Illich (1973), which focuses on creating and using tools that strengthen individual human creativity, autonomy, and understanding, takes center stage. If postmodernist thinking capturing truth as relative and increasingly perceived as constructed is considered, then the algorithms that underpin AI generated content should receive even greater scrutiny than they currently do, bias-ridden, and context devoid knowledge included, alongside learners and educators alike. Moreover, should the main measures of educational success shift towards speed in information processing and feedback delivery, we run the risk of ignoring deeper, slower, more transformative modes of learning, reflection, critical engagement and reasoned thought. A reality that is likely to compel those valuing such humanity centric aspects to contemplate “educational dissidence” or opposition to a sprint toward a technologically, ‘transhumanistically’, dominated future.

Thus, the fundamental challenge goes deeper than just integrating technology. It is intentionally constructing a future in which technology enhances, not erodes, our basic humanity, our *Imago Dei*, and the timeless quest to seek the truth and comprehend the meaning of life.

### **Acknowledgments Pt. 1**

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Sincerely,

Dejan Adam

Estonia, May, 2025

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Sincerely,

Mohamed Nidal Ouazzani

Estonia, May, 2025.

**Author's Declaration**

We, the co-authors, hereby declare that we have written this thesis independently and that all contributions of other authors and supporters have been referenced. The thesis has been written in accordance with the requirements for graduation theses of the Institute of Education of the University of Tartu and is in compliance with good academic practices.

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31.05.2025

Date

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Signature

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Date

**Author's Contributions**

Both Dejan Adam and Mohamed Nidal Ouazzani completed the primary research, data collection, analysis, and writing of this thesis. Both authors carried out literature reviews. Adam focused on introduction and theoretical overview compilation, while Ouazzani focused on ensuring proper methodology. Both authors collaborated equally to the discussion chapter. The thesis supervisors, Emanuele Bardone, and Yaroslav Opanasenko, provided ongoing guidance, critical feedback, and editorial support throughout the project. All authors read and approved the final version of the thesis.

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