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Investigating ChatGPT as an AI writing assistant in ESL/EFL education: A systematic literature review

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Abstract - Although research on ChatGPT for second language (L2) learning has expanded in recent years, there is still a lack of systematic and up-to-date review of its current development. This review included twenty-eight empirical studies on the use of ChatGPT in English writing education published between 2024 and 2026. They were reviewed in terms of participants, educational level, sample size, target languages, duration, research methods, research design, data collection tools, targeted writing skills. Findings showed that most studies were conducted in higher education contexts especially with undergraduate learners. Furthermore, they mostly adopted quantitative and mixed methods, and common data collection tools were writing products, questionnaires, interviews and automated linguistic analysis tools. In these studies, ChatGPT was mostly used to improve grammatical accuracy, revision and feedback, lexical diversity, content development, organization and coherence. Implications were discussed for future studies.

Keywords: ChatGPT, generative artificial intelligence, English writing instruction, AI-assisted writing development

1. Introduction

Ongoing technological advancements open the way for the use of innovative technologies in different educational areas. A study conducted by Raja and Nagasubramani (2018) underlines the importance of technology in education. They stated that when learners adopt technological tools, they learn better and their motivation and interaction increase as well. Furthermore, one of the educational areas that ongoing digital improvements affect is foreign language education. As Mohebbi (2025) stated due to the integration of technology into education, language learning becomes one of the most promising fields for technological advancement. In the last decade, the generation of Artificial Intelligence (AI) tools such as ChatGPT has been one of these advancements and it has become a popular educational tool in foreign language education (Ghafar, 2023).

McCarty (2007) defines AI as "the science and engineering of making intelligent machines". In 2022, ChatGPT (Generative Pre-trained Transformer) which is one of the AI tools was launched and more than one hundred million people around the world started to use it in two months (Rahimi & Abadi, 2023). It is an AI-powered chatbot developed by United States-based startup OpenAI as well as an open-access public tool with highly sophisticated chatbot that works according to GPT language model technology (Kirmani, 2022, p. 574). It further enhanced by a large language model (LLM), and it is able to understand and produce human-like responses on diverse topics. It contains vast amount of knowledge and retrieves necessary information to write in a natural, human-like manner. Moreover, its data base comes from various sources such as articles, websites, and other online materials. It has a structured corpus with the set of statistical associations and patterns to produce contextually appropriate responses to users. Therefore, its corpus is regularly updated and expanded to reach the most up-to-date sources (Barrot, 2023).

Thanks to its huge and continuously updated database, large language model (LLM) and human-like output, ChatGPT provides huge source of information for language learning and practice whenever and wherever needed. Therefore, it has been widely searched by different researchers in foreign language learning education (FLE) (e.g. Hatmanto & Sari, 2023; Li, 2024). There are many benefits of using ChatGPT on FLE. For instance, it can be used as a "self-directed

learning tool, conversation simulation, and creative learning content provider" (Polakova & Ivenz, 2024). Therefore, learners can interact with it at their own proficiency level by getting immediate feedback on grammar, punctuation and vocabulary. Further, it can be able to generate well-designed texts and give conversational answers to questions; therefore, it is accepted as a beneficial tool for summarizing and responding to questions (Hatmanto & Sari, 2023; Sok & Heng, 2024). Additionally, it provides "information, performs text-related tasks, provides suggestions, and interacts naturally with users" (Prananta et al., 2023, p. 1032). In line with all these benefits of ChatGPT, it is truly clear how it becomes an important part of foreign language education.

English which is widely accepted as the global language has the promising role in foreign language education and critical for academic and professional development. Moreover, based on the usage area of the ChatGPT such as generating and summarizing texts and providing content and suggestions to users, it has a promising role in writing skill development in EFL. Writing skill requires proficiency in writing organization, coherence, grammar and vocabulary (Campbell, 2019) to be able to be a proficient user in English. Moreover, Klimova (2012) summarized the vital role of writing in terms of enhancing communication and critical thinking, allowing reflection, offering feedback and preparing learners for both academic and professional life. Therefore, it is necessary for EFL learners to attain these skills to express and communicate their thoughts appropriately. However, many EFL learners still struggle with writing in terms of vocabulary, punctuation, grammar, sentence structure mistakes as well as complex structure and inappropriate academic expression (Li, 2023)

Current studies showed that technology-enhanced learning methods especially ChatGPT promote learners' English academic writing ability. It provides instant feedback on writing and vocabulary suggestions, paragraph organization and grammar correction to improve writing quality (Ghafouri et al., 2024; Han et al., 2023; Wu, 2024). Following current studies further show that ChatGPT is used for brainstorming, drafting, editing (Sallam et al., 2024) and idea generation (Pikhart et al., 2024) in writing. Therefore, it can be inferred that ChatGPT can overcome the struggles that learners face during their writing and they can interactively practice writing in a supportive and less stressful environment.

2.1. Current Studies on the Use of ChatGPT in Writing

ChatGPT has been documented for its potential in enhancing writing performance (Huang and Tan, 2023). For instance, a study conducted by Su et. al (2023) found that argumentative writing requires dialogical, structural and linguistic knowledge and most of the time peer practice and teacher feedback can be difficult and time-consuming. Therefore, integrating ChatGPT into writing courses can support argumentative writing by assisting learners with outlining, revising, proofreading, and reflecting on their work. Similarly, Li et al. (2023) reported that ChatGPT could provide personalized feedback, content generation and teaching support to improve learners' writing skills.

Mahapatra (2024) also conducted an intervention study with mixed methods design. The study investigated the role of ChatGPT as a formative feedback tool to improve writing skills of undergraduates EFL students. The findings reveal that ChatGPT improves academic writing and students' perceptions are positive. Therefore, study found ChatGPT as a reliable classroom aid especially in large writing classes. Similarly, Abdullayeva and Musayeva (2023) found that ChatGPT provides writing prompts, instant feedback and revision suggestions on EFL learners' writing output.

Another study by Hongxia and Razali (2025) examined the effect of ChatGPT on English academic writing ability and engagement among Chinese EFL undergraduates. They adopted a quasi-experimental design and surveys with 70 third-year students. The findings showed that ChatGPT improved writing in terms of content, structure, coherence, grammar, vocabulary and spelling and over 60% of students reported affective cognitive, social and behavioural engagement. Based on the findings, the study found ChatGPT as a valuable tool for supporting academic writing skills.

Finally, a recent quasi-experimental study conducted by Vo and Ho (2026) explored how ChatGPT can impact grammar accuracy in writing. Ninety first-year English majors were divided into two groups. While experimental group used ChatGPT for generating texts and receiving real-time feedback, control group followed traditional classroom instruction. At the end of the study pre- and post-test results showed that the ChatGPT group achieved significantly higher grammar accuracy scores. Also, Farrel (2022) found that ChatGPT enables students practice grammar continuously in a low-pressure way and helps learners to feel less anxious and learn from feedback without fear of criticism.

2.2. Current Reviews on the Use of ChatGPT in Writing

Recent developments in technology have led to various empirical research on the use of AI tools across different fields especially in education. Among these tools ChatGPT has attracted attention due to its potential to support teaching and learning processes. Therefore, many systematic reviews have conducted on the integration of ChatGPT into language teaching and learning by the researchers. For instance, Celik et al. (2022) analyzed the role of AI in teaching and emphasized its potential to improve planning, implementation, and assessment, while also identifying challenges such as technical limitations, reliability issues, and the need for teacher involvement in AI development. On the other hand, Teng (2024) reviewed the opportunities and challenges of adopting ChatGPT for EFL writing. While it offers innovative support through instant feedback and various prompts, there are concerns about learner dependency and the need to foster critical thinking. In another review, Alsaedi (2024) reported that ChatGPT enhances writing efficiency, creativity, and proficiency, while also personalizing learning and reducing teachers' workload through automated evaluation and feedback. Additionally, Yang and Li (2024) reported that ChatGPT is mostly used to content generation, feedback and teaching support. More recently, Amoush and Alhosban (2025) identified the best practices for integrating ChatGPT into EFL writing classrooms, such as combining AI-generated feedback with teacher guidance, training learners to use AI responsibly, and maintaining the supportive role of educators throughout the writing process.

2.3. Research Statement and Questions

Despite these valuable current reviews on the use of ChatGPT in writing development, there is still an important gap in the literature. Existing reviews mainly focus on the general perceptions, opportunities, challenges, and pedagogical implications of ChatGPT use in overall English language learning rather than examining how ChatGPT specifically contributes to writing in terms of writing quality, feedback, revision, editing, coherence, grammatical accuracy, lexical diversity and linguistic complexity.

To address these gaps, this study reviewed recent experimental articles between 2024 and 2026 synthesized how ChatGPT has been used in EFL/ESL or other educational contexts improve to provide knowledge of how researchers have used ChatGPT to improve writing skills such as writing quality, feedback, revision, editing, coherence, grammatical accuracy, lexical diversity and linguistic complexity. By synthesizing recent empirical findings, this study seeks to provide a comprehensive understanding of the pedagogical potential of ChatGPT as a writing assistant and contribute to the growing field of AI-supported language education. Therefore, this review will answer the following research question:

1. What are the participant profiles in terms of educational levels, sample sizes, and target languages reported in the studies of ChatGPT for L2 writing?
2. What research methods and research designs have been adopted in the studies of ChatGPT for L2 writing?
3. Which data collection tools have been implemented in the studies of ChatGPT for L2 writing?
4. Which aspects of writing skills such as writing quality, feedback, revision, editing, coherence, grammatical accuracy, lexical diversity and linguistic complexity have been supported by ChatGPT?

3. Method

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines. For literature search Web of Science database were selected to reach high-quality journals, since Birkle et al. (2020) highlights that WoS is the world's oldest and most widely used authoritative database of research publications and citations.

The review synthesized recent empirical studies conducted on the use of ChatGPT for ESL/EFL learners' writing performance particularly for writing quality, feedback, revision, editing, coherence, accuracy, lexical development and linguistic complexity. To reach relevant studies following query were generated and searched on the Web of Science (WoS): TS=(((ChatGPT) AND (writing OR "writing development" OR "writing skill*" OR "academic writing" OR "essay writing" OR "composition" OR "brainstorming" OR "drafting" OR "editing" OR "revision" OR "feedback" OR "coherence" OR "fluency" OR "accuracy" OR "linguistic complexity" OR "idea generation") AND (EFL OR ESL OR "English as a Foreign Language" OR "English as a Second Language")).

The WoS database initially listed 295 studies. After applying quick filters, only English article or early access studies indexed by Social Sciences Citation Index (SSCI) in the field of Linguistic were reached. Finally, a total of 72 studies published between 2023 and 2026 remained. Subsequently, the researcher read the titles and abstracts of each article according to inclusion and exclusion criteria developed based on the research focus. To enhance consistency and accuracy, another researcher candidate from ELT field also screened the article titles and abstracts independently and similar articles were selected for the systematic review.

2.4. Inclusion Criteria

Studies were included if they:

- examined the use of ChatGPT not self-developed chatbots or other AI tools used in ESL/EFL or other educational contexts,
- provided empirical findings through quantitative, qualitative or mixed methods research designs,
- examined and reported at least one of the writing outcomes such as writing quality, feedback, revision, editing, coherence, grammatical accuracy, lexical diversity or linguistic complexity,
- were open access and published in peer-reviewed journals.

2.5. Exclusion Criteria

Studies were excluded if they:

- were review articles, systematic reviews or meta-analyses, and non-peer-reviewed publications,
- focused on teachers' perceptions, attitudes, cognition or professional development,
- examined other language skills such as speaking, pronunciation, vocabulary or pragmatics,
- reported students' perceptions, motivation, self-efficacy, technology acceptance but not writing outcomes,
- examined AI detection or plagiarism,
- examined automated scoring or writing evaluation systems without measuring at least one of the writing outcomes.

After screening, 28 studies that met the inclusion criteria were summarized in a Microsoft Excel sheet based on studies' authors, publication year, participants, educational level, sample size, target languages, duration, research methods, research design, data collection tools, targeted writing skills. Then, studies were discussed under these categories in the results section.

3. Results and Discussion

2.6. Publication Year

Twenty-eight empirical studies that were reviewed for this study published between 2024 and 2026. While ten studies were published in 2026, fourteen studies were published in 2025, and four studies were published in 2024.

2.7. Participants

As shown in Table 1, under participants category, educational level of the participants, sample size and target languages were represented. Regarding educational levels, ChatGPT was mostly implemented by undergraduate (n= 20), post-graduate (n= 3), high school (n= 3), middle school (n= 1) and IELTS (n= 1) students. In terms of sample sizes, the reviewed studies mostly conducted with large samples (n= 18) and small samples (n= 10). Regarding target languages that were taught, all studies (n= 28) adopted ChatGPT for improving English writing skills.

Table 1

Participants of the reviewed studies.

Participants	***n***
Target languages	
✓ English	✓ 28
Educational Levels	
✓ Undergraduate	✓ 20
✓ Postgraduate	✓ 3
✓ High school	✓ 3
✓ Middle school	✓ 1
✓ IELTS students	✓ 1
Sample sizes	
✓ Large	✓ 18
✓ Small	✓ 10
Duration	
✓ Long	✓ 15
✓ Short	✓ 7
✓ Not specified	✓ 6

2.8. Duration of the Studies

Among twenty-eight reviewed studies, fifteen studies had long duration lasted for months, whereas seven studies had short duration conducted within hours or up to four weeks. However, remaining six studies did not specify the duration of the study (Table 1).

2.9. Research Methods and Research Designs

As shown in Table 2, all three methods were adopted in the selected studies, including quantitative (n= 12), qualitative (n= 7), and mixed methods (n= 9). Regarding research designs, each research method was implemented with different research designs.

Quantitative methods were adopted with the following research designs: quasi-experimental design (n= 4), counterbalanced controlled experiment design (n= 1), two-by-two mixed experimental design (n=1), experimental design (n= 3), cross sectional design (n= 1) and quantitative design (n= 2).

Qualitative methods were adopted with the following research designs: microgenetic design (n= 1), inductive design (n= 1), case study design (n= 2), multi-method case study design (n= 1) and qualitative design (n= 2).

Mixed methods were adopted with the following research designs: convergent parallel design (n= 2), exploratory case study design (n= 2), explanatory sequential design (n= 2), within-groups design (n= 1) and mixed design (n= 2).

Table 2

Distribution of research methods and research designs in the reviewed studies.

Research Methods	***n***	**Research Designs**	***n***
Quantitative	12	✓ Quasi-experimental	✓ 4
		✓ Experimental	✓ 3
		✓ Quantitative	✓ 2

		✓ Counterbalanced controlled experiment	✓ 1
		✓ Two-by-to mixed experimental	✓ 1
		✓ Cross sectional	✓ 1
Qualitative	7	✓ Case study	✓ 2
		✓ Qualitative	✓ 2
		✓ Microgenetic	✓ 1
		✓ Inductive	✓ 1
		✓ Multi-method case study	✓ 1
Mixed	9	✓ Convergent parallel	✓ 2
		✓ Exploratory case study	✓ 2
		✓ Explanatory sequential design	✓ 2
		✓ Mixed	✓ 1
		✓ Within-groups	

2.10. Data Collection Tools

In terms of data collection, studies implemented different tools based on their research method and design they adopted. Quantitative studies mostly adopted writing performance data (n= 9), including expository, argumentative or narrative essays and revisions, individual or ChatGPT revised drafts, final writing tasks, in-class writing tasks, pre- and post-writing scripts, and CET-6 draft. Also, they adopted questionnaires and surveys (n= 6). Subsequently, revision and feedback documents (n= 3) such as feedback review sheets, comparison sheets, error-identification tables; audio recordings and transcripts (n= 2) were adopted by the researchers.

Qualitative studies, on the other hand, frequently adopted different types of interviews (n= 10) such as semi-structured, stimulated recall, retrospective and group interviews. Another frequently adopted tools were writing artifacts and revisions (n= 6) such as original and revised research proposals, draft-feedback-revision texts, group portfolios, and original and revised memoir tasks. Also, ChatGPT interaction records (n=5) were gathered via interaction logs. Researchers further implemented think-aloud protocols and direct observation sessions (n= 5) to gather data. Also, screen recordings (n=3); researcher notes, behavioural and metacognitive coding schemes, text comparison outputs (n= 3); reflexive journals (n=2) and open-ended follow-up survey (n= 1) were implemented for data collection.

Mixed method studies mostly adopted questionnaires and surveys (n= 8) such as pre and post surveys, Task Engagement Questionnaire and perception questionnaire. Subsequently, writing artifacts and revisions (n= 7) such as initial and revised essays, pre and post writing tasks, sequential writing tasks, timed writing tasks, argumentative essays and TOEFL writing tasks were implemented frequently. Interviews (n=6); ChatGPT interaction records (n= 3) via chat logs and teacher and ChatGPT feedback logs; journals, self-reports, reflection notes (n= 3) were also adopted in the studies. Finally, less frequently adopted sources were classroom observations (n= 1), creativity/cognitive measures via TTCT Verbal-Short Form (n= 1), screen-recordings of writing tasks (n= 1), and tracker sheets (n= 1).

Table 3

Data collection tools adopted in reviewed studies.

Research Methods	**Data Collection Tools**	***n***

Quantitative	✓ Writing performance data	✓ 9
	✓ Language proficiency measures	✓ 6
	✓ Questionnaires and surveys	✓ 6
	✓ Revision and feedback documents	✓ 3
	✓ Audio recordings and transcripts	✓ 2
Qualitative	✓ Interviews	✓ 10
	✓ Writing artifacts and revisions	✓ 6
	✓ ChatGPT interaction records	✓ 5
	✓ Think aloud protocols and direct observations	✓ 5
	✓ Screen recordings	✓ 3
	✓ Researcher notes and text comparison outputs	✓ 3
	✓ Reflexive journals	✓ 2
	✓ Open-ended follow-up survey	✓ 1
Mixed	✓ Questionnaires and surveys	✓ 8
	✓ Writing artifacts and revisions	✓ 7
	✓ Interviews	✓ 6
	✓ ChatGPT interaction and feedback records	✓ 4
	✓ Journals, self-reports and reflection notes	✓ 3
	✓ Classroom observations	✓ 1
	✓ TTCT Verbal-Short form	✓ 1
	✓ Screen-recordings of writing tasks	✓ 1
	✓ Tracker sheets	✓ 1

2.11. Targeted Writing Skills

Among the reviewed studies, ChatGPT is mostly used to improve grammatical accuracy (n= 12), revision and feedback (n= 11) and lexical diversity and complexity (n= 10). It also used to enhance organization (n= 9), content development (n= 8), coherence and cohesion (n= 8), language use (n= 7), and syntactic complexity (n= 5). Additionally, it is used for editing (n= 2), readability (n= 1) and originality and creativity (n= 1).

Table 4

Targeted Writing Skill	***n***
✓ Grammatical accuracy	✓ 12
✓ Revision and feedback	✓ 11

✓ Lexical diversity and complexity	✓ 10
✓ Organization	✓ 9
✓ Content development	✓ 8
✓ Coherence and cohesion	✓ 8
✓ Language use	✓ 7
✓ Syntactic complexity	✓ 5
✓ Editing	✓ 2
✓ Readability	✓ 1
✓ Originality and creativity	✓ 1

3. Discussion

The first research question focused on participants' educational levels, sample size and target language of the studies reported in the studies of ChatGPT for L2 writing. Among the studies, twenty empirical studies were conducted with undergraduate students. On the other hand, three studies conducted with post graduate students (Koltovskaia et al., 2024; Shen & Chen, 2025; Yuan & Dao, 2026), three studies conducted with high school students (Kim & Chon, 2025; Lu & Zeng, 2025; Ozan & Azap, 2026), one study conducted with middle school students (Wu & Zhao, 2025) and one study conducted with IELTS students (Fathi & Rahimi, 2026). These frequencies showed that ChatGPT has been mostly implemented in university context to enhance learners' writing skill. So, further studies should focus more on its implementation in high school and middle school contexts.

In terms of sample size most studies conducted with large sample size (e.g. Ton-Nu & Barrot, 2026; Teng & Huang, 2025; Tsai, 2026, Yan, 2024), while some of them conducted with relatively small sample size (e.g. Kaltovskaia et al., 2024; Shen & Chen, 2025; Ma et al., 2026). Furthermore, regarding study duration, most studies had long duration such as Muñoz et al. (2025), Ozan and Azap (2026), Tai et al. (2025) and Zhu et al. (2025). Some studies; however, had short duration such as Cengiz et al. (2025), Kang and Kim (2026), Koltovskaia et al. (2024), Ma et al. (2026) and Pretorius and Thewissen (2026).

Furthermore, all studies used ChatGPT to develop writing skills in English language since English is a compulsory lesson in K-12 education (Kim & Chon, 2025; Lu & Zeng, 2025; Ozan & Azap, 2026; Wu & Zhao, 2025). Additionally, English for academic writing courses are also presented as a compulsory subject in both EFL and ESL undergraduate programs such as English Language Education (Ghouali, 2025; Lee, 2024; Tabari et al., 2025; Teng & Huang, 2025; Wang,2024; Yan, 2024; Zou et al., 2026), English Language and Literature (Ma et al., 2026; Zare et al., 2025), English Literature and Linguistics (Pretorius & Thewissen, 2026), English Pedagogy (Muñoz et al., 2025), English Translation (Deygers et al., 2025) and Teacher education (Kang & Kim, 2026) as well as English preparatory school (Cengiz et al., 2025).

English for academic writing courses are also given in post graduate programs in Education (Shen & Chen, 2025) and other academic disciplines such as Management, Law and Biological Science (Yuan & Dao, 2026). Apart from EFL and ESL context, English writing courses are also presented in non-English disciplines such as Technology (Tai et al., 2025), Engineering sciences, Computer Science and Hydrology, (Huang & Wang, 2025; Koltovskaia et al., 2024; Ton-Nu & Barrot, 2026) and Humanities and Social Sciences (Zhu et al., 2025).

The second research question focused on research methods and designs of the studies conducted on ChatGPT for L2 writing. For quantitative methods, researchers adopted various research designs such as quasi-experimental (Deygers et al., 2025; Lu and Zeng, 2025; Muñoz et al., 2025; Tsai, 2026), experimental (Tai et al., 2025; Teng & Huang, 2025; Yan, 2024), quantitative (Kang & Kim, 2026; Pretorius & Thewissen, 2026), counterbalanced controlled experiment (Kim & Chon, 2025), two-by-to mixed experimental (Tabari et al., 2025) and cross sectional (Ton-Nu & Barrot, 2026). Regarding qualitative methods, they also adopted different research designs such as case study (Koltovskaia et al., 2024; Shen & Chen, 2025), qualitative (Lee, 2024; Ma et al., 2026), microgenetic (Fathi & Rahimi, 2026), inductive (Huang & Wang, 2025) and multi-method case study (Wu & Zhao, 2025). Finally, mixed methods studies adopted convergent parallel design

(Cengiz et al., 2025; Tekir, 2026), exploratory case study design (Ghouali, 2025; Zhu et al., 2025), explanatory sequential design (Ozan & Azap, 2026; Zare et al., 2025), mixed design (Wang, 2024; Zou et al., 2026) and within-groups design (Yuan & Dao, 2026).

Regarding third research question data collection tools were examined. For quantitative methods mostly writing performance data were used to assess writing skills (Deygers et al., 2025; Kim & Chon, 2025; Lu & Zeng, 2025; Muñoz et al., 2025; OOzan & Azap, 2026; Tabari et al., 2025; Tai et al., 2025; Yan, 2024; Yuan & Dao, 2026). Subsequently, they collected data through language proficiency measures (Kang & Kim, 2026; Lu & Zeng, 2025; Muñoz et al., 2025; Tabari et al., 2025; Yan, 2024; Zare et al., 2025), questionnaires and surveys (Cengiz et al., 2025; Ghouali, 2025; Teng& Huang, 2025; Tsai, 2026; Zare et al., 2025; Zou et al., 2026), revision and feedback documents (Cengiz et al., 2025; Koltovskaia et al., 2024; Zou et al., 2026), audio recordings and transcripts (Huang & Wang, 2025; Kang & Kim, 2026).

For qualitative methods researchers adopted interviews (Cengiz et al., 2025; Fathi & Rahimi, 2026; Huang & Wang, 2025; Koltovskaia et al., 2024; Lee, 2024; Ma et al., 2026; Ozan & Azap, 2026; Shen & Chen, 2025; Yuan & Dao, 2026; Zare et al., 2025), writing artifacts and revisions (Cengiz et al., 2025; Huang Wang, 2025; Lu &Zeng, 2025; Ma et al., 2026; Wu & Zhao, 2025; Yuan & Dao, 2026), ChatGPT interaction records (Huang & Wang, 2025; Ma et al., 2026; Shen & Chen, 2025; Yuan & Dao, 2026; Pretorius & Thewissen, 2026), think-aloud protocols and direct observations (Fathi & Rahimi, 2026; Huang & Wang, 2025; Lee, 2024; Shen & Chen, 2025; Ma et al., 2026), screen recordings (Koltovskaia et al., 2024, Zhu et al., 2025; Huang & Wang, 2025), researcher notes and text comparison outputs (Cengiz et al., 2025;Koltovskaia et al., 2024; Wu & Zhao, 2025), reflexive journals (Fathi & Rahimi, 2026;Ma et al., 2026) and open-ended follow-up survey (Koltovskaia et al., 2024).

Regarding mixed methods, they also implemented different types of data collection tools. For instance, questionnaires and surveys (Cengiz et al., 2025; Deygers et al., 2025; Lu & Zeng, 2025; Ozan & Azap, 2026; Tai et al., 2025; Tsai, 2026; Wang, 2024; Zare et al., 2025), writing artifacts and revisions (Cengiz et al., 2025; Lu & Zeng, 2025; Ma et al., 2026; Tai et al., 2025; Tsai, 2026; Wu & Zhao, 2025; Yuan & Dao, 2026), interviews (Cengiz et al., 2025; Ma et al., 2026; Ozan& Azap, 2026; Tai et al., 2025; Wu & Zhao, 2025; Zare et al., 2025), ChatGPT interaction and feedback records (Ma et al., 2026; Pretorius & Thewissen, 2026; Yuan & Dao, 2026; Zou et al., 2026), journals, self-reports and reflection notes (Ma et al., 2026; Tekir, 2026; Wang, 2024), classroom observations (Ma et al., 2026), TTCT Verbal-Short form (Tekir, 2026), screedn recordings (Zhu et al., 2025), and tracker sheets (Cengiz et al., 2025).

For the last research question ChatGPT use to improve learners' writing skills in terms of grammatical accuracy, revision and feedback, lexical diversity and complexity, organization, content development, coherence and cohesion, language use, syntactic complexity, editing, readability and originality and creativity.

Among the studies, ChatGPT was mostly used to identify grammar errors and correct them in terms of grammar, mechanics, syntax and punctuations to enhance grammatical accuracy (Cengiz et al., 2025; Deygers et al., 2025; Fathi & Rahimi, 2026; Huang & Wang, 2025; Kang & Kim, 2026; Kim & Chon, 2025; Koltovskaia et al., 2024; Lee, 2024; Lu & Zeng, 2025; Ozan & Azap, 2026; Tabari et al, 2025). For instance, Cengiz et al. (2025) found that learners use ChatGPT for grammar, punctuation and mechanic corrections. 77.2 % of the corrections were accepted directly by the students to achieve grammatical accuracy. Similary, students used it for scaffolding and grammatical feedback (Deygers et al., 2025) and verb tense and determiners (Koltovskaia et al., 2024) It also helped students to notice and correct their errors such as subject verb agreement thanks to immediate feedback (Fathi & Rahimi, 2026). Also, students used ChatGPT for reviewing in terms of grammatical errors, logic and structure of the writing tasks (Huang & Wang, 2025). Also, by getting feedback from ChatGPT, learners produced final writing products with less errors (Kang & Kim, 2026).

It also used for revision and feedback (Cengiz et al., 2025; Kang & Kim, 2026; Koltovskaia et al., 2024; Lee, 2024; Ma et al., 2026; Pretorius & Thewissen, 2026; Teng & Huang, 2025; Tsai, 2026; Wu & Zhao, 2025; Yan, 2024; Zare et al., 2025). For example, Lu and Zeng (2025) compared

the use of ChatGPT-generated model texts with teacher model texts for feedback source and they found that Chat-GPT generated model texts provided better feedback to learners' writing tasks than teacher model texts. Muñoz et al. (2025) further found ChatGPT feedback more beneficial than teacher feedback in terms of grammatical range and accuracy in IELTS context. Another study conducted by Tabari et al. (2025) also implemented teacher feedback for control group and ChatGPT feedback for experimental group. However, findings differed in terms of writing quality. While teacher feedback provided more error reduction and syntactic complexity than ChatGPT, ChatGPT enhanced grammatical accuracy more than teacher feedback. Also, Lee (2024) used ChatGPT for planning, translating and reviewing. In Ma et al. (2026) study, learners used ChatGPT to receive feedback on their narrative writing by asking follow-up questions and clarifications. Also, Ozan and Azap (2026) asked ChatGPT to act as an EFL teacher to provide feedback on topic-specific writing tasks in terms of organization, style, grammar and content for experimental group, while control group receive feedback from their teachers on their writing tasks. Findings showed that experimental group improved their tasks more than control group.

Many studies further conducted to improve lexical diversity and complexity (Deygers et al., 2025; Fathi & Rahimi, 2026; Kang & Kim, 2026; Kim & Chon, 2025; Koltovskaia et al., 2024; Lee, 2024; Lu & Zeng, 2025; Muñoz et al., 2025; Pretorius & Thewissen, 2026; Tabari et al., 2025; Yuan & Dao, 2026). For instance, Pretorius and Thewissen (2026) asked learners to revise their essays based on teacher-moderated ChatGPT feedback and they found that lexical diversity increased in their revised texts. Also, Kim and Chon (2025) compared ChatGPT-assisted proofreading (CAP) with machine translation and self-revision in terms of lexical diversity and lexical errors, and they found that CAP users produced texts with higher lexical diversity. Finally, Deygers et al. (2025) investigated lexical diversity with TAALES software and found that ChatGPT provided academic lexis and text lengths were increased during the interventions.

Furthermore, some studies used ChatGPT for organization by getting help for planning, structural clarity and essay organization (Cengiz et al., 2025, Fathi & Rahimi, 2026; Ghouali, 2025; Huang & Wang, 2025; Lu & Zeng, 2025; Ozan & Azap, 2026; Tabari et al., 2025; Tai et al., 2025; Zou et al., 2026). For instance, Ghoual (2025) reported that ChatGPT can be used for lesson planning and outline creation. Also, Tabari et al. (2025) used ChatGPT to provide feedback based on the five stages of plot in narrative writing. Furthermore, Zou et al. (2026) reported that learners accepted 81.82 % of organizational feedback from ChatGPT while 68.75% organizational feedback from their teacher. It also helped students for content development through idea generation, detailed examples for idea validation (Cengiz et al., 2025; Ghouali, 2025; Huang & Wang, 2025; Lu & Zeng, 2025; Ozan & Azap, 2026; Tai et al., 2025; Zare et al., 2025).

Finally, it also used to develop coherence and cohesion by providing connector suggestions and transitions (Fahi & Rahimi, 2026; Huang & Wang, 2025; Kim & Chon, 2025; Koltoskaia et al., 2024; Ma et al., 2026; Pretorius & Thewissen, 2026; Shen & Chen, 2025; Yuan & Dao, 2026), language use in terms of style tone and wording (Cengiz et al., 2025; Huang & Wang, 2025; Ozan & Azap, 2026; Shen & Chen, 2025; Tai et al., 2025; Tsai, 2026; Zhu et al., 2025), syntactic complexity (Deygers et al, 2025; Kang & Kim, 2026; Kim & Chon, 2025; Tabari et al, 2025; Ton-Nu & Barrot, 2026), editing in terms of proofreading and refining (Ghouali, 2025; Ton-Nu & Barrot, 2026), readability (Tsai, 2026) and originality and creativity (Tekir, 2026).

4. Implications for future studies

The analysis of twenty-eight studies showed that most studies conducted in undergraduate settings with little attention on postgraduate, high school and middle school setting. Also, most studies' participants were EFL or ESL learners in different English programs and fewer studies have examined different disciplines. Therefore, future studies should focus on the use of ChatGPT use to develop writing skills for postgraduate or K-12 students and focus on other undergraduate and post graduate disciplines apart from ELT and ESL field.

In terms of research methods and designs, most studies conducted with quantitative and mixed methods approaches; however, there were limited studies that adopted qualitative designs. Additionally, the number of the studies with short and long duration were almost equal which means ChatGPT use in writing skill development can be measured through both long- and short-term studies. However, none of the studies adopted longitudinal design, so future studies

may examine how learners' writing development improve throughout the periods with ChatGPT implementation.

Regarding data collection tools, while some studies adopted the similar tools, some used different tools to gather data. For instance, they mostly collected data through writing products, questionnaires, interviews, and linguistic analysis tools. These tools provide qualitative findings. Therefore, future studies should implement more quantitative data collection tools such as eye-tracking, screen-capture analysis, collecting chat logs etc. to strengthen their data analysis procedure and to provide more objective results in terms of how learners interact with ChatGPT while generating their writing tasks.

Lastly, most studies focused on ChatGPT use for grammatical accuracy, revision and feedback, lexical improvement, organization and content development. However, they little paid attention to syntactic complexity, editing, readability, originality and creativity. Therefore, future studies should focus on how ChatGPT is used to enhance these skills.

4. Conclusion

This study reviewed twenty-eight studies in terms of the use of ChatGPT in English writing instruction across different educational contexts and levels. Findings showed that it is used both in K-12 context and higher education context and researchers examined its use through quantitative, qualitative and mixed methods approaches. Most studies focused on grammatical accuracy, revision and feedback, lexical development, content development, organization and coherence. Findings also suggest that it can be used to improve writing development in terms of getting immediate feedback and revision processes. However, most studies conducted in higher education especially EFL and ESL context with short term duration and with small sample size. Therefore, future studies should focus on different disciplines with diverse populations by adopting longitudinal designs. Therefore, future studies will provide more reliable findings in terms of the role of ChatGPT in language learning and writing instruction.

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