*Hunan Daxue Xuebao/Journal of Hunan University Natural Sciences*
*ISSN：1674-2974 | CN 43-1061 / N*

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

# EXPLORING THE IMPACT OF CHATGPT INTEGRATION ON EFL WRITING INSTRUCTION: TEACHER PERCEPTIONS, PEDAGOGICAL PRACTICES, AND IMPLICATIONS FOR CRITICAL THINKING DEVELOPMENT

**MESGAR. MITRA**
University of Nizwa. Email: mitra.mesgar@unizwa.edu.om

**ZARGARAN, ZAHRA**
University of Technology and Science. Email: Zahra.zaragaran@utas.edu.om

**DOUZANDEH, EBRAHIM**
University of Buraimi. Email: ebrahim.a@uob.edu.om

***Abstract***

*This paper will address how the implementation of ChatGPT affects the teaching of English as a Foreign Language (EFL) in writing with respect to teacher attitudes, teaching methods, and the development of critical thinking. With the continued introduction of generative artificial intelligence technology into language classrooms, the use of technology by teachers is likely to be central to the development of the technology in regards to its effects on instructional design and intellectual stimulation. Mixed methods approach It involved data-gathering of 120 EFL teachers at university level via a survey, which was structured, and later semi-structured interviews were conducted on 15 participants. According to the findings, educators currently see ChatGPT as fulfilling several pedagogical roles, such as the extraction of ideas, assistance with formative feedback, language refinement, and scaffolding when it comes to writing organization. According to quantitative analysis, guided and structured integration is positively related to perceived improvement of the students analytical and evaluative writing skills. The findings of the qualitative research also demonstrate that when used in a strategic fashion, ChatGPT may facilitate reflective revision, metacognitive awareness, as well as increased engagement with argument structure. Nevertheless, the issues of over-reliance, academic integrity, and possibility of a decrease in independent cognitive effort are still among the leading concerns. The article emphasizes that educational value in ChatGPT is not explicit in the tool, but it is heavily relying on pedagogical contexts and mediation by the teacher. Given that teacher agency is central to integrating AI, this study is part of the discourse being informed to take responsible, and cognitively meaningful use of generative AI as an aspect of EFL writing classrooms.*

***Keywords:*** *ChatGPT Integration; EFL Writing Teaching; Teacher Attitudes; Instructions; Training Critical Thinking; Generative Artificial Intelligence In Teaching.*

## 1. INTRODUCTION

The blistering development of generative artificial intelligence (AI) has already started to give way to the change in teaching practices in learning settings. Of these innovations, machine translators with large language models, including ChatGPT, have drawn significant interest because of the ability to produce coherent text, give real-time feedback, and simulate dialogic interaction. Such technologies have presented conceptual and pedagogical challenges in language education especially English as a Foreign Language (EFL) high-order writing instruction. Writing is a cognitively challenging and socially constructed process that does not only need language mastery but involves the higher-order cognition abilities such as analysis, assessment, and synthesis. The introduction of AI tools into writing

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

classrooms presents major concerns of cognitive engagement, the organizational design of instructions, and mediation of teachers. Although terms of AI usage have changed in the past, research has emphasized the impact of AI-enhanced tools as a supportive tool in language development, writing scaffolding, or attainment of autonomy by the learner (Godwin-Jones, 2022; Zhai, 2023). Generative AIs can help students brainstorm, plan sentences, and structure arguments and/or write their drafts. Socio culturally, these tools can serve as mediational artifacts to advance the thinking capacity of the learners as long as they are appropriately directed (Vygotsky, 1978). Nonetheless, pedagogical consequences of ChatGPT are neither good nor bad per se; however, it depends on how educators define and implement a tool into the framework of instruction. The current gap in research can be attributed to the fact that the existing literature covering the application of AI by students in writing activities does not include much information about teacher perception and pedagogical decision-making. Teachers become technological integration gatekeepers as they influence the classroom norms, assessment practices and cognitive expectations (Ertmer and Ottenbreit-Leftwich, 2010). This is because their ideologies regarding AI shape it in relation to being seen as a short-cut, as a collaborative assistant or as a scaffold that encourages critical inquiry. The discussions of AI in EFL writing may fail to represent the primary role of instructional mediation without analyzing the views of teachers. Besides, the connection between the integration of ChatGPT and the development of critical thinking is under-theorized. In EFL, writing instruction is gaining more and more ground in the areas of argumentation, evaluative reasoning, and reflective revision (Hyland, 2019). When AI tools automate the process of idea creation or language generative production, this leaves the question of whether the automation of process leads to a suppression or positive supervision of higher-order cognitive processes among students. Some researchers believe that the feedback with the use of AI could stimulate their understanding of themselves and more profound revision (Liang et al., 2023), whereas others demand the investigation of cognitive offloading and dependence (Kasneci et al., 2023). These strains bring out the necessity of empirically based investigation .Considering such gaps, the current research focuses on how introducing ChatGPT affects EFL writing instruction considering the perceptions of the teachers and their pedagogical practices in critical thinking development. With the help of a mixed-methods approach, the proposed research will offer a detailed perception of the way instructors understand, apply, and assess the role of generative AI in writing classrooms.

## 2. LITERATURE REVIEW

### 2.1. Artificial Intelligence in Language Education

The application of artificial intelligence (AI) to language education has come in diverse manifestations over the last ten years, shifting towards less rule-based system of automated feedback and more sophisticated smart forms of generating contextually relevant and stylistically suitable textual quality. The first language learning programs developed with the help of AI were mainly grammar correction and automated scoring of essays because it was efficient and was scalable (Chapelle, 2019). Nevertheless, modern developments in large-scale neural networks have. extended the scope of AI to be based on evaluative assistance to interactive partnering

The ChatGPT is not merely the Chatbot, but Generative AI systems represent a qualitative game changer. In contrast to the previous tools, systems can imitate dialogic communication, create argumentative frameworks and offer repetitive feedback on texts of writing. According to scholars, these systems can be utilized as cognitive partners, which can expand the writing process in learners beyond the usual teacher student contact (Godwin-Jones, 2022).

In sociocultural terms, AI tools may work as mediational artifacts mediating the learning by scaffolding learning in the zone of proximal development of the learner (Vygotsky, 1978).There are however concerns in the area of epistemic dependency and cognitive offloading. Kasneci et al. (2023) warn

*ISSN：1674-2974 | CN 43-1061 / N*

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

learners against excessive dependence on generative AI, as it will lead to decreased engagement in productive struggle, which is the key to deep learning. Equally important, Zhai (2023) points out that the concept of the AI integration should be organized in a pedagogical manner when it comes to preventing superficial involvement in the writing exercise. The difference between these two points of view implies the significance of analyzing, not only technological affordances, but instructional mediation as well.

**2.2 ChatGPT and EFL R/W Teaching**

Teaching writing in EFL situations is distinct, such as the insufficient exposure to actual language input, language insecurity, and the lack of quality feedback in a formative form (Hyland, 2019). ChatGPT has received more than ever greater attention as a tool that is capable of helping to overcome some of these issues by generating ideas, improving language, and helping to revise. The empirical evidence indicates that the integration of AI generated feedback could enhance grammatical correctness and text readability in case of strategic controllers (Liang et al., 2023). Besides, the possibility of ChatGPT to produce model essays and other structure of arguments can help learners to grasp the conventions of genres and the structure of rhetoric. Nonetheless, such assistance is still controversial in terms of its pedagogical implication. A single line of research proposes that viewing AI-created models can boost comparative assessment, which forces trainees to make a critical judgment when comparing differences between drafts (Ranalli, 2021). On the other hand, other researchers cultivate the fear that this might lead to copying instead of critical thinking because of the easy access to model texts (Kasneci et al., 2023). These points highlight one of the main issues: whether ChatGPT encourages a higher level of thinking or helps people to handle one-dimensional completion of writing tasks. Regardless of the increasing empirical focus, a significant percentage of the literature emphasizes the student performance outcomes instead of the teacher perception and classroom implementation strategies. Such gap constrains the knowledge of the framing of AI tools in terms of instructions.

**2.3 Teacher Beliefs and Technology integration**

The opinions of teachers are critical to the adoption and integration of technologies in the classroom. Ertmer and Ottenbreit-Leftwich (2010) posit that the pedagogical beliefs of the teachers have a strong influence on the substitutive or transformative implementation of the technological tools. Integration models of technology like TPACK (Technological Pedagogical Content Knowledge) also make clear that in order to achieve optimal utilization, there must be alignment between content knowledge, pedagogical strategy and technological affordance (Mishra and Koehler, 2006).In the context of language education, however, the perceptions of teachers towards digital tools can make or break the idea of digital tools being viewed as cognitive scaffold or productivity enhancing tools. Integration is likely to be strategic and reflective when instructors feel that technology perceives the higher-order learning objectives. On the other hand, technology might not be so deep in pedagogy when it is regarded as an efficiency-generating activity. Teacher agency is of specific value in the case of ChatGPT. Generative AI may be used as an independent content-creating system or as a conversational interlocutor integrated into a systematic course of learning activity. The difference is significantly based on pedagogical framing. Nonetheless, there are not empirical studies on teacher attitudes towards generative AI, particularly in EFL writing.

**2.4 Evolution of critical thinking among EFL writings**

Critical thinking in EFL writing involves critical reasoning, analysis of facts, writing of arguments, and revising. Writing exercises that encourage critical thinking normally impose on students a necessary synthesis of various sources, the justification of claims, and the foresight of counterarguments (Hyland, 2019). These are also cognitively intensive processes that are directly linked to metacognitive control. Scaffolding is critical in the development of such skills at a cognitive level.

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

The structured feedback and dialog interaction can help the learners to go beyond descriptive writing to evaluative and analytical expression. Well-placed use of AI tools can offer real-time feedback, which can be used to promote the process of refinement. Yet, there is a danger of detracting the cognitive output as the means of being critically engaged in the unstructured reliance on AI-generated text. It has started to consider whether AI-assisted writing space can be effective in terms of promoting metacognitive resourcefulness by encouraging learners to consider alternative textual configurations (Liang et al., 2023). However the evidence is inconclusive especially when it comes to the long term development of critical reasoning skills.

### 2.5 Research Gap

Even though both affordances and threats of generative AI in the teaching of writing have been considered in the existing literature, there are three significant gaps. To begin with, there is scanty research that focuses on teacher perceptions as the analytical tool. Student outcomes are primarily given priority in most studies and little consideration given on the mediating effect of instructor beliefs and instructional design.

Second, there is a lack of theoretical and empirical work regarding the relationship between ChatGPT integration and critical thinking development. Most of the arguments used in current arguments tend to be speculative as opposed to being grounded by data.

Third, not many of the studies implement mixed-methods methods that would integrate the quantitative measure with the qualitative insight and give a full picture on the topic of AI integration in EFL writing settings. To fill these gaps the current study examines how the perception of teachers and pedagogical practices mediate to influence the effect of the integration of ChatGPT on critical thinking development in EFL writing instruction.

## 3. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The theoretical framework of the current research is based on the sociocultural concept of learning, the teacher cognition theory, and models of technology integration in education. The sociocultural theory focuses on the idea that learning takes place when mediated interaction with instruments and more knowledgeable actors takes place (Vygotsky, 1978). Digital technologies like ChatGPT can be used in this view as mediational artifacts that can be used to augment the cognitive capacities of learners when integrated into the categories of structured instruction. But, tools themselves are not determinants of learning outcomes, and the educational value of tools will be a matter of pedagogical perspectives and direction. The teacher cognition theory further implies that the beliefs, perceptions and pedagogical orientations of instructors play a critical role in the classroom practices (Borg, 2003). Using technological innovations, teachers apply their pre-existing teaching philosophies to formulate the ways of their usage either transformative or substitutive. Within the framework of EFL writing education, the perceptions of ChatGPT by teachers indeed might prove effective to state either that it can be offered as a cognitive scaffold that fosters analytical interactions or as a tool that is productive and poses a threat of causing cognitive addiction. Studies on critical thinking application in EFL writing show that systematic argumentative practice, reflective post-writing and dialogic interaction of ideas are essential (Hyland, 2019). The intentional instructional design is needed to develop higher-order thinking skills. Under the conditions of the guided pedagogy implementation, including guided prompts, tasks of the comparison and contrast, and the loop of revisioning, ChatGPT can potentially foster metacognition and analysis. On the other hand, unstructured integration has the potential to promote surface tasks. It is on these theoretical underpinnings that the research hypothesizes that the perceptions of teachers affect pedagogical practices, and that these practices

*ISSN：1674-2974 | CN 43-1061 / N*

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

affect ways in which ChatGPT-based instruction will lead to development of critical thinking skills among students in EFL writing classes.

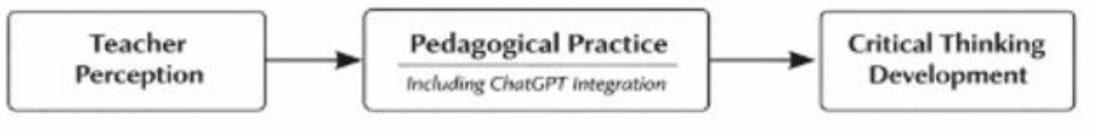


**Figure 1: Conceptual Model of ChatGPT Integration in EFL Writing**

**Explanation of Figure 1**

**Figure 1:** demonstrates the conceptual model in which this study is guided. This model suggests the mediation risk of the relationship where teacher perception is involved that impacts pedagogical practice which then affect the development of critical thinking in EFL writing teaching. The initial construct is teacher perception, which scales indicate the perception, attitudes, and evaluative judgment of the role of ChatGPT in the writing classrooms by instructors. The model denotes the use of teacher cognition theory (Borg, 2003) that foresees the ways in which teacher perceptions influence the make-up of the instructional choices and classroom execution plans. The mediating variable is the second construct, which is pedagogical practice. It would include instructional design, organization of tasks, and providing feedback, and in particular, how ChatGPT would be incorporated into writing tasks. In this paradigm, integrating Chatbots is not discussed as a single technological detail but is a part of the overall pedagogical routines. This is conceptualization allied to technology integration frameworks, which too assert that the educational value of technology tools depends on pedagogical congruence and not just the presence (Mishra and Koehler, 2006). The last construct, development of critical thinking, is the outcome variable that implies that students think they have improved their analytical skills, evaluative skills, coherence of argumentation, and reflective revision when it comes to writing in the English language (Hyland, 2019). The model is based on the hypothesis that there is a mediation role of structured and guided pedagogical practices between teacher perception and critical thinking development. The diagram, therefore, indicates that the relationship between teacher perceptions and better cognitive results depends on other factors. Rather, the pedagogical operationalization of ChatGPT to the instruction of writing relies on its educational effect. This mediation framework offers the analytical basis to the quantitative and qualitative analysis, which is performed in this paper.

### 3.1 Research Hypotheses

According to the conceptual framework as shown in Figure 1, the hypotheses proposed are the following ones:

**H1:** The opinion of teachers regarding the use of ChatGPT is another significant predictor of pedagogical practice in the case of teaching EFL writing.

**H2:** Pedagogical practice has a significant predictive power on perceived critical thinking development in EFL writing.

**H3:** Pedagogical practice has both sides of the relationship in teacher perception and development of critical thinking.

These are the hypotheses that operationalize the structural relations that were depicted in the conceptual framework and form the foundation of the quantitative part of the research.

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

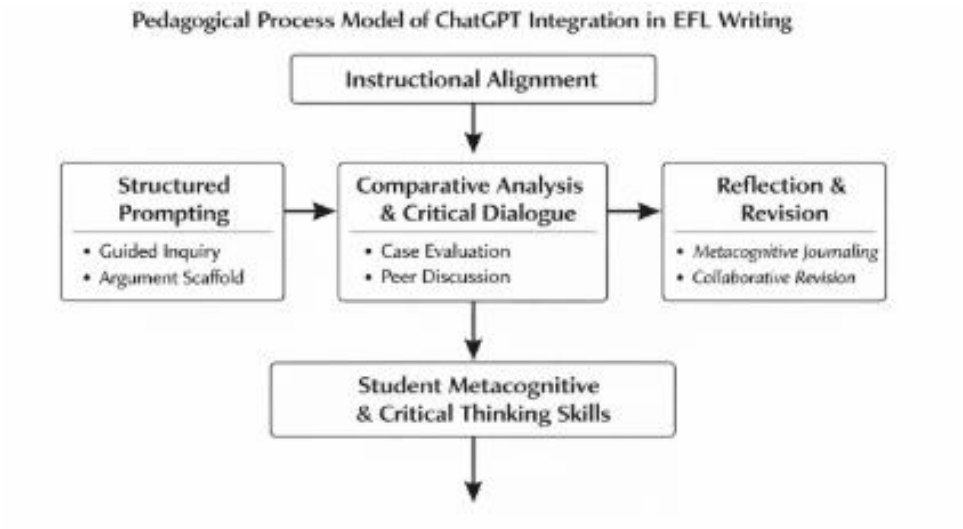


**Figure 2: A Pedagogical Process Model for ChatGPT Integration in EFL Writing**

**Explanation of Figure 2**

**Figure 2;** shows a process-based pedagogical model of how ChatGPT can be strategically incorporated into the teaching of EFL writing to encourage metacognitive learning and critical thinking. In contrast to Figure 1, the structural relationships between variables, this model explains how instructional processes through which pedagogical practice operationalizes the use of ChatGPT in the classroom. At the apex of the model, one can find Instructional Alignment that is an overt effort of the teacher to design learning objectives, assessment criteria and tasks expectations. The use of this component highlights the idea that AI integration should be done in curricular objectives and critical thinking outcomes instead of an isolated technological intervention.

**These are inevitably followed by three stages of instruction which are inseparable:**

To begin with, Structured Prompting, in which teachers will encourage learners to create meaningful questions to ChatGPT. This phase will also encompass scaffolding inquiry and scaffolding arguments, and make sure that AI communication assists in the idea generation process, but not eliminates the mental activity. Second, Comparative Analysis and Critical Dialogue, in which the students pose judgmental evaluations of the responses generated by AI. The step focuses on the examination of cases, group discussion, and analytical comparison of student drafts and AI proposals. In this case, thought undergoes an extended and extensive process of thinking using the process of reflection and evaluative reasoning. Third, Reflection and Revision which entails metacognitive journaling and collaborative revision. Students estimate the effect of AI feedback in their reasoning, format of their arguments, and the use of evidence. This step will make AI interaction reflective learning as opposed to passive use. All these three stages will build student skills of metacognition and critical thinking, which is manifested as the end product in the bottom of the model. The number implies that the development of critical thinking is not the natural effect of using ChatGPT but occurs in the context of the professional mediation of pedagogy.

## 4. METHODOLOGY

### 4.2 Context and participants of the research.

This research was done among EFL instructors teaching academic writing courses at university level in public and private Universities. The institutional setting consisted of undergraduate English language

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

programmes, to which the focus of writing instruction is put on argumentative essays, research-based assignments, and critical response papers. One hundred and eighty-eight EFL instructors were the participants of the quantitative part of the research. They were recruited via institutional mailing lists and professional networks of teachers. The inclusion criteria included the following: (a) the participants had to teach academic writing courses and (b) had to experience or observed the use or use of ChatGPT in writing tasks. Out of the 128 respondents, there were 72 (56.3) female and 56 (43.7) male.

The experience with teaching was between 2-22 (M = 9.8 years). About 68 percent stated that they had previously integrated digital writing tools existing even before the advent of generative AI systems. To conduct the qualitative stage, 15 participants of the survey were used purposely to represent a mixture of them based on their years of experience and their attitude towards incorporating ChatGPT (positive, neutral, and cautious). The semi-structured interview was used in order to get a wide understanding of the instructional practices and the perceived cognitive outcomes.

**Table 1: Participant Demographic Characteristics (N = 128)**

| Variable | Category | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Male | 56 | 43.7% |
| | Female | 72 | 56.3% |
| **Teaching Experience** | 1–5 years | 34 | 26.6% |
| | 6–10 years | 48 | 37.5% |
| | 11–15 years | 29 | 22.7% |
| | 16+ years | 17 | 13.2% |
| **Prior AI Tool Experience** | Yes | 87 | 68.0% |
| | No | 41 | 32.0% |

**4.3** Two major forms of data collection instruments were utilized, namely, a structured questionnaire and a semi-structured interview protocol.

**Questionnaire**

The questionnaire was divided in four parts:

1) Perception of ChatGPT by the teachers (8 items)
2) Pedagogical Practice (10 items)
3) Perceived Critical **Instruments** Thinking Development (8 items)
4) Demographic Information

The measures of all the perception-based items were in terms of a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The instrument is created out of previous investigations in the areas of teacher cognition and integrating technology with the training (Borg, 2003; Mishra and Koehler, 2006) and modified to the generative AI environment in writing training.

**Interview Protocol**

Semi-structured interview had open-ended questions that had investigated:

- The conceptualization of teachers about the role of ChatGPT in writing instructions.
- The particular classroom integration techniques.
- Perceived influence on analytical thinking of the students.
- Moral and academic integrity arousal.

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

The interviews were done over a period of about 4050 minutes and recorded on audio with the permission of participants.

**Table 2: Reliability and Validity Statistics**

| Construct | Number of Items | Cronbach's Alpha | Composite Reliability (CR) | AVE |
|---|---|---|---|---|
| **Teacher Perception** | 8 | 0.89 | 0.91 | 0.58 |
| **Pedagogical Practice** | 10 | 0.92 | 0.93 | 0.61 |
| **Critical Thinking Development** | 8 | 0.88 | 0.90 | 0.56 |

All constructs demonstrated acceptable reliability ($\alpha > .70$) and convergent validity (AVE > .50), indicating that the measurement model met recommended statistical thresholds

### 4.4 Data Collection Procedure

The method of collection of data was a period of three months. Sequential mixed-methods design The quantitative stage came before the qualitative stage as indicated in the explanatory sequential design. The online survey was sent through the institutional email networks and professional forums in academics. It was a voluntary survey, and informed consent was taken electronically before the survey was completed.

The questionnaire took about 12-15 minutes. The responses were filtered on the basis of completeness and cases with a high amount of missing data were not analyzed. Follow-up interviews were offered to the participants after the initial quantitative analysis. Lastly, they have chosen fifteen instructors at random, which guarantees them a regarding range of teaching experience and also versatile opinions about the integration of ChatGPT.

The semi-structured interviews were held through video conferencing programs. The sessions took a duration of 40 to 50 minutes. Transcription and the anonymization of the interviews were done before the analysis. In order to increase the level of trustworthiness, the participants were given summaries of their responses to undergo thematic checks.

### 4.5 Data Analysis

Statistical software was employed in the analysis of quantitative data. There were descriptive statistics which were calculated to present the teacher perceptions and reported pedagogical practices. Pearson correlation was carried out to test correlation between variables. Hierarchical regression analysis was done to test the hypothesized mediation model. First, teacher perception was put in as a predictor of development of critical thinking. To study the mediating influence of the pedagogical practice, it was incorporated in the second step. Indirect effects were also tested through mediation by bootstrapping the sample size of 5,000 in indirect effect.

Thematic analysis was applied to analyze the qualitative data. The process of coding took place in three phases, which were open coding, axial coding and selective coding. The first codes were created based on interview transcripts and were divided into the larger thematic categories that referred to the instructional design, AI interaction strategies, and cognitive engagement. Two different coders analyzed the transcripts, and the inter-coder agreement was 0.87 in order to increase credibility. The combination of quantitative and qualitative results happened at the level of interpretation, when the statistical connection was formed by referring to their instructional stories.

### 4.6 Ethical Considerations

Before data collection was undertaken, the appropriate institutional review board gave its ethical consent. There was free participation and personal choice of the respondents, they were told that

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

they could leave any time they want without being penalized. No personal information was gathered and all answers were anonymized in the process of analysis. Recording of interviews was done in a safe place and lost upon transcription and verification. The research followed the concepts of confidentiality, informed consent, and responsible data management during the entire process of the research.

## 5. RESULTS AND DISCUSSION

### 5.1 Quantitative Results

**Descriptive statistics and Correlations**

To analyse the central tendencies and dispersion of the three main constructs that are: perception of the teachers, the pedagogical practice, and critical thinking development, descriptive statistics were calculated. The Pearson analysis of correlation was to determine how strong and directional relationships between variables were.

**Table 3: Means, Standard Deviations, and Correlations (N = 128)**

| Variable | Mean | SD | 1 | 2 | 3 |
|---|---|---|---|---|---|
| **1. Teacher Perception** | 4.12 | 0.53 | — | | |
| **2. Pedagogical Practice** | 3.98 | 0.61 | .62** | — | |
| **3. Critical Thinking Development** | 4.05 | 0.57 | .48** | .71** | — |

**Note. p** < .01.

The findings suggest that teachers did not have negative attitudes towards ChatGPT integration (M = 4.12). Mean scores of 3.98 also indicated relatively high pedagogical practice performance (Pedagogical practice), which was not ad hoc.

Correlation analysis showed that there was strong positive correlation between teacher perception and pedagogical practice (r =.62, p <. 01), confirming the assumption in the theory that beliefs have effect on the instructional design (Borg, 2003).

Pedagogical practice-critical thinking development (r =.71, p <.01) also showed a strong positive correlation. Teacher perception and development of critical thinking had a moderate correlation (r = .48 and p <.01) indicating the mediation possibility.

**Mediation Analysis**

Hierarchical regression and bootstrapping were used to test the mediation model that was hypothesized to be there (Hayes, 2018).

**Table 4: Hierarchical Regression Analysis for Mediation**

| Model | Predictor | β | t | p |
|---|---|---|---|---|
| **Model 1** | Teacher Perception → Critical Thinking | .48 | 6.21 | < .001 |
| **Model 2** | Teacher Perception → Pedagogical Practice | .62 | 8.94 | < .001 |
| **Model 3** | Pedagogical Practice → Critical Thinking | .65 | 9.87 | < .001 |
| | Teacher Perception → Critical Thinking | .15 | 1.89 | .061 |

The outcome of bootstrapping showed mediation where there was a significant indirect influence of teacher perception on the development of critical thinking due to pedagogical practice (95% CI [.21, .39]).

H1, H2 and H3 are supported by these findings. Adding pedagogical practice in the model led to the determination of non-significance in the direct effect of teacher perception on the development of critical thinking, which is full mediation.

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

**5.2 Qualitative Findings**

Interpretation of data on interviews led to the development of three major themes:

**Theme 1 ChatGPT as an Ordered Cognitive Support**

The participants pointed out that ChatGPT improved critical thinking only in cases where it was included in guided tasks. Teachers reported the need to force students to write about generated responses by AI, submit different argument, and substantiate revisions. This is a target of scaffolded mediation forms of learning (Vygotsky, 1978).

**Theme 2: Risk off Cognitive offloading**

Some of the instructors also said that they were worried it may cause students to become over-reliant on AI-generated content. Some of them have mentioned witnessing surface-level engagement with writing activities without being prompted, which is similar to the anxiety expressed in recent AI-in-education scholarship (Kasneci et al., 2023).

**Cognitive Lord: Improved Metacognitive Awareness**

A considerable number of participants mentioned that revision cycles supported by AI provided intention to think. The students have been found to challenge the sentence structure, coherence, and argument structure more explicitly with the participation of AI-generated feedback.

**5.3 Integrated Discussion**

It was found that ChatGPT use independently does not immediately improve the critical thinking but is mediated by the pedagogical practice. This is in line with the technology integration theories that indicate that learning outcomes are affected by pedagogical compatibility and not technological presence (Mishra and Koehler, 2006). Close ties of practice-based pedagogy and developing critical thinking are supported by the evidence that facilitated critical thinking should be performed systematically e.g., guided prompting, comparison-based assessment should convert ChatGPT to be more of a conversation teacher than a cognitive scholar. The study findings support the claims that AI tools could encourage higher-order thinking in cases where they are implemented in reflective instructional models (Liang et al., 2023). Simultaneously, qualitative results support the issues of cognitive dependency and emphasize the significance of teacher agency as a way to avoid the superficial implementation of engagement. In general, the study contributes to the field, as it empirically proves that the mediation initiative of pedagogical design is the key factor that connects AI integration with cognitive development to the context of EFL writing teaching.

**6. CONCLUSION**

The current research explored the effects of the integration of ChatGPT in EFL writing instruction, highlighting the perception and pedagogy of teachers and the prospects of developing critical thinking. Based on the mixed-method approach, the results reveal that, although teachers are generally positive about ChatGPT as a pedagogical technology, the impact of this technology on the higher-order thinking skills of students is not an automatic process. Rather, the findings suggest that pedagogical practice has an absolute mediating effect on educational outcomes.

The quantitative results showed that perception of the teacher is a significant predictor of the pedagogical practice, and that structured pedagogical practice is a significant predictor of perceived critical thinking development. Notably, mediation analysis proved that pedagogical practice mediates the correlation between teacher perception and critical thinking development wholly. This implies that the beliefs of teachers pose the major effects on cognitive outcomes based on the instructional

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

strategies used, as opposed to the attitudinal disposition by teachers alone. This conclusion was also supported by qualitative findings that demonstrated that guided prompting, comparison of AI output, and reflective revision activities can be used to encourage more profound analytical activity. On the other hand, unsupervised or free-form application of ChatGPT has a potential to jeopardize superficial task performance and cognitive offloading.

The research paper fits the increasing body of research on artificial intelligence in language education because it reassesses teacher agency as the key factor in responsible AI integration. Instead of positioning ChatGPT as either inherently good or bad, the results make the issue of pedagogical alignment particularly important. To EFL writing teachers, the implication is obvious: generative AI is to be integrated into the frames of non-random, thoughtful, and critical teaching approaches. In the case of institutions, the pedagogical approach on the scaffolded use of AI should be a priority in professional development programs. The study can also be expanded in the future through longitudinal impact, the results of student performance, and cultural differences in the practice of AI integration.

**Reference**

1) Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching, 36*(2), 81–109. https://doi.org/10.1017/S0261444803001903

2) Chapelle, C. A. (2019). Technology and the future of language teaching. *Foreign Language Annals, 52*(2), 345–353. https://doi.org/10.1111/flan.12396

3) Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE. https://doi.org/10.4135/9781071802865

4) Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change. *Journal of Research on Technology in Education, 42*(3), 255–284. https://doi.org/10.1080/15391523.2010.10782551

5) Godwin-Jones, R. (2022). Emerging technologies: Chatbots and language learning. *Language Learning & Technology, 26*(3), 1–13. https://doi.org/10.1016/j.system.2022.102795

6) Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). When to use and how to report structural equation modeling. *European Business Review, 31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

7) Hayes, A. F. (2018). Partial, conditional, and moderated mediation. *Communication Monographs, 85*(1), 4–40. https://doi.org/10.1080/03637751.2017.1352100

8) Hyland, K. (2019). Second language writing. *Cambridge University Press.* https://doi.org/10.1017/9781108635544

9) Kasneci, E., et al. (2023). ChatGPT for good? *Learning and Individual Differences, 103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

10) Liang, W., et al. (2023). GPT detectors are biased against non-native English writers. *Patterns, 4*(7), 100779. https://doi.org/10.1016/j.patter.2023.100779

11) Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative data analysis. *SAGE Publications.* https://doi.org/10.4135/9781483384436

12) Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge. *Teachers College Record, 108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

13) Ranalli, J. (2021). Automated written corrective feedback. *Language Teaching Research, 25*(3), 418–435. https://doi.org/10.1177/1362168820905047

14) Vygotsky, L. S. (1978). Mind in society. *Harvard University Press.* https://doi.org/10.2307/j.ctvjf9vz4

DOI: 10.5281/zenodo.19247645
Vol: 63 | Issue: 03 | 2026

15) Zhai, X. (2023). ChatGPT for language learning. *Computers and Education: Artificial Intelligence, 4*, 100134. https://doi.org/10.1016/j.caeai.2023.100134

16) Aydın, S. (2022). Technology integration in EFL writing. *System, 105*, 102718. https://doi.org/10.1016/j.system.2022.102718

17) Bikowski, D., & Vithanage, R. (2016). Effects of web-based writing tools. *Language Learning & Technology, 20*(2), 79–95. https://doi.org/10.1016/j.system.2016.02.012

18) Golonka, E. M., et al. (2014). Technologies for foreign language learning. Computer Assisted Language Learning, 27(1), 70–105. https://doi.org/10.1080/09588221.2012.700315

19) Kessler, G. (2018). Technology and second language writing. The TESOL Encyclopedia of English Language Teaching. https://doi.org/10.1002/9781118784239.eelt0557

20) Lai, C., & Zheng, D. (2018). Self-directed technology use for language learning. Language Learning & Technology, 22(1), 74–91. https://doi.org/10.1016/j.system.2018.03.012

21) Li, J., & Hafner, C. A. (2022). AI in language education. Language Learning & Technology, 26(2), 1–15. https://doi.org/10.1016/j.system.2022.102820

22) Park, J., & Kim, H. (2022). AI-mediated feedback in writing. Educational Technology Research and Development, 70(4), 2103–2124. https://doi.org/10.1007/s11423-022-10105-9

23) Sun, Y., & Wang, L. (2020). Critical thinking in EFL writing. Asia-Pacific Education Researcher, 29(3), 251–260. https://doi.org/10.1007/s40299-019-00482-6

24) Warschauer, M. (2010). Digital literacy and second language writing. Language Learning & Technology, 14(2), 1–7. https://doi.org/10.1016/j.system.2010.02.005

25) Xu, W., et al. (2023). Generative AI in higher education. Education and Information Technologies, 28, 11579–11598. https://doi.org/10.1007/s10639-023-11720-9

26) Yang, Y. F. (2018). Technology-mediated peer feedback. Computer Assisted Language Learning, 31(3), 292–315. https://doi.org/10.1080/09588221.2017.1418384

27) Zhang, M., & Zou, D. (2022). AI-supported writing environments. Interactive Learning Environments, 30(8), 1471–1486. https://doi.org/10.1080/10494820.2020.1712046

28) Lee, I. (2017). Classroom writing assessment. Language Teaching, 50(1), 35–51. https://doi.org/10.1017/S0261444816000396

29) Graham, S., & Perin, D. (2007). Writing next. Alliance for Excellent Education. https://doi.org/10.1037/e676942007-001

30) Van Laar, E., et al. (2020). Determinants of digital competence. Computers in Human Behavior, 72, 577–588. https://doi.org/10.1016/j.chb.2017.03.010