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ESL Pre-Service Teachers' Literacy and Acceptance of ChatGPT as a Generative AI Tool for Writing: A Sequential Explanatory Study

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ABSTRACT

The main objective of this research is to explore how ESL pre-service teachers perceived ChatGPT, a generative AI tool for writing, and the factors shaping their perception of ChatGPT for writing skills in an educational context. The research aims to investigate ESL pre-service teachers' awareness, acceptance, perception, and the interplay between these factors regarding ChatGPT for writing. A sequential explanatory research design was employed and utilized complete enumeration sampling. The sample consisted of 80 undergraduate students enrolled in the Teacher Education Department English majors were used to collect students' engagement data including students' perceptions and usage of the platform, and user experiences were examined using the data using a 5-point Likert scale. Also, an in-depth interview was conducted with ten (10) students based on those who got the highest and lowest scorers in the Quantitative phase to understand deeper experiences in using ChatGPT and to explore design opportunities for leveraging ChatGPT as a generative AI tool for writing in the field of ESL education. The findings emphasized the awareness and acceptance of ChatGPT in writing. However, there were limitations to consider. These challenges encompassed issues such as inaccurate automated responses and the possibility of plagiarism. Despite these limitations, the research findings demonstrate that ChatGPT is effective writing tool. As researchers who experienced the process of different writing styles using ChatGPT, researchers believe that its potential needs to be maximally utilized. We suggest its application across different subjects and disciplines to examine its strengths and weaknesses in depth thoroughly.

INTRODUCTION

As the 21st century opened its arms to the rapidly evolving technology, generative AI has become rampant in the field of education, but educators remain reluctant to embrace ChatGPT as a teaching and learning tool. Zhai *et al.*, (2021) stated that AI in education faces challenges, including inappropriate use of AI techniques, reshaping the roles of teachers and students, and ethical issues. ChatGPT (Chat Generative Pre-Trained Transformer) is a powerful tool that uses artificial intelligence to perform tasks such as generating human-like ideas and automatically responding to a particular question.

While ChatGPT offers potential benefits in education, pre-service teachers often lack a full understanding of its advantages and disadvantages (Haseski, 2019). Concerns exist about plagiarism, reduced critical thinking, and overreliance on technology (Iqbal *et al.*, 2022). Studies in Ghana (Ofosu-Ampong *et al.*, 2023) and China (Lo, 2023) highlight student concerns about privacy, potential misuse, and hindered critical thinking. Despite its growing popularity in the Philippines (Fabella, 2023), learners remain hesitant due to accuracy limitations and potential bias (Alipio *et al.*, 2023). The potential benefits of ChatGPT in education are overshadowed by concerns about its impact on critical thinking skills. This raises the possibility of a future generation lacking independent thinking abilities (Maboloc, 2023).

Despite the growing number of studies focused on using

ChatGPT, there are still several blind spots that can be identified based on the existing study literature. The study of Albayati (2024) suggested that future researchers must deepen the understanding of AI acceptance in education and engagement in ChatGPT with varying levels of awareness. As is exemplified by the cited studies, most studies in AI focus on acceptance; however, there is no prior research about ChatGPT awareness and acceptance among pre-service teachers. The researchers have also not come across research that is bivariate in nature, considering the variables in the study. Furthermore, Santiago *et al.*, (2023) noted that most existing studies on the analysis of the variables in this study are conducted on populations comparably different from the context of Davao de Oro. The purpose of this study is to determine the level of ESL pre-service teachers' awareness and acceptance of ChatGPT as a generative artificial intelligence tool for writing and examine how the ESL Pre-service Teachers perceive the use of ChatGPT. In addition, the purpose of this research is to determine the factors that could influence the ChatGPT perception and its effect on the learning experience to help the higher education sector deal with opportunities and challenges.

Specifically, this study seeks to answer the following research questions:

1. What is the level of ESL Pre-service Teachers' Awareness and Acceptance of ChatGPT as a generative artificial intelligence tool for writing?

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2. Is there a significant relationship between awareness and acceptance in using ChatGPT?
3. How do the ESL Pre-service Teachers perceive the use of ChatGPT as a generative artificial intelligence tool for writing?
4. What is the perception of Pre-service Teachers on their awareness and acceptance of ChatGPT?
5. How do the results of the qualitative phase explain the results of the quantitative phase?

LITERATURE REVIEW

ChatGPT

ChatGPT (Chat Generative Pre-Trained Transformer) was created by OpenAI, and its massive user base is growing faster around the world. It is a Large Language Model (LLM) that originates in natural language processing to generate a sequence of words (Kleesiek *et al.*, 2023). According to Haleem *et al.*, (2022) ChatGPT was introduced in November 2022, and it has been a remarkable success because of the massive number of users. This AI tool can generate essays, poems, fictitious tales, and many more that could help with composing programming code, emails, and answering inquiries on various subjects, including investing. While AI like ChatGPT offers convenience (Shidiq, 2023), it can hinder student learning by reducing originality (Meyer *et al.*, 2023) and providing inaccurate or biased information (Akbarani *et al.*, 2023; Hartmann *et al.*, 2023). Its ability to generate student work raises ethical concerns (Kleebayoon & Wiwanitkit, 2023). ChatGPT also has limitations in understanding complex concepts (Baskara & Mukarto, 2023) and may require human verification to avoid disputed or incorrect information (Oviedo-Trespacios *et al.*, 2023).

ChatGPT as a Writing Tool

ChatGPT offers potential benefits in various fields like education and healthcare (Azaria *et al.*, 2023; Garg *et al.*, 2022). It can improve writing styles, generate ideas, and answer questions (Kaliyadan *et al.*, 2023). However, educators raise concerns about reduced creativity due to ease of use (Koubaa *et al.*, 2023). Studies show students find it engaging and helpful but emphasize the need for prior knowledge and accuracy verification (Shoufan, 2023). Despite these concerns, students generally support its use in education (Bonsu & Baffour-Koduah, 2023).

Literacy of ChatGPT

Artificial Intelligence Literacy refers to knowledge and awareness of AI concepts and applications. It involves understanding the principles of AI in digital learning and data analysis, as well as the ethical implications (Kasinidou, 2023). AI literacy is a pedagogical and cognitive challenge for students living in a society where they must be more inclined to use AI. This involves learning conceptual, technical, and applied skills related to AI and understanding the potential uses and risks of AI (Casal-Otero *et al.*, 2023). Acquiring proficiency in AI will

be a necessary skill, and students can benefit greatly from early exposure (Obenza *et al.*, 2024). AI literacy allows individuals to critically evaluate AI tools like ChatGPT. ChatGPT can be helpful for generating ideas, improving writing styles, and exploring different viewpoints (Guo & Lee, 2023). However, it's important to be aware of its limitations, such as potential inaccuracies and biases (AlAfnan & MohdZuki, 2023b). AI literacy is crucial for understanding and using AI responsibly. Studies highlight the need for individuals to be aware of AI's potential benefits and drawbacks, including ethical concerns like data privacy and bias (Kong *et al.*, 2022; Hua *et al.*, 2023). AI literacy education is becoming increasingly important in higher education to equip individuals for the future (Laupichler *et al.*, 2022). Studies show ChatGPT can improve student learning in various ways, including media literacy, critical thinking, and digital navigation skills (Tran & Tran, 2023).

However, ethical concerns exist regarding plagiarism, copyright, and the potential for biased or inaccurate information (Sallam, 2023). The key is to balance leveraging ChatGPT's benefits and mitigating potential drawbacks (Stepanechko & Kozub, 2023).

Acceptance of ChatGPT

ChatGPT is considered a new panacea in academia because of its high potential to produce a wide range of original, coherent, and scientifically informative content (Quintans-Júnior *et al.*, 2023). This is the rationale behind its widespread acceptance, as it provides beneficial and educational factors to students' academic pursuits. The study of Strzelecki (2023) found that higher education students' acceptance and use of ChatGPT are influenced by habit, performance expectancy, and hedonic motivations. It will help to assess students in writing, learning, and task completion.

ChatGPT has gained traction in various fields like healthcare, education, and research since its release in 2022 (Shahriar *et al.*, 2023). In healthcare, it assists with patient examinations, basic health inquiries, and medical exam prep. In education, it tutors students, detects plagiarism, and even helps researchers with writing and data analysis (Shahriar *et al.*, 2023). However, concerns exist about its potential to stifle creativity due to its ease of use (Koubaa *et al.*, 2023). While ChatGPT offers benefits like enhanced research and content creation (Lund & Wang, 2023), ethical considerations regarding privacy and bias remain crucial (Bhatia, 2023). In education, it can be a helpful tool for brainstorming and finding inspiration, but it shouldn't replace the learning process (Herbold *et al.*, 2023). Educators need to adapt their approach to assess the logic and accuracy of AI-generated outputs (Herbold *et al.*, 2023). Studies show students value ChatGPT's ease of use and its role in improving academic performance (Menon *et al.*, 2023; Hasanein & Sobaih, 2024). As a result of the technology's capabilities, students now believe that tasks can be completed with little to no human involvement (Bouzar *et al.*, 2024). This change in

academic effort and confidence has been brought about by students' acceptance of ChatGPT. However, educators must provide clear guidelines to prevent misuse (AlAfnan *et al.*, 2023b). By utilizing AI's capabilities, the school may cultivate a new generation of educators with strong digital skills, cross-cultural communication ability, and understanding of scientific trends (Almahdawi, 2024).

Relationship between Awareness and Acceptance of ChatGPT

Students' perceptions regarding ChatGPT are greatly influenced by how simple and beneficial they believe the technology to be. There is a positive relationship between these attitudes and students' acceptance of ChatGPT, where students are more likely to have a good attitude toward the tool in general when they believe it to be helpful and easy to use. This research highlights the significance of an intuitive user interface and transparent explanation of ChatGPT's useful features to improve student engagement (Albayati, 2024).

The positive relationship between awareness and acceptance of ChatGPT, suggesting a complex interplay affecting its use in language learning (Aljabr, 2023). While some see it as a valuable tool for diverse learning styles (Strzelecki, 2023), ethical concerns regarding data privacy and overreliance on AI remain (George & Wooden, 2023). Increased awareness can lead to curiosity and ultimately acceptance, especially with positive user experiences (Van Wyk *et al.*, 2023). Overall, ChatGPT offers benefits in education, research, and healthcare (Sallam, 2023) but requires careful consideration of ethical and legal issues.

MATERIALS AND METHODS

This chapter presented the research design, participants, and research instrument

Research Design

This study used a mixed-methods approach, combining surveys (quantitative) and interviews (qualitative) to get a more complete picture (Almeida, 2018). The sequential explanatory design involved collecting survey data first to understand pre-service ESL teachers' awareness and acceptance of ChatGPT as a writing tool, followed by interviews to delve deeper into their perceptions of potential drawbacks (Creswell & Plano Clark, 2018).

Research Locale

The present study was conducted in the province of Davao de Oro, particularly in the municipality of Compostela. It is subdivided into 16 barangays, and each barangay consists of puroks. Furthermore, the institution is located at Purok – 10 Poblacion, Compostela, Davao de Oro. This institution is situated in neighboring municipalities and has four campuses: Montevista, Compostela, New Bataan, and Maragusan. This institution offered different programs namely education, entrepreneurship, agriculture, and criminology. The said institution was recognized for its many competent



Figure 1: Compostela, Davao de Oro map

students, and topnotchers were produced.

Participants

In this study, the researchers utilized complete enumeration sampling to identify the participants for the quantitative phase. According to Michaelides (1997), complete enumeration sampling is a technique used to find the exact distribution of a test statistic by exhaustively considering all the possible tables that satisfy a given model. The study included all 91 BSED English students (2nd & 3rd year) at Davao de Oro State College to avoid sampling bias. For the interview phase, 10 participants will be chosen: 5 with the highest and 5 with the lowest survey scores to capture a range of perspectives.

Research Instrument

Along with this study, researchers will use surveys and questionnaires using demographic data and a Likert 5-point scale to identify the percentage level of awareness and acceptance of ChatGPT as a writing tool among the pre-service teachers at DDOSC Main Campus. Each table has a descriptive interpretation of the level of acceptance: strongly disagree, moderately disagree, neutral, moderately agree, and strongly agree.

Quantitative Strand

AI Literacy of ESL Pre-service Teachers on ChatGPT, the researchers adapted 10 questions from MAIIS -- Meta AI Literacy Scale: Development and testing of an AI Literacy questionnaire based on Well-Founded Competency Models and Psychological Change- and Meta-Competencies (Carolus *et al.*, 2023), in modified items 1-10 (Q1-Q10) focusing on using AI to reach goals (Ng *et al.*, 2022), make tasks easier (Ng *et al.*, 2022), or even do homework (Ng *et al.*, 2022). The questions also explore understanding the good and bad sides of AI (Ng *et al.*, 2022), what AI might be like in the future (Long & Magerko, 2020), and how to acknowledge AI when you use it (Long & Magerko, 2020). It was examined for internal consistency and verified by experts, yielding a Cronbach's alpha of 0.90.

To guarantee reliable results, the researchers modified and conducted survey questionnaires that were verified by expert judgment and checked for internal consistency. To ensure the instrument's reliability and validity, a pilot

test was conducted to assess. Reliability, measured by Cronbach's alpha, reflects the consistency of scores across administrations. Validity refers to the extent to which the instrument measures the intended construct. The pilot test yielded Cronbach's alpha coefficients of 0.86 for ChatGPT literacy and 0.94 for ChatGPT acceptance, indicating strong internal consistency for both constructs.

In this instrument, respondents will be asked to choose their answer to signify one of the numbers from 1 to 5, where 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree) The explanation for the numbers are:

Qualitative Strand

In the second phase, the researchers drafted an open-ended question for data collection and utilized in-depth interviews, in which the researchers used interview questions to probe more deeply into student perceptions of the acceptance and literacy of chatbots, particularly the role of ChatGPT in education. This method is effective and meaningful in engaging with how people understand or perceive issues and their worlds, and relate to others or places. In-depth interviews are typically conducted face-to-face and are audio recorded (Osborne & Grant-Smith, 2021).

RESULTS AND DISCUSSIONS

Presented in this chapter are some tables that show the final numerical result of the level of awareness and acceptance of ChatGPT, and interpretations of the study are being discussed. Also, present the results and discussion for the qualitative phase, using the data gathered through interviews to further explain the findings of the study.

Level of ESL Pre-Service Teachers' Awareness and Acceptance of ChatGPT

The results showed that the level of ESL pre-service teachers' awareness is high, with an overall mean score of 3.70. This indicates a strong understanding of ChatGPT's limitations and opportunities as a generative AI writing tool. Pre-service teachers recognize ChatGPT's effective use in educational contexts and the importance of critical thinking by weighing its positive and negative consequences. The statement, "I am aware of the limitations and opportunities of using ChatGPT as an AI tool," had the highest mean score of 4.44, while the statement, "I confidently communicate in my daily life because I am exposed to artificial intelligence like ChatGPT," had the lowest mean score of 2.49.

This study confirms the findings of Oğurlu and Mossholder (2023), who reported a generally positive attitude towards ChatGPT but highlighted concerns about potential misuse, such as plagiarism and a decline in critical thinking skills. Pre-service teachers understand both the benefits and risks of using ChatGPT in the classroom, emphasizing the need for responsible integration of this tool. This balanced awareness is essential for harnessing ChatGPT's potential effectively. Supporting Long and Magerko (2020),

the study underscores the importance of AI literacy for critical evaluation of AI technologies, including the risks of plagiarism and factual inaccuracies. Alawida *et al.*, (2023) highlight ChatGPT's versatility and potential applications while warning of cybersecurity challenges and malicious use. Awareness of ChatGPT's capabilities and ethical issues, such as data privacy and security, is crucial to mitigating its negative impacts (Hua *et al.*, 2023). Moreover, Hasanein and Sobaih (2023) state that positive consequences include time savings, reduced anxiety, and improved language skills, while negative concerns involve overreliance, potential plagiarism, and compromised learning quality.

ESL Pre-service Teachers' Acceptance of ChatGPT

The study found that ESL pre-service teachers highly rated ChatGPT for ease of use (mean score: 3.96) and moderately for its relevance to learning and school tasks (mean score: 3.81). Overall, acceptance was high (mean score: 3.58), indicating comfort with ChatGPT as a writing tool despite limitations.

The findings support Dahri *et al.*, (2024), highlighting ChatGPT's benefits in metacognitive learning and lesson design. Similarly, Menon *et al.*, (2023) noted its usefulness for task completion and academic success. Additionally, Hasanein and Sobaih (2024) also underscored ChatGPT's role in aiding students' academic pursuits.

Relationship between Awareness and Acceptance in using ChatGPT

The study identified a significant relationship between awareness and acceptance of ChatGPT, supported by a p-value $< .001$, indicating strong statistical significance. Additionally, there was a robust positive correlation ($r = 0.712$) between ESL pre-service teachers' literacy and their acceptance of ChatGPT, suggesting that familiarity with the tool enhances its acceptance as a learning aid. This implies that pre-service teachers view ChatGPT as both relevant and beneficial, simplifying tasks and enhancing their overall educational experience. These findings are consistent with Van Wyk *et al.*, (2023), who observed that increased awareness of ChatGPT fosters curiosity and positive attitudes towards its use as an educational tool. Student perceptions are influenced by their perception of ChatGPT's usability and benefits, which correlates positively with their acceptance of the technology. This underscores the importance of user-friendly interfaces and clear explanations of ChatGPT's functionalities to effectively engage students (Albayati, 2024).

The study highlights the intricate relationship between attitudes and awareness of ChatGPT usage, underscoring the complex dynamics influencing technology adoption in education (Aljabr, 2023). These findings support Strzelecki (2023), who advocates for ChatGPT as a complementary tool in education, accommodating diverse learning styles. Additionally, there is recognition of ethical considerations, data security, and the need to balance AI's role with human teaching in fostering critical thinking and problem-solving skills (George & Wooden, 2023).

Moreover, Sallam's (2023) study reinforces the importance of literacy and acceptance in leveraging ChatGPT across educational, healthcare, and research domains, highlighting its benefits while addressing ethical and legal concerns.

ESL Pre-Service Teachers Perceive the Use of ChatGPT

As presented in Table 1, the essential themes are enhanced writing skills, improvement in grammar and syntax, real-time feedback, and vocabulary development. Also, the core ideas are based on the responses of the participants from the in-depth interview.

Table 1: ESL pre-service teachers perceive the use of ChatGPT

Emerging Themes	Core Ideas
Enhanced writing skills	It can develop writing skills.
Grammar and Syntax Improvement	Expanding your formal vocabulary through suggested words and phrasing.
Real-time feedback	Learning from the ChatGPT responses by exposing new words that can enhance writing skills.
Vocabulary development	Ensuring the proper grammar rules.

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Enhanced Writing Skills

Participants 2, 4, and 9 discussed both positive aspects and potential areas of caution regarding its influence on writing development. The integration of ChatGPT into writing practices can increase engagement and interactivity, aiding pre-service teachers in incorporating machine learning into their writing workflow (Hidayatullah, 2024). ChatGPT's use encourages pre-service teachers to deepen their understanding of the writing process, refining their abilities (Sa'adah, 2020). Students employed ChatGPT for brainstorming ideas, improving sentence structure and grammar, enhancing coherence and flow, and expanding vocabulary, which exposed them to a broader range of words, thereby elevating their writing quality (Soelistiyowati *et al.*, 2024). While ChatGPT can benefit academic writing by aiding in idea generation, language flow improvement, and productivity boosts, it also raises concerns about over-reliance, plagiarism, and potentially weakening writing abilities (Rezaei *et al.*, 2024). Vocabulary development requires not just exposure to new words but also comprehension of their meanings and appropriate usage within context (Zhao *et al.*, 2024).

Grammar and Syntax Improvement

Participants 1, 2, and 3 found ChatGPT beneficial for grammar correction, vocabulary expansion, and enhancing the overall clarity and structure of their writing. The results indicate that ChatGPT provides detailed explanations and helps students check for errors in grammar, punctuation, and spelling. This enables a deeper learning experience due to its thorough analysis and easy-to-understand explanations, making it effective for finding errors in written tasks (Schmidt-Fajlik, 2023). Using ChatGPT for writing tasks requires understanding its strengths and weaknesses. Lingard (2023) highlighted that it helps summarize complex ideas, generate outlines, and address grammar challenges. Grammar plays a crucial role in shaping communication by providing guidelines for word order, sentence formation, and meaning interpretation (Christensen *et al.*, 2021). While ChatGPT improves writing skills, idea generation, sentence structure, coherence, flow, and vocabulary, there are concerns about its implications for academic integrity (Soelistiyowati *et al.*, 2024b).

Real-Time Feedback

Participants highlighted the benefit of real-time feedback from ChatGPT, which can accelerate the writing process and improve writing quality. ChatGPT provides corrections and suggestions as users write.

The study aligns with Yutong *et al.*, (2024), who found that ChatGPT's immediate feedback quickens the learning process by shortening the wait for writing corrections. Tertiary learners reported improved writing skills through ChatGPT by generating ideas, improving sentence structure and grammar, enhancing coherence and flow, and expanding vocabulary (Soelistiyowati *et al.*, 2024c).

Vocabulary Development

Participants perceive ChatGPT as beneficial for vocabulary development. Pre-service teachers found it helpful for learning new words and understanding existing vocabulary. Baskara (2023) noted that ChatGPT introduces learners to nuanced expressions, idiomatic language, and subject-specific vocabulary. This exposure fosters a richer vocabulary base, allowing ESL learners to express themselves more effectively. Soelistiyowati *et al.*, (2024) also emphasized that ChatGPT enhances vocabulary development by providing personalized support and engaging learners in interactive writing tasks.

Perception of Pre-service Teachers on their Awareness and Acceptance in ChatGPT

As presented in Table 2, the essential themes are practice and engagement, idea generation and organization, enhanced learning opportunities, and inaccuracy and unreliability. Also, the core ideas are based on the responses of the participants from the in-depth interview.

Table 2: Perception of Pre-service Teachers on their Awareness and Acceptance in ChatGPT

Emerging Themes	Core Ideas
Practice and Engagement	ChatGPT can offer tips and strategies to make the writing process easier.
Idea Generation and Organization	The ease of use of ChatGPT.
Enhanced Learning Opportunities	Improve the quality of writing.
Inaccuracy and Unreliability	Enhance creativity and writing skills.

Practice and Engagement

Students’ interaction with ChatGPT enhances their vocabulary and grammar skills through synonym exploration and grammar corrections. Interviews with participants 3, 4, and 5 underscored their literacy and acceptance of ChatGPT, reflecting active engagement. ChatGPT stimulates student interest and internal motivation by offering resources, guidance, and interactive features. This engagement encourages deeper study habits and proactive academic approaches, contributing to improved learning motivation and academic performance (Caratiquit & Caratiquit, 2023a). ChatGPT’s responses vary in keyword density, lexical diversity, and reading ease, though technical terms may lack detailed explanations of their significance (AlAfnan & MohdZuki, 2023). While Kothgassner & Felnhofer (2023) noted ChatGPT’s human-like performance in academic and professional writing, its limitations necessitate careful usage. Students recognize ChatGPT’s role in developing original ideas, enhancing vocabulary, and refining writing style, appreciating its utility in gaining diverse perspectives (Guo & Lee, 2023).

Idea Generation and Organization

Writing skills have always been a challenge for English language learners, particularly in generating ideas and organizing their writing. This study aligns with Koubaa *et al.*, (2023), noting that while ChatGPT makes text processing easier, it may lack creativity. Nonetheless, it provides students with ideas for application-based questions and answers to theoretical ones. Additionally, it offers teachers a platform to incorporate technology in lessons and hold workshops to analyze and assess AI-generated responses (Dishari *et al.*, 2023). Researchers can enhance academic writing by using ChatGPT’s features while mitigating its potential drawbacks (Mondal & Mondal, 2023b). Using language models like ChatGPT in language learning environments can enhance mistake analysis and improve language and writing skills (Algaraady & Mahyoob, 2023). Co-creation with ChatGPT significantly boosts students’ creative problem-solving performance, enhancing the quality, complexity, and uniqueness of their solutions while reducing mental effort (Urban *et al.*, 2024).

Enhanced Learning Opportunities

Exploring how these tools can support literacy development and gain acceptance as valuable writing aids is crucial for preparing future educators in the evolving landscape of language learning. The findings of this study align with Strzelecki’s (2023) study, which found that higher education students’ acceptance and use of ChatGPT are influenced by habit, performance expectancy, and hedonic motivations. ChatGPT aids students in writing, learning, and task completion. Leunard *et al.*, (2023) also support these findings, noting that ChatGPT helps with writing, speeds up feedback and response times, and enhances user communication. Additionally, ChatGPT assists with text production, question answering, summarizing, language translation, and customization. Its exceptional code assistance allows individuals with limited coding skills to develop computational tools (Chen & Li, 2023). Students are encouraged to explore various essay writing methods and gather ideas and motivation for their work using ChatGPT. Therefore, teachers must adjust their approach to assignments, focusing more on the logic and accuracy of AI-generated outputs (Herbold *et al.*, 2023).

Inaccuracy and Unreliability

Ethical concerns such as copyright issues, transparency, and potential biases were also highlighted as significant risks associated with using ChatGPT (Long & Magerko, 2020; Sallam, 2023). The key lies in finding a balance between using ChatGPT’s capabilities to enrich education while minimizing its potential drawbacks (Stepanechko & Kozub, 2023). The study’s findings, as discussed by AlAfnan *et al.*, (2023b), echo Tseng and Warschauer’s (2023) research, emphasizing both the potential and limitations of tools like ChatGPT in language learning. While ChatGPT can aid students, it requires users to verify information, communicate clearly with the tool, and recognize its boundaries, acknowledging sources in academic work. Therefore, clear guidelines and proper instruction are crucial to mitigate misapplication. In synthesizing the study’s quantitative and qualitative findings, the quantitative data underscore a solid basis for interpreting qualitative insights. Survey results indicate significant awareness and acceptance of ChatGPT among ESL pre-service teachers at Davao de Oro State College, highlighting their comfort and proficiency with the tool. Qualitative responses further affirm its positive impact on writing skills, including enhancements in grammar, sentence construction, and vocabulary selection, reinforcing the quantitative findings. The qualitative phase delves deeper, explaining the “why” behind these quantitative results. Interviews revealed that pre-service teachers see ChatGPT as a valuable tool that enhances writing skills through improved grammar, sentence structure, and vocabulary. These findings resonate with the quantitative data, suggesting that pre-service teachers’ acceptance is from the perceived benefits for both their writing skills and potentially for their future students.

Joint Display of Quantitative and Qualitative Results

The joint results of the quantitative and qualitative strands for the variables, namely awareness of ChatGPT,

acceptance of ChatGPT, and the relationship between awareness and acceptance are shown in Table 7. The nature of integration for each indicator is also presented.

Table 3: Quantitative and Qualitative Results

Quantitative Results	Qualitative Results	Nature of Integration
Awareness of ChatGPT Mean: 3.70 SD: 0.59	Participants confirmed that the literacy of ChatGPT is observable. Based on the IDI, it could be gathered that the general assertions confirm the high rating.	Connecting-Confirmation
Acceptance of ChatGPT Mean: 3.58 SD: 0.68	Participants confirmed that the acceptance of ChatGPT is observable. Based on the IDI, it could be gathered that the general assertions confirm the high rating.	Connecting-Confirmation
Relationship between awareness and acceptance p: <.001 r: 0.712	Participants confirmed that pre-service teachers who were more aware of ChatGPT also accepted it as a tool for writing. Based on the IDI, it could be gathered that the general assertions confirm the high rating.	Connecting-Confirmation

The combined findings of both quantitative and qualitative research strands provide a comprehensive view of the variables related to awareness of ChatGPT, acceptance of ChatGPT, and their interrelationship. Quantitatively, the study reveals a high level of awareness (Mean: 3.70, SD: 0.59) among pre-service teachers, which is corroborated by qualitative insights from in-depth interviews (IDIs). This connecting-confirmation integration indicates that the observed high awareness is not merely numerical but is supported by experiential evidence and participant statements.

Similarly, the quantitative results indicate a significant level of acceptance (Mean: 3.58, SD: 0.68) of ChatGPT, which qualitative data further supports through participant interviews. This connecting-confirmation integration within the school culture context affirms that the reported acceptance aligns with the perceptions and experiences shared by pre-service teachers.

Moreover, the study identifies a strong positive relationship between ESL pre-service teachers' literacy and their acceptance of ChatGPT, as indicated by quantitative analysis with a p-value below 0.05. Qualitative findings underscore this relationship, demonstrating that greater awareness of ChatGPT correlates with increased acceptance of it as a writing tool. This connecting-confirmation integration highlights organizational commitment, indicating that pre-service teachers recognize ChatGPT's utility in simplifying writing tasks and enhancing overall writing experiences.

CONCLUSION

This study found a high level of awareness and acceptance of ChatGPT among ESL Pre-service Teachers of Davao De Oro State College – Main Campus. The survey results showed strong positive correlations between awareness and acceptance, suggesting that the more familiar the students with ChatGPT, the more open and interested they were in using it. Moreover, the qualitative findings further highlighted the perceived benefits of ChatGPT. Pre-service teachers strongly accept it as a tool that could

improve their writing skills, enhance learning through various features, and offer valuable feedback.

Despite the high degree of acceptability and understanding of ChatGPT that this study discovered, ESL Pre-service teachers also acknowledged the potential drawbacks of the technology as it is still important to provide the tools needed to use ChatGPT for academic purposes more effectively. To preserve sustainable learning outcomes, higher education institutions must make sure that their students understand the limitations of AI tools and how they affect their learning over time. Therefore, promote the ethical and responsible use of ChatGPT for educational purposes with limits. Overall, pre-service teachers reveal to have a balanced perspective on ChatGPT, recognizing both its strengths and weaknesses.

Implications

The implication of this study highlights the awareness and acceptance of ChatGPT among ESL Pre-service Teachers. This serves as a call to action for university leaders and educators to cultivate greater awareness of technological trends within higher education and other educational levels. Such awareness is crucial for fostering the adoption of innovative technologies like ChatGPT. The study proposes several strategies to achieve this, including subscribing to technology newsletters and blogs, utilizing social media for learning, creating and offering technology podcasts, providing professional development opportunities for academics, and organizing tech conferences and forums. These efforts will equip educators and students to leverage the potential of ChatGPT for educational purposes.

LIMITATIONS

Despite the valuable insights provided by this study, some limitations must be acknowledged. The population of this study is 91 students who are officially enrolled in Davao de Oro State College – Main Campus, Major in English. However, the sample size that the researchers gathered is 80 students from 2nd and 3rd year BSED English.

Since the research study must follow ethical guidelines, withdrawal, and exclusion criteria, the researchers consider those students who refused to answer the survey.

RECOMMENDATIONS

High awareness and acceptance of ChatGPT suggest opportunities for DDOSC. The administration can develop policies for proper AI use in teaching, and the English department can offer workshops on using AI writing tools. Faculty, in collaboration with AI experts, can organize seminars on the benefits, limitations, and ethics of AI in education. Students can explore ChatGPT's creative capabilities while ensuring responsible use. Future research with a larger sample size can further explore ChatGPT's value and potential issues.

REFERENCES

- AlAfnan, M. A., Dishari, N. S., Jovic, N. M., & Lomidze, N. K. (2023). ChatGPT as an educational tool: Opportunities, challenges, and recommendations for communication, business writing, and composition courses. *Journal of Artificial Intelligence and Technology*. <https://doi.org/10.37965/jait.2023.0184>
- AlAfnan, M. A., & MohdZuki, S. F. (2023). Do Artificial Intelligence Chatbots have a writing style? an investigation into the stylistic features of ChatGPT-4. *Journal of Artificial Intelligence and Technology*. <https://doi.org/10.37965/jait.2023.0267>
- Alawida, M., Shawar, B. A., Abiodun, O. I., Mehmood, A., Omolara, A. E., & Hwaitat, A. K. A. (2023). Unveiling the dark side of ChatGPT: Exploring cyberattacks and enhancing user awareness. *Information*, 15(1), 27. <https://doi.org/10.3390/info15010027>
- Albayati, H. (2024). Investigating undergraduate students' perceptions and awareness of using ChatGPT as a regular assistance tool: A user acceptance perspective study. *Computers and Education: Artificial Intelligence*, 6, 100203. <https://doi.org/10.1016/j.caeai.2024.100203>
- Algaraady, J., & Mahyoob, M. (2023). ChatGPT's capabilities in spotting and analyzing writing errors experienced by EFL Learners. *Arab World English Journal*, 9, 3–17. <https://doi.org/10.24093/awej/call9.1>
- Alipio, M., Lantajo, G. M., Pregoner, J. D. (2023). On the use of ChatGPT in health science education: opportunities and obstacles. *IMCC Journal of Science*, 3(2), 1-7. SSRN: <https://ssrn.com/abstract=4588412>
- Aljabr, Fahad (2023). Gauging the Saudi EFL Learners Level of Awareness and Attitudes towards the Use of ChatGPT. (2023c). *Information Sciences Letters / Information Sciences Letters*, 12(11), 3101–3109. <https://doi.org/10.18576/isl/121120>
- Almahdawi, A. J. (2024). The Role of Artificial Intelligence in Developing Digital Transformation Skills Language Communication, and Scientific Trends among Students of the College of Education at Al Ain University. *American Journal of Education and Technology*, 3(1), 25–34. <https://doi.org/10.54536/ajet.v3i1.2187>
- Almeida, F. (2018). *Strategies to perform a mixed methods study*. Zenodo. <https://doi.org/10.5281/zenodo.1406214>
- Akbarani, R., Pamungkas, F., D. (2023). The Challenges of Using Artificial Intelligence in Academic Writing. *Prosiding Annual International Conference on Islamic Education (AICIED)*, 01(64-72). <https://prosiding.iainponorogo.ac.id/index.php/aicied/article/view/1051>
- Azaria, A., Azoulay, R., & Reches, S. (2023). ChatGPT is remarkable Tool – For Experts. arXiv. <https://doi.org/10.48550/arxiv.2306.03102>
- Baskara, F. R. (2023). Integrating ChatGPT into EFL Writing Instruction: Benefits and Challenges. *International Journal of Education and Learning*, 5(1), 44–55. <https://doi.org/10.31763/ijele.v5i1.858>
- Baskara, R. & Mukarto, M. (2023). Exploring the Implications of ChatGPT for Language Learning in Higher Education. *Indonesian Journal of English Language Teaching and Applied Linguistics*, 7(2), 343-358. <http://dx.doi.org/10.21093/ijetal.v7i2.1387>
- Bhatia, P. (2023). ChatGPT for Academic Writing: A Game Changer or a Disruptive Tool? *Journal of Anaesthesiology Clinical Pharmacology*, 39(1), 1. https://doi.org/10.4103/joacp.joacp_84_23
- Bonsu, E. M., & Baffour-Koduah, D. (2023). From the consumers' side: Determining students' perception and intention to use ChatGPT in Ghanaian Higher Education. *Journal of Education Society & Multiculturalism*, 4(1), 1–29. <https://doi.org/10.2478/jesm-2023-0001>
- Bouzar, A., Idrissi, K. E., & Ghourdou, T. (2024). Investigating the Correlation between Different ChatGPT Versions and Task Initiation among Postgraduate Students: A Cross-Sectional Study. *American Journal of Education and Technology*, 3(2), 79–84. <https://doi.org/10.54536/ajet.v3i2.2704>
- Caratiquit, K. D., & Caratiquit, L. J. C. (2023). ChatGPT as an academic support tool on the academic performance among students: The mediating role of learning motivation. *Journal of Social, Humanity, and Education*, 4(1), 21–33. <https://doi.org/10.35912/jshe.v4i1.1558>
- Carolus, A., Koch, M., Straka, S., Latoschik, M. E., & Wienrich, C. (2023). *MAILS – Meta AI Literacy Scale: Development and testing of an AI Literacy questionnaire based on Well-Founded Competency Models and Psychological Change- and Meta-Competencies*. arXiv. <https://doi.org/10.48550/arxiv.2302.09319>
- Casal-Otero, L., Catala, A., Fernández-Morante, C. et al., (2023). AI literacy in K-12: A Systematic Literature Review. *IJ STEM Ed* 10, 29. <https://doi.org/10.1186/s40594-023-00418-7>
- Chen, M., & Li, G. (2023). ChatGPT for Mechanobiology and Medicine: A Perspective. *Mechanobiology in Medicine*, 1(1), 100005. <https://doi.org/10.1016/j.mbm.2023.100005>

- Christensen, M. H., Kristensen, L. B., Vinther, N. M., & Boye, K. (2021). Grammar is background in sentence processing. *Language and Cognition*, 13(1), 128–153. <https://doi.org/10.1017/langcog.2020.30>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). Sage Publication <https://files.eric.ed.gov/fulltext/ED611786.pdf>
- Dahri, N. A., Yahaya, N., Al-Rahmi, W. M., Aldraiweesh, A., Alturki, U., Almutairy, S., Shutaleva, A., & Soomro, R. B. (2024). Extended TAM based acceptance of AI-Powered ChatGPT for supporting metacognitive self-regulated learning in Education: A Mixed-Methods Study. *Heliyon*, 10(8), e29317. <https://doi.org/10.1016/j.heliyon.2024.e29317>
- Fabella, F. (2023). Attitudes toward the positive and negative features of ChatGPT by selected First Year College students. *International Research Journal of Modernization in Engineering Technology and Science*, 05(10) 2582-5208. <https://doi.org/10.56726/IRJMETS45426>
- Garg, R. K., Urs, V. L., Agrawal, A. A., Chaudhary, S. K., Paliwal, V., & Kar, S. K. (2023). *Exploring the role of ChatGPT in patient care (Diagnosis and Treatment) and Medical Research: A Systematic Review*. medRxiv. <https://doi.org/10.1101/2023.06.13.23291311>
- George, B., & Wooden, O. (2023). Managing the strategic transformation of higher education through Artificial Intelligence. *Administrative Sciences*, 13(9), 196. <https://doi.org/10.3390/admsci13090196>
- Guo, Y., & Lee, D. (2023). Leveraging ChatGPT for enhancing critical thinking skills. *Journal of Chemical Education*, 100(12), 4876–4883. <https://doi.org/10.1021/acs.jchemed.3c00505>
- Haleem, A., Javaid, M., & Singh, R. P. (2022). An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges. *Bench Council Transactions on Benchmarks, Standards and Evaluations*, 2(4), 100089. <https://doi.org/10.1016/j.tbench.2023.100089>
- Hartmann, J., Schwenzow, J., & Witte, M. (2023). *The political ideology of conversational AI: Converging evidence on ChatGPT's pro-environmental, Left-Libertarian Orientation*. arXiv. <https://doi.org/10.48550/arXiv.2301.01768>
- Hasanein, A. M., & Sobaih, A. E. E. (2023). Drivers and consequences of CHATGPT use in Higher Education: Key Stakeholder Perspectives. *European Journal of Investigation in Health, Psychology and Education*, 13(11), 2599–2614. <https://doi.org/10.3390/ejihpe13110181>
- Haseski, H.I. (2019). What do Turkish pre-service teachers think about Artificial Intelligence? *International Journal of Computer Science Education in Schools*, 3(2) ISSN 2513-8359. <https://doi.org/10.21585/ijcses.v3i2.55>
- Herbold, S., Hautli-Janisz, A., Heuer, U., Kikteva, Z., & Trautsch, A. (2023). *AI, write an essay for me: A large-scale comparison of human-written versus ChatGPT-generated essays*. arXiv. <https://doi.org/10.48550/arxiv.2304.14276>
- Hidayatullah, E. (2024). Evaluating the effectiveness of ChatGPT to improve English students' writing skills. *Humanities, Education, Applied Linguistics, and Language Teaching: Conference Series*, 1(1), 2024, pp. 14-19. <https://seminar.ustjogja.ac.id/index.php/heal>
- Hua, S., Jin, S., & Jiang, S. (2023). The limitations and ethical considerations of CHATGPT. *Data Intelligence*, 1–38. https://doi.org/10.1162/dint_a_00243
- Iqbal, N., Ahmed, H., & Azhar, K. A. (2022). Exploring Teachers' Attitudes Towards Using ChatGPT. *Global Journal for Management and Administrative Sciences*, 3(4), 97–111. <https://doi.org/10.46568/gjmas.v3i4.163>
- Kaliyadan, F., & Seetharam, K. (2023). ChatGPT- Quo vadis? *Indian Dermatology Online Journal*, 14(4), 457. https://doi.org/10.4103/idoj.idoj_344_23
- Kasinidou, M. (2023). AI literacy for all: A participatory approach. In *Proceedings of the Conference on Innovation and Technology in Computer Science Education* (Vol. 2, pp. 607-608). <https://doi.org/10.1145/3587103.3594135>
- Kleebayoon, A., & Wiwanitkit, V. (2023). Chatbots in Medical Research. *Clinical Nuclear Medicine*. <https://doi.org/10.1097/rln.0000000000004877>
- Kleesiek, J., Wu, Y., Štiglic, G., Egger, J., & Bian, J. (2023). An Opinion on ChatGPT in health care—written by humans only. *The Journal of Nuclear Medicine*, 64(5), 701–703. <https://doi.org/10.2967/jnumed.123.265687>
- Kong, SC., Cheung, W.M., Zhang, G. (2022). Evaluating Artificial Intelligence literacy courses for fostering conceptual learning, literacy and empowerment in university students: Refocusing to conceptual building. *Computers in Human Behavior Reports*. <https://doi.org/10.1016/j.chbr.2022.100223>
- Koubaa, A., Boulila, W., Ghouti, L., Alzahem, A., & Latif, S. (2023). Exploring ChatGPT capabilities and limitations: A survey. *IEEE Access*, 11, 118698–118721. <https://doi.org/10.1109/access.2023.3326474>
- Kothgassner, O. D., & Felnhofer, A. (2023). ChatGPT, Who? *Digital Psychology*, 4(1), 1. <https://doi.org/10.24989/dp.v4i1.2268>
- Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higher and adult education: A scoping literature review. *Computers & Education: Artificial Intelligence*, 3, 100101. <https://doi.org/10.1016/j.caeai.2022.100101>
- Leunard, H., Rachmawati, R., Zani, B. N., & Maharjan, K. (2023). GPT Chat: Opportunities and challenges in the learning process of arabic language in higher education. *Journal International of Lingua and Technology*, 2(1), 10–22. <https://doi.org/10.55849/jiltech.v2i1.439>
- Lingard, L. (2023). Writing with ChatGPT: An illustration of its capacity, limitations & implications for academic writers. *Perspectives on Medical Education*, 12(1), 261–270. <https://doi.org/10.5334/pme.1072>
- Lo, C. K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. *Education Sciences*, 13(4), 410. <https://doi.org/10.3390/>

- educsci13040410
- Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14). ACM. <https://doi.org/10.1145/3313831.3376727>
- Lund, B., & Wang, T. (2023). *Chatting about ChatGPT: How may AI and GPT impact academia and libraries?* Social Science Research Network. <https://doi.org/10.2139/ssrn.4333415>
- Maboloc, C. R. (2023). Chat GPT: The Need for an Ethical Framework to Regulate its Use in Education. *Journal of Public Health*. <https://doi.org/10.1093/pubmed/fdad125>
- Menon, D., & Shilpa, K. (2023). “Chatting with ChatGPT”: Analyzing the factors influencing users’ intention to use the open AI’s ChatGPT using the UTAUT Model. *Heliyon*, 9(11), e20962. <https://doi.org/10.1016/j.heliyon.2023.e20962>
- Meyer, J. G., Urbanowicz, R. J., Martin, P., O’Connor, K., Li, R., Peng, P., . . . Moore, J. H. (2023). *ChatGPT and Large Language Models in Academia: Opportunities and Challenges*. BioData. <https://doi.org/10.1186/s13040-023-00339-9>
- Michaelides, D. T. (1997). *Exact tests via complete enumeration: A distributed computing approach* (Doctoral dissertation, University of Southampton). <https://eprints.soton.ac.uk/250749/>
- Mondal, H., & Mondal, S. (2023b). ChatGPT in Academic Writing: Maximizing its Benefits and Minimizing the Risks. *Indian Journal of Ophthalmology*, 71(12), 3600–3606. https://doi.org/10.4103/ijo.ijo_718_23
- Ng, D. T. K., Wenjie, W., Chiu, T. K. F., Leung, J. K. L., Chu, S. K. W. (2023). Design and Validation of the AI Literacy Questionnaire: The affective, behavioural, cognitive, and ethical approach. *British Journal of Educational Technology*. <https://doi.org/10.1111/bjet.13411>
- Obenza, B. N., Caballo, J. H. S., Caangay, R. B. R., Makigod, T. E. C., Almocera, S. M., Bayno, J. L. M., Camposano, J. J. R., Cena, S. J. G., Garcia, J. A. K., Labajo, B. F. M., & Tua, A. G. (2024). Analyzing university students’ attitude and behavior toward AI using the extended unified theory of acceptance and use of technology model. *American Journal of Applied Statistics and Economics*, 3(1), 99–108. <https://doi.org/10.54536/ajase.v3i1.2510>
- Ofosu-Ampong, K., Acheampong, B., Kevor, M.-O., & Amankwah-Sarfo, F. (2023). Acceptance of Artificial Intelligence (ChatGPT) in Education: Trust, Innovativeness and Psychological Need of Students. (2023). *Information and Knowledge Management*. <https://doi.org/10.7176/ikm/13-4-03>
- Oğurlu, Ü., & Mossholder, J. (2023). The Perception of ChatGPT among Educators: Preliminary Findings. *Research in Social Sciences and Technology*, 8(4), 196–215. <https://doi.org/10.46303/ressat.2023.39>
- Osborne, N., & Grant-Smith, D. (2021). In-depth interviewing. In *Cities research series* (pp. 105–125). https://doi.org/10.1007/978-981-16-1677-8_7
- Oviedo-Trespalcios, O., Peden, A. E., Cole-Hunter, T., Costantini, A., Haghani, M., Rod, J.,... Reniers, G. (2023). The Risks of Using ChatGPT to Obtain Common Safety-Related Information and Advice. *Safety Science*, 167, 106244. <https://doi.org/10.1016/j.ssci.2023.106244>
- Quintans-Júnior, L. J., Gurgel, R. Q., De Souza Araújo, A. A., Filho, D. C., & Martins-Filho, P. R. (2023). ChatGPT: The New Panacea of the Academic World. *Revista Da Sociedade Brasileira De Medicina Tropical*, 56. <https://doi.org/10.1590/0037-8682-0060-2023>
- Rezaei, M., Salehi, H., & Tabatabaei, O. (2024). ChatGPT: A helpful scaffold or a debilitating crutch for academic writing? In *Proceedings of the 11th International and 17th National Conference on E-Learning and E-Teaching (ICeLeT)* (pp. 1-5). IEEE. <https://doi.org/10.1109/ICeLeT62507.2024.10493087>
- Sa’adah, A. R. (2020). Writing skill in teaching english: An Overview. *Educasia*, 5(1), 21–35. <https://doi.org/10.21462/educasia.v5i1.41>
- Sallam, M., Salim, N. A., Barakat, M., Al-Mahzoum, K., Al-Tammemi, A. B., Malaeb, D., Hallit, R., & Hallit, S. (2023). Assessing health students’ attitudes and usage of CHATGPT in Jordan: Validation study. *JMIR Medical Education*, 9, e48254. <https://doi.org/10.2196/48254>
- Sallam, M. (2023). ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns. *Healthcare*, 11, 887, <https://doi:10.3390/healthcare11060887>.
- Sallam, M. (2023). *The Utility of ChatGPT as an example of large language models in healthcare education, research and practice: Systematic review on the future perspectives and potential limitations*. medRxiv. <https://doi.org/10.1101/2023.02.19.23286155>
- Santiago, C. S., Embang, S. I., Acanto, R. B., Ambojia, K. W. P., Aperocho, M. D. B., Balilo, B. B., Cahapin, E. L., Conlu, M. T. N., Lausa, S. M., Laput, E. Y., Malabag, B. A., Paderes, J. J., & Romasanta, J. K. N. (2023). Utilization of writing assistance tools in research in selected higher learning institutions in the Philippines: A text Mining Analysis. *International Journal of Learning, Teaching and Educational Research*, 22(11), 259–284. <https://doi.org/10.26803/ijlter.22.11.14>
- Schmidt-Fajlik, R. (2023). ChatGPT as a Grammar Checker for Japanese English Language Learners: A Comparison with Grammarly and Pro Writing Aid. *AsiaCALL Online Journal*, 14(1), 105–119. <https://doi.org/10.54855/acoj.231417>
- Shahriar, S., & Hayawi, K. (2023). *Let’s have a chat! A Conversation with ChatGPT: Technology, Applications, and Limitations*. arXiv. <https://doi.org/10.48550/arxiv.2302.13817>
- Shidiq, M. (2023). The Use of Artificial Intelligence-Based ChatGPT and its challenges for the world of education; From the viewpoint of the development

- of creative writing skills. *Proceeding of International Conference on Education, Society and Humanity*, 01(2986–5832). Retrieved from <https://ejournal.unuja.ac.id/index.php/icesh/article/view/5614>
- Shoufan, A. (2023). Exploring Students' Perceptions of CHATGPT: Thematic Analysis and Follow-up survey. *IEEE Access*, 11, 38805–38818. <https://doi.org/10.1109/access.2023.3268224>
- Soelistiyowati, E., Permatasari, A. N., Nugroho, V. T. A., & Kusmulyadi, A. S. F. (2024). Enhancing college learners' writing skills through the integration of ChatGPT: Strategies, benefits, and concerns. *eralingua: Jurnal Pendidikan Bahasa Asing Dan Sastra*, 8(1), 1. <https://doi.org/10.26858/eralingua.v8i1.53461>
- Stepanechko, O., & Kozub, L. (2023). English teachers' concerns about the ethical use of ChatGPT by University Students. *Grail of Science*, 25, 297–302. <https://doi.org/10.36074/grail-of-science.17.03.2023.051>
- Strzelecki, A. (2023). Students' Acceptance of CHATGPT in Higher Education: An Extended Unified Theory of Acceptance and Use of Technology. *Innovative Higher Education*. <https://doi.org/10.1007/s10755-023-09686-1>
- Tran, T. N., & Tran, H. P. (2023). Exploring the role of chatgpt in developing critical digital literacies in language learning: A Qualitative study. *Proceedings of the Asia CALL International Conference*, 4, 1–17. <https://doi.org/10.54855/paic.2341>
- Tseng, W., & Warschauer, M. (2023). AI-writing tools in education: if you can't beat them, join them. *Journal of China Computer-assisted Language Learning*, 3(2), 258–262. <https://doi.org/10.1515/jccall-2023-0008>
- Urban, M., Děchtěrenko, F., Lukavský, J., Hrabalová, V., Svacha, F., Brom, C., & Urban, K. (2024). ChatGPT improves creative problem-solving performance in university students: An experimental study. *Computers and Education/Computers & Education*, 215, 105031. <https://doi.org/10.1016/j.compedu.2024.105031>
- Van Wyk, M. M., Adarkwah, M., & Amponsah, S. (2023). Why all the hype about ChatGPT? Academics' views of a chat based conversational learning strategy at an open distance e-learning institution. *Open Praxis*, 15, 214–225. <https://doi.org/10.55982/openpraxis.15.3.563>
- Yutong, N. Z., Leqi, N. Z., Rongxiao, N. Z., & Hang, N. S. (2024). Exploring AI-Generated feedback on english writing: A case study of ChatGPT. *US-China Foreign Language*, 22(3). <https://doi.org/10.17265/1539-8080/2024.03.002>
- Zhai, X., Chu, X., Chai, C., Jong, M., Istenič, A., Spector, M., Liu, J., Yuan, J., & Li, Y. (2021). A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity*, 2021, 8812542. <https://doi.org/10.1155/2021/8812542>
- Zhao, T., Chance, R., Buckhalter, C., & Wang, G. (2024). Impact of CHATGPT on student writing in construction management: Analyzing literature and countermeasures for writing intensive courses. *EPiC Series in Built Environment*. <https://doi.org/10.29007/4d7m>