Embracing Digitalization: Employing Using Chatbots to Improve Writing Skills

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Abstract

Chatbots can offer students an engaging learning experience that mirrors one-on-one interactions with teachers. Tamayo (2020) emphasized that chatbots create a personalized e-learning environment where students can acquire information at their own pace. This adaptability allows chatbots to adjust to each student's speed without overwhelming them. Using a mixed-method design, this study explores student responses to chatbot engagement in their writing. The findings showed a significant improvement in students' writing skills among those who received training through chatbots. The learning experience in the e-learning platform provided students with an accessible and user-friendly mode of learning. With the growing integration of modern technology, learners are increasingly inclined to use e-learning tools, thus boosting the acceptance of the platform as a viable learning method. The Technology Acceptance Model (TAM) supports this demonstrating that students' perceptions of the chatbot's usefulness and its ease-of-use lead to a positive attitude and higher engagement. This chatbot-driven learning experience resulted in observable improvements, including significant gains in writing assessment scores.

Keywords: *writing skills, chatbots, digitalization, e-learning*

Introduction

The Philippine education system continues to face persistent challenges that hinder students' academic growth, particularly in writing. Systemic issues—ranging from inadequate infrastructure and outdated instructional materials to an overloaded curriculum—have led to widespread difficulties in composition, organization, and clarity (EDCOM II, 2024). Alarmingly, 91% of Filipino 10-year-olds are not proficient in reading, a foundational skill for writing (World Bank, 2022). The 2018 Programme for International Student Assessment (PISA) further placed Filipino students among the lowest globally in writing-related performance, underscoring the urgent need for effective, scalable interventions (OECD, 2019).

A central barrier to writing development is the lack of tools and systems that provide timely, individualized feedback. According to the Department of Education (DepEd, 2023), only 104,536 out of 327,851 school buildings are in good condition, and teacher shortages continue to compromise personalized instruction. Overcrowded classrooms and overloaded teaching workloads often reduce writing instruction to grammar drills, neglecting essential aspects such as idea development and coherence. During the pandemic, these challenges intensified, with students engaging in self-directed learning and teachers struggling to provide in-depth writing support amid growing administrative burdens (DepEd, 2023).

In this context, AI-powered chatbots offer a promising and cost-effective intervention to bridge these instructional gaps. Unlike traditional classroom setups, chatbots

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can deliver instant, individualized feedback on grammar, structure, and logical flow, allowing students to revise their writing in real time and at their own pace. This supports asynchronous, self-directed learning, making writing practice more accessible, especially in low-resource environments.

Empirical research supports the use of chatbots in improving writing skills. Kwon, Shin, and Lee (2023) found that chatbot-guided writing tasks significantly improved students' essay organization and clarity. Similarly, Vanichvasin (2021) emphasized that chatbots help personalize learning by tracking recurring errors and offering context-sensitive prompts to stimulate creativity and fluency. Winkler and Sollner (2018) argued that chatbots can function as nonjudgmental conversational partners, fostering a supportive environment that encourages students to take writing risks and develop confidence.

Recent studies also highlight the growing role of chatbots in educational contexts beyond higher education. For instance, a 2024 study by Kumar and Goyal examined the use of chatbots in primary and secondary education and found them effective in improving students' engagement and writing fluency. The chatbot's ability to provide immediate feedback on drafts significantly enhanced students' revision processes and reduced common writing anxieties. Similarly, Martin and Alayón (2023) demonstrated that chatbot interactions led to an increase in student autonomy and motivation, particularly in diverse educational settings with varying resources. These findings underscore the potential of chatbots not only as tools for academic improvement but also as instruments for fostering independent learning habits in younger students.

Chatbots can offer students an engaging learning experience that mirrors one-on-one interactions with teachers. Tamayo (2020) emphasized that chatbots create a personalized e-learning environment where students can acquire information at their own pace. This adaptability allows chatbots to adjust to each student's speed without overwhelming them. Furthermore, chatbots support social learning by providing a platform where students from diverse backgrounds can express their thoughts and viewpoints on various topics, with the bot tailoring its responses to each individual.

However, existing literature largely focuses on chatbot use in higher education and adult learning contexts, often within technologically equipped environments. Little attention has been given to their application in basic education settings such as Philippine public schools, where limited infrastructure and inconsistent internet access persist. This research gap is particularly evident in writing instruction, where most chatbot tools emphasize grammar correction rather than process-oriented writing mentorship—including support for brainstorming, drafting, revising, and reflecting across genres.

This study seeks to address that gap by examining how chatbots can enhance writing engagement, motivation, and performance among junior and senior high school students in the Philippines. Unlike previous studies that focus on tertiary learners or formal academic writing, this study investigates chatbot use in informal, curriculum-aligned writing tasks in basic education. It also explores the affective benefits of chatbot use, including reduced writing anxiety and increased writing confidence—both crucial in contexts where students often view writing as intimidating or tedious (Kwon et al., 2023).

Crucially, this study is grounded in the realities of the Philippine education system. It accounts for infrastructural limitations and digital inequities that complicate the integration of advanced educational technology. While most studies on chatbot-assisted learning assume reliable internet and individual device access (Winkler & Söllner, 2018), these conditions are often absent in Philippine public schools. To address this, the study investigates low-bandwidth, mobile-compatible chatbot platforms—such as Facebook Messenger-based bots—that offer more realistic, scalable solutions (Canlas & Ortillo, 2023).

Through localizing chatbot integration within Philippine writing instruction, this research contributes a context-sensitive perspective to the global discourse on AI in education. It aligns with heutagogical principles, which emphasize learner autonomy, digital agency, and self-directed learning in technology-enhanced environments (Cochrane et al., 2020). Rather than replacing human instruction, chatbots are positioned as scaffolded writing partners—guiding students through revision, encouraging reflective practice, and simulating real-world writing tasks such as composing emails and reports.

Successful implementation, however, requires addressing infrastructural and pedagogical limitations. Many schools lack the necessary digital infrastructure to support AI tools, and teachers may need professional development to integrate chatbots effectively and interpret AI-generated feedback (DepEd, 2023). Ethical considerations must also be prioritized: ensuring data privacy, maintaining transparency in chatbot responses, and avoiding overreliance on AI to the detriment of independent critical thinking.

Hence, integrating chatbots into Philippine writing instruction presents a compelling opportunity to address long-standing challenges related to feedback, student engagement, and writing skill development. With thoughtful implementation and a grounded understanding of local constraints, chatbots can help cultivate a new generation of confident, competent Filipino writers—even in the most resource-limited settings. By bridging the gap between technology and education, this proposed study aims to determine the effectiveness of chatbots as a language learning tool, particularly in enhancing students' writing performance in basic education. Specifically, this study seeks to answer the following research questions:

1. What is the level of students' writing skills?

A. Before using chatbots as a tool for writing instruction

B. After using chatbots as a tool for writing instruction

2. How do students evaluate the use of chatbots in improving their writing skills in terms of:

2.1. Ease of use

2.2. Usefulness for improving writing

2.3. Effectiveness in enhancing writing quality

2.4. Compatibility with their writing process

2.5. Motivation to continue using the tool for writing practice

3. Is there a significant difference in students' writing skills between the pre-test and post-test results?

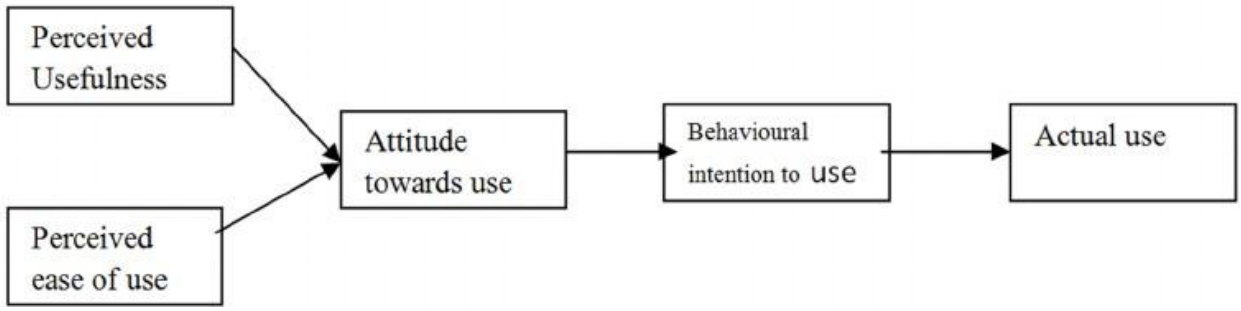
Theoretical Framework

A. Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is essential to know how students embrace and utilize chatbot writing tools in enhancing their writing ability. Development of writing calls for regular practice, feedback, and revision, and these are primary areas where chatbot-enabled writing tools can play a positive role. TAM indicates that students are likely to employ technology when they find it helpful and easy to use. For writing, this implies that the

tool has to deliver real benefits in enhancing writing and be user-friendly enough for students to use on a regular basis.

Figure 1. *Technology acceptance model (TAM) (Davis et al., 1989)*



Perceived Usefulness and Writing Improvement: students are likely to adopt chatbots as useful aids for improving writing if they perceive them as useful. Chatbots can offer instant, customized feedback in terms of grammar, structure, and style that helps to improve writing skills. If students discover that chatbot feedback makes them a better writer, then they will be more likely to use it to enhance their drafts, identify errors, and make improvements in later writing assignments. This perceived usefulness encourages an ongoing cycle of writing and revision.

Perceived Ease of Use and Writing Engagement: To have students use chatbots regularly, the software should be simple to use. Writing is not an easy activity, and students might not be comfortable with it. But if the chatbot has an easy-to-use interface where it is convenient to submit the drafts and get feedback, then the students will use it more often. Using the chatbot repeatedly is likely to result in increased practice of writing, which, in turn, enhances the ability of the students to write fluently and well with time. Therefore, a user-friendly platform is needed to ensure continued interaction with the tool.

TAM focuses on the significance of making chatbot tools both useful (for writing improvement) and convenient (to enhance usage), which indirectly facilitates the development of writing skills. When the two factors are balanced properly, students are likely to gain benefits from technology in writing development.

B. Politeness Theory and Writing Skills

Aside from the technical, Politeness Theory introduces social and emotional components to the learning process, particularly in writing. The kind of feedback and interactions students have with a chatbot can go a long way toward influencing their motivation and willingness to continue writing, which is key to skill building. Writing inherently is an act that can be highly personal and vulnerable, and the manner of feedback can play a big role in how students emotionally respond and continue to engage.

Lessening Anxiety through Politeness, writing is a risk-taking activity for most students. If the chatbot responds in a polite manner and without judgment, it is able to lessen the anxiety that students experience about eroding in writing. Through positive reinforcement and providing constructive feedback in an encouraging manner, the chatbot can motivate students to continue correcting themselves without getting discouraged. This strategy is especially useful for students who may struggle with writing or lack confidence in their writing skills, as it provides a more secure environment for development.

Politeness strategies such as respectful criticism and empathic expressions can enhance a student's motivation to write and edit. Students are more likely to heed criticism and use it on their next writing assignment if they feel respected and appreciated. Positive reinforcement

through respectful, supportive communication creates a supportive learning atmosphere in which learners feel comfortable experimenting and refining their writing abilities. This feeling of respect and empathy heightens their motivation to work through the writing process in the long term.

Overall, Politeness Theory focuses on minimizing anxiety, enhancing motivation, and having a respectful conversation in the writing process. This is particularly important for students who are insecure about their writing skills since a polite and supportive environment can encourage them to have more confidence and the urge to enhance.

C. Integrating TAM and Politeness Theory in Writing Skill Development

When we combine TAM with Politeness Theory, we get a holistic approach to writing development that takes into account both the practical and emotional needs of students. This integrated approach ensures that students not only receive effective feedback but also engage with the writing process in a way that supports their emotional well-being.

From a TAM perspective, chatbots that are perceived as useful and easy to use encourage students to engage with writing tasks more frequently, receive valuable feedback, and gradually improve their writing skills. If students find the tool user-friendly and capable of providing insightful feedback, they are more likely to use it consistently, thereby enhancing their writing proficiency.

From a Politeness Theory perspective, providing feedback in a way that is supportive, empathetic, and non-judgmental helps students feel confident and motivated to keep writing. Polite and respectful language in chatbot responses reduces anxiety, nurtures positive emotional engagement, and encourages students to refine their skills without fear of judgment. This emotional support is crucial in maintaining a positive learning experience, especially for students who may already feel vulnerable in their writing abilities.

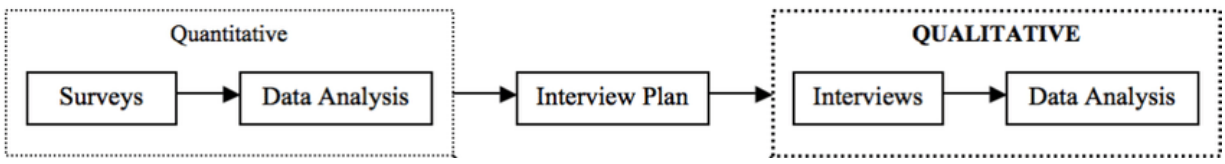
Both theories guarantee that chatbot tools not only support the technical aspects of writing but also contribute to a positive emotional experience that motivates students to continue practicing and refining their writing skills. In the context of Philippine public schools, where students may come from diverse backgrounds and levels of proficiency, both the functional and emotional aspects are crucial for fostering an environment where students can thrive as writers.

Methodology

Research Design

This study employed a mixed-method design, an emergent research methodology that systematically integrates both quantitative and qualitative data within a single investigation. According to Fischler (2015), this design is ideal for comprehensively addressing research problems, as it helps resolve discrepancies between quantitative and qualitative findings. Additionally, it ensures participants' voices are heard and that study conclusions are based on their lived experiences.

Figure 2. *Sequential Mixed Method, Explanatory Design* (Creswell & Plano Clark, (2007).



For the quantitative aspect, a quasi-experimental method was utilized, which included pre- and post-tests that specifically assessed writing skills. To ensure the sample was representative, participants were selected from a section with the lowest scores in writing assessments. Demographic information such as age, gender, and academic background was also collected to contextualize the data. Considerations regarding internet connectivity and device availability were taken into account, as these factors could influence participation and performance.

According to Bruce (2012), the quasi-experimental method is particularly suited for real-world, naturalistic situations, allowing for a meaningful assessment of how the independent variable impacts the dependent variable, in this case, writing improvement. This method enables the study to closely replicate real-world conditions while assessing cause-and-effect relationships in the context of writing skills.

For the qualitative portion, a semi-structured interview was conducted to gather detailed, personal insights from participants regarding their writing experiences and perceptions of their improvement. The researcher provided an open framework for participants to elaborate on their experiences, offering flexibility in their responses. This approach allows respondents to share their thoughts and reflections on writing in their own words, providing richer and more nuanced data (Creswell, 2014).

However, the interview method, while effective in gathering in-depth, raw data, can be time-consuming. Given the remote nature of the interviews, which were conducted using various online platforms, there was variability in the interaction between the researcher and respondents. This could lead to differences in the data collected, influenced by factors such as the researchers' interviewing skills and participants' comfort with the platform used. To address these potential variables, control measures were implemented, such as training for interviewers to standardize the questioning process and ensure consistency across interviews. Furthermore, demographic data and participant background were monitored closely to minimize any biases or factors that could affect the results, particularly in the context of writing improvement (Patton, 2015).

Participants and Settings

The research was conducted at a public secondary school in Antipolo City, serving a diverse student population. While the school aimed to provide effective and accessible education, it faced challenges such as limited resources and varying levels of technological infrastructure. A survey conducted on September 2, 2021, on the preferred distance learning modality revealed that 15.39% of students preferred online learning, 21.18% favored blended learning, and 63.43% opted for modular distance learning. The results indicated that limited internet access was a significant factor, leading most students to prefer modular distance learning. Given the findings, it was suggested to develop materials optimized for low bandwidth. This shift to modular delivery made it increasingly difficult for both teachers and learners to maintain the quality of education.

A purposive sampling method was utilized to recruit 30 Grade 10 students, selected according to specific parameters, such as language assessment test results, as well as internet access and devices availability. Purposive sampling was chosen because it can determine participants most likely to gain from the intervention and whose goals fit that of the study (Patton, 2002). Such a method confirms that the participants have the required resources and background to engage effectively with the chatbot-based language learning tool. In addition, purposive sampling is most useful in educational research when the goal is to select specific groups that meet specified conditions, (Creswell, 2020).

Before the treatment, a pilot study was administered to 30 students to check the efficacy of the learning tool and verify the reliability of the measurement instruments. In this phase, the researcher employed Jmetrik to calculate the Cronbach Alpha to check the internal consistency of the instruments. After the pilot study, the treatment lasted for a quarter of the time (3 months) and consisted of students interacting with the chatbot tool to improve their language skills. Treatment was structured to offer interactive, technology-based learning experiences for developing language skills through personalized guidance and feedback.

Instruments

The pretest and posttest were employed to assess the respondents' language skills, specifically targeting the least mastered competencies from the school years 2019 to 2021, with a particular focus on the use of modal verbs. These assessments were complemented by interviews that enabled participants to elaborate on their comments, providing them with greater opportunities to articulate their experiences and observations regarding the use of chatbots as language learning tools. To ensure content validity, experts in the field of second language acquisition reviewed the pretest, posttest, and interview questionnaire; their feedback and recommendations were incorporated into the final instruments.

In addition, a survey questionnaire adapted from Deris et al. (2019) was utilized to evaluate the effectiveness of Mobile-Assisted Language Learning (MALL). The instrument measured five key dimensions: Ease of Use, Usefulness, Efficacy, Compatibility, and Intention of Use, using a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

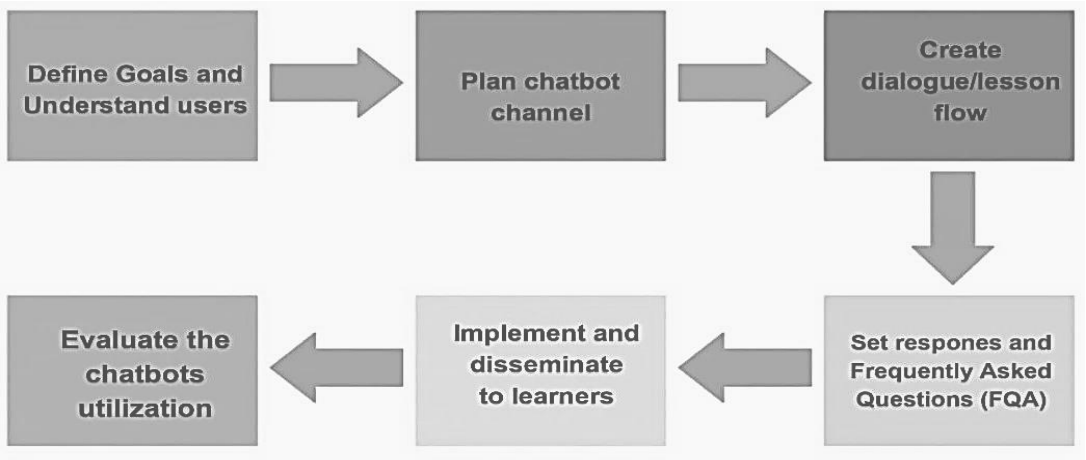
To further ensure the reliability and validity of the research instruments, a pilot test was conducted with 30 participants who were not part of the actual study sample. The pilot test results were analyzed to determine the instruments' validity, reliability, item discrimination index, and difficulty level, in line with established testing standards (Gay, Mills, & Airasian, 2012).

Data Gathering Procedure

The researcher sought permission to perform the study from the Principal and the English Department Coordinator. The researcher provided the respondents with a link to the pretest once approved. Chatbots was used as an Artificial Intelligence (AI) communicator to assist students with much-needed practice,review, and confidence. After four weeks, the researcher provided the link to the Google Form posttest to the students' Messenger group. The researcher encoded each respondent's scores to make sure that the data obtainedwas correct from the google form. Then five randomly chosen students were asked for an interview in order toget a deeper insight into the results; all the data were transcribed and analyzed

The data was evaluated using frequency and percentage analysis, mean standard deviation and learninggains for the quantitative section of the study. The goal of the interview for qualitative design was to explain, better comprehend, and examine the individuals' perspectives and experiences regarding the effects of chatbotsin enhancing their language skills. To ensure the validity of qualitative results, the findings were assessed in two forms: 1) inter-rater agreement: where two experts in the field of qualitative analysis and the subject domainof research were consulted. 2) intra-rater agreement: The researcher herself coded and analyzed the data. Whenaddressing the trustworthiness of results from qualitative content, Graneheim and Lundman (2004) point out that there is still some degree of interpretation when approaching a document. Researchers must know how to verify the organization phase's integrity and conformability.

Figure 3. Phases in developing chatbots as a language learning tool



The study followed the phases in developing chatbots as a language learning tool crafted by the researcher.It includes six (5) phases, namely; (1) define goals and understand the users, (2) plan the chatbot channel (3) create dialogue/lesson flow, (4) set responses and frequently asked questions, (5) implement and disseminate to learners and (6) evaluate the utilization.

Chatbots reply to user-initiated messages automatically; the goal of the created chatbot in this study is tobe a tool that will support students in their remote learning classes. Chatbots, according to Singh (2018), may make the learning experience more engaging, interesting, and exciting for students while also improving the teaching process by relieving teachers of repeated queries and acting as virtual assistant or tutor.

Ethical Considerations

In this study, ethical standards were carefully upheld to ensure the safety, dignity, and well-being of all student participants, especially in light of the use of chatbot technology. Prior to the research period, informed consent was obtained from students and their parents or guardians, clearly outlining the study's purpose, procedures, potential risks, and benefits. Students were informed about how the chatbot would be used as a learning tool and that their interactions with it would be monitored solely for academic analysis. Participation was entirely voluntary, and students retained the right to withdraw from the study at any time without any academic penalty. Confidentiality and data privacy were strictly maintained; all records of chatbot interactions and assessment results were anonymized and stored securely.

Furthermore, students were asked for explicit permission to use their real names in the research report—those who opted out were assigned pseudonyms to protect their identities. The study complied with ethical guidelines on technology use in education and ensured that the chatbot promoted a safe, respectful, and supportive learning environment.

Results and Discussion

This section presents the findings of the study regarding the impact of chatbot technology on the writing skills of students. The study aims to assess whether the integration of chatbots into the learning process influences students' writing proficiency over time. The data collected from pretest and post-test results demonstrate how the use of chatbots as a language learning tool can improve writing skills, along with students' evaluations of the technology's effectiveness.

Table 1. Level of Student's Writing Skills

	M	SD
Pretest Writing Score	10.80	
Post-test Writing Score	24.17	

The findings of the study show that the level of writing skills the students possess before the utilization of chatbots is at an average of 10.8 and 24.7 on average after the use of chatbots in a 30-item test. Chatbots were found to deliver learning at a convenient time, in a suitable location, and in little chunks or short bits, which is ideal for modern students' fast-paced lives (Dokukina & Gumanova, 2020). They also offer instant feedback, check for comprehension, and patiently repeat the knowledge that must be grasped, remembered, and put into practice a number of times (Gonulal, 2019). These features of the chatbot, along with the utilization of politeness strategies (Mahmud, 2019), allow for easier acceptance of technology and visible growth in the level of utilization and comprehension of the subject matter, which in this case is writing skills (Smutny & Schreiberova, 2020).

The use of chatbots allows students to have an engaging learning experience akin to one-on-one interactions with teachers. Chatbots for e-learning, as highlighted by Xia et al. (2018), can create a system for a tailored learning experience in which each student learns and absorbs knowledge at their own pace. Studies also support that chatbots can facilitate this adaptive learning process, improving writing skills through tailored feedback and instruction (Smutny & Schreiberova, 2020).

Table 2. Student Evaluation of Utilization of Chatbots as a Writing Tool

Factor	M	SD	R	VI
Ease of Use	3.88	0.25	1	Agree
Usefulness	3.74	0.34	3.5	Agree
Efficacy	3.73	0.33	5	Agree
Compatibility	3.81	0.31	2	Agree
Intention of Use	3.74	0.34	3.5	Agree

This study also assessed the different factors that determine technological acceptance among the participants regarding the use of the chatbot. It was found that the average population has rated its ease of use as 3.88 on a 5-point Likert scale, 3.74 for usefulness, 3.73 for efficacy, 3.81 for compatibility, and 3.74 for intention of use with 5 being the highest. This suggests that the chatbot is perceived positively by the participants, leading to effective use of the chatbot (Xia et al., 2018). Perceived utility, perceived ease of use, and societal norms all influence the decision to utilize a technological system (Eraslan Yalcin & Kutlu, 2019).

Simultaneously, perceived usefulness is influenced by perceived ease of use, social norms, and user interface design, while perceived ease of use is influenced by computer self-efficacy and user interface design. This affects the positive use and efficiency of the system's goal, promoting the desired attitudes for participants in using the system, which in this case is the chatbot used for enhancing writing skills (Smutny & Schreiberova, 2020).

In the literature on technology adoption, studies back up the theoretical model that contextualizes the self-efficacy and response-efficacy processes (He, Chen, & Kitkuakul, 2019). This also shows that ease of use increases the usefulness of the technological system as it allows for an increased intent of use, which enhances the overall learning process (Gonulal, 2019). The compatibility of the system with the participants' lifestyles also affects the frequency of their use of the technology (Smutny & Schreiberova, 2020).

Table 3. Paired Samples t-test Results Comparing Level of Student's Writing Skills before and after the Utilization of Chatbots as a Writing Tool

	M	**SD**	**t**	**df**	**p**
Pretest Writing Score	10.80	2.33	**-18.28***	29	
Post-test Writing Score	24.17	2.80			

*Notes: M = Mean, SD = Standard Deviation, t = t-test score, df = degrees of freedom, p = critical value, * = p<0.05*

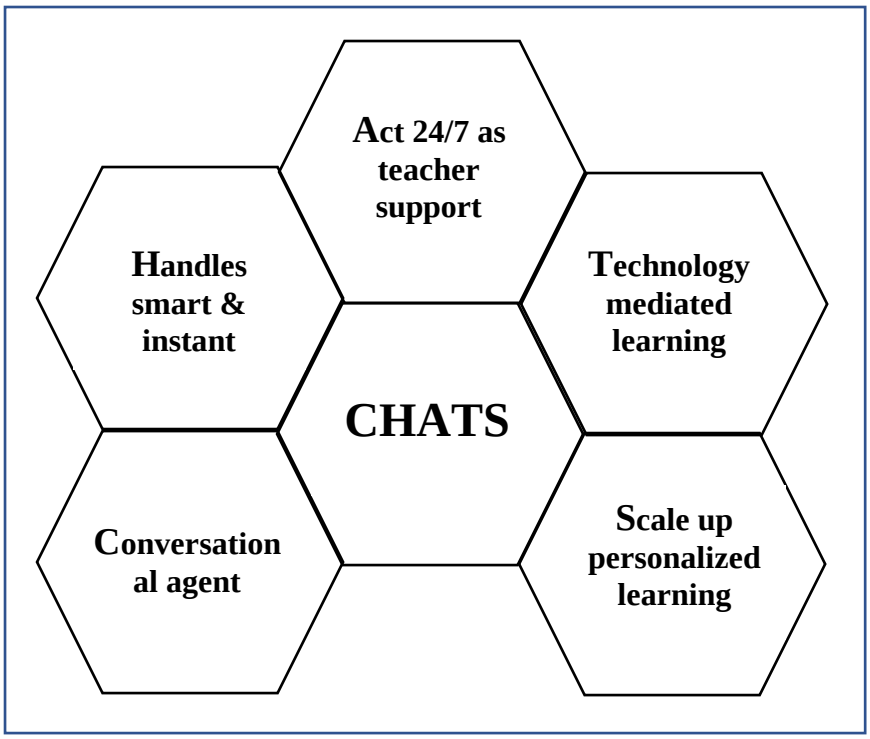
A Paired Samples t-test revealed a significant difference between the performance of students in their writing skills before and after implementing chatbots as a writing tool [t (29) = -18.28, p = 0.00]. This suggests that there is a significant difference in the participants' writing skills before and after the implementation of the chatbot. Research on chatbots in various educational contexts has demonstrated their benefits in language learning (Saputra et al., 2019; Smutny & Schreiberova, 2020). Previous research has shown that employing chatbots to learn a language provides advantages, including minimizing learning interruptions and offering relevant, tailored education (Vanichvasin, 2021). Chatbots were also found to yield favorable results by providing students with a more individualized learning experience (Smutny & Schreiberova, 2020).

Even though chatbots were not initially created with the intention of being used for educational purposes, many English language learners (ELLs) reported using them for language learning (Gonulal, 2019). "Motivation to use a technology could very well lead learners to develop motivation to learn a language, and conversely, sustained motivation to learn a language could result in a desire to use technology" (Gonulal, 2019). Studies have shown that chatbots are viewed positively by students in higher education, even in low-resource nations (Botero et al., 2019). However, for successful integration of chatbots in education, enabling conditions and a stronger role of the educational community are essential (He, Chen, & Kitkuakul, 2019).

Five major themes relative to the utilization of chatbots as a writing learning tool emerged from the data analysis. The identified themes were presented in Figure 5: the CHATS framework:

Conversational agents
Handles smart and instant feedback
Acts 24/7 as teacher support
Technology-mediated learning
Scales up personalized writing learning.

Figure 5. *CHATS is a framework for using bots as remote language learning*



Theme 1: Chatbots as Conversational Agents

Chatbots simulate a conversation or interaction with a real person by emulating written or spoken human communication. In the same way that a classroom promotes student-teacher communication, a chatbot facilitates two-way communication. This is crucial in writing development as students can practice constructing sentences and writing in a more interactive setting (Fryer, 2021).

According to Winkler (2018), one of the best features of a chatbot as a conversational agent is that it provides a mistake-friendly environment. Students can practice their writing skills anytime and anywhere. This offers them the opportunity to work on written tasks or assignments in a low-pressure, non-judgmental space, helping them overcome the anxiety often associated with writing. A participant mentioned: "P3: It gives me the confidence to express my thoughts in writing, and it helps me practice my writing skills in some way. I'm not worried about making mistakes."

Participants expressed enthusiasm for using chatbots as a writing partner, as they are accessible everywhere and anytime. Finding native speakers as writing partners is difficult, but chatbots provide that experience. Students also felt more comfortable writing to a chatbot, as it seemed less intimidating than interacting with a human tutor. One participant stated: "P1: Before, every time I was unsure about my writing, I wanted to message my teacher. However, I didn't know how to approach her, even online, because I was unsure if my constructed sentences were correct."

A chatbot as a writing tool can provide an interactive, practice-oriented environment where students can ask questions, receive corrections, and engage in dialogues that strengthen their writing (Fryer, 2021). One participant highlighted: "P2: I believe using chatbots is beneficial because it allows us to practice writing skills like reading, writing, and listening. It makes me feel more at ease, like I'm talking to a friend or classmate."

Fryer (2021) further found that chatbots could act as an intelligent tutoring system, offering feedback and mentoring on specific writing tasks. Furthermore, some participants

noted that chatbots could reduce the social pressure that many students feel when engaging in writing tasks. A participant shared: "P5: I use chatbots when I want to practice writing our lessons but don't have anyone else to turn to. It allows me to express myself without fear of being judged."

Chatbots, with continuous improvements in coding, offer the opportunity to build more complex interactions that help students grow their writing skills. According to Carpenter (2021), "the more believable the chatbot is as a conversational agent, the greater the quality of the writing experience."

Theme 2: Chatbots Handle Smart and Instant Feedback

Chatbots work seamlessly on platforms like Facebook's instant messaging system, which is widely available on mobile phones (Stalista, 2017). This offers students a familiar and easy-to-access platform for receiving feedback. In a remote learning setting, where instant feedback from teachers may not always be feasible, chatbots offer a solution for providing quick, constructive feedback on written work.

Participants noted that the chatbot's ability to give immediate feedback was one of its most appealing features. One participant explained:"P1: It's my second year in distance learning, and it's the first time I've used chatbots. What I like about this tool is that it gives me instant feedback on my tasks, which helps me stay on track."

Tseng and Tsai (2007) found that reinforcing feedback is effective in improving the quality of student work, particularly in an online environment. Chatbots facilitate timely feedback, even when instructors are unavailable due to large student cohorts or time zone differences. This contributes significantly to student motivation and learning progress.

Additionally, one participant mentioned: "P4: Unlike human-to-human chats, I had to wait hours, sometimes days, for feedback from my teacher, but with chatbots, I get the help I need instantly, which is very helpful for assignments that require more assistance."

Chatbots enable students to improve their writing skills in real-time while giving instructors valuable insights into areas that may need further clarification or support (Winkler, 2018).

Theme 3: Chatbots Act as Teacher Support 24/7

Due to the increased pressure on teachers during the pandemic, many struggled with burnout and high workloads, making it challenging to provide timely support for students' writing tasks (Carpenter, 2021). Chatbots offer an invaluable support system, available 24/7, helping students with their writing anytime they need assistance. One participant noted: "P1: Since I have limited internet access and can't attend all the class consultations, I rely on chatbots to access lessons and assessments at any time. It helps me keep up with the course despite my connectivity issues."

In a country like the Philippines, where many students face barriers such as poverty and poor internet access, chatbots can bridge the digital divide and ensure that all students have access to writing support, even when teachers are unavailable (Winkler, 2018).

A working student shared: "P3: I work as a fish vendor during the day, so I can only study at night. I know I can't message my teacher then, but because the chatbot is available, I can review the lesson and complete my writing tasks. It feels like I'm having a real conversation with my teacher."

Chatbots also give students the freedom to review writing concepts and practice at their own pace, allowing them to internalize the material in a way that works best for them (Fryer, 2021).

Theme 4: Technology-Mediated Learning

The increasing integration of digital technologies in education has transformed the way students engage with learning tasks. Educators have turned to innovative tools like chatbots to enhance writing instruction and provide more interactive, student-centered learning experiences. As Fryer (2021) noted, digital tools have become essential in modern education, prompting a shift from traditional instructional practices toward more flexible, technology-driven methods.

Chatbots, in particular, offer a dynamic platform that allows students to engage in authentic writing tasks, receive instant feedback, and access personalized support. According to Carpenter (2021), technology empowers students to develop new writing skills, explore diverse resources, and approach writing tasks in more creative and meaningful ways. One student shared, "I'm amazed by the digital tools that were introduced to us this quarter. They give me fast access to information and make writing tasks much more engaging and easier to practice."

Recent research highlights the effectiveness of chatbot-assisted writing environments. Nguyen et al. (2023) found that AI-powered writing tools significantly improve students' grammar, vocabulary use, and overall writing structure. These tools also offer scaffolded learning experiences, making it easier for students to manage complex writing tasks independently. Similarly, Li and Liu (2022) observed that chatbot use fosters increased motivation and learner autonomy, especially when students are provided with instant and constructive feedback.

Moreover, the integration of digital tools like chatbots supports the development of 21st-century skills—critical thinking, creativity, communication, and collaboration—which are essential for students' academic success and future careers. As Stalista (2017) emphasized, equipping students with these competencies ensures they are better prepared to thrive in an increasingly digital and interconnected world. UNESCO (2022) also supports this view, underscoring the importance of digital literacy and technology-enhanced learning in building lifelong learning capacities.

Theme 5: Chatbots Scale Up Personalized Writing Learning

Chatbots have increasingly become integral to personalized writing instruction, thanks to their ability to offer real-time, adaptive feedback. Fryer (2021) emphasized that chatbots can significantly enhance the writing learning process by tracking student responses, assessing their development, and tailoring feedback to individual needs. This aligns with heutagogical principles, where learners take greater control over their learning journey.

As one student in Fryer's study noted, "Chatbots help us practice writing tasks like regular conversations. They record our replies and assess our performance, offering personalized feedback," highlighting their role as both learning companions and formative assessment tools.

Winkler (2018) similarly found that chatbot technology supports individualized writing development. By identifying specific weaknesses in grammar, coherence, and idea development, chatbots can guide students toward self-directed learning paths. This allows educators to focus their instructional energy on more nuanced challenges while chatbots handle routine writing practice and diagnostics.

Recent studies continue to support these findings. According to Kuhail et al. (2023), chatbot-based writing assistants can improve writing fluency and reduce cognitive load by simplifying the drafting and revision processes. The AI's ability to give instant feedback motivates learners to engage more deeply and consistently in the writing process. Similarly, Zawacki-Richter et al. (2022) explored how chatbot-driven interactions encourage reflection and metacognitive awareness among learners. Moreover, Kim & Kim (2023) explored the

emotional impact of AI feedback and found that students using chatbots felt less anxious about making mistakes, which fostered a safer learning environment conducive to risk-taking and creativity in writing.

Conclusion

A significant improvement in students' writing skills was observed among those who engaged with chatbot-assisted learning platforms. These improvements were evident in areas such as grammar accuracy, idea organization, sentence structure, coherence, and vocabulary development. The integration of chatbot technology in writing instruction not only enhanced learners' performance in writing assessments but also stimulated their intrinsic motivation and self-directed learning behaviors.

The convenience, accessibility, and interactive nature of the e-learning platform contributed to a positive learning experience, with learners noting the ease of navigation and the immediate, personalized feedback provided by chatbots. This aligns with the principles of the Technology Acceptance Model (TAM), which posits that perceived ease of use and usefulness strongly influence the user's attitude toward technology. As students became more confident using chatbots, they demonstrated greater engagement, independence, and willingness to revise and refine their writing outputs.

In addition, chatbot interactions mimicked human conversational patterns by employing positive reinforcement strategies, such as personalized greetings, praise, and motivational phrases. These features reflect aspects of Politeness Theory and support the idea that affective engagement plays a key role in sustaining learner interest and performance. The chatbot's ability to encourage, guide, and support students in real time resulted in heightened cognitive engagement and behavioral persistence, both of which are critical to improving writing competence.

Recommendations

The promising results of this study call for the continuous integration and development of chatbot technology in writing education. Future implementations should explore expanding chatbot functions to include writing prompts based on real-world scenarios, support for peer feedback processes, and advanced error detection for nuanced writing elements such as tone, purpose, and argumentation.

Additionally, gamification features—such as badges, leaderboards, writing challenges, and progress tracking—can significantly increase learner engagement, especially among adolescents and young adult learners. These features not only promote motivation and a sense of achievement but also encourage collaborative learning and social interaction, which are crucial for developing communication skills in writing.

Future researchers should also consider the comparative impact of chatbots across various educational levels (elementary, secondary, tertiary) and subject areas (e.g., creative writing, technical writing, academic writing) to identify the most effective contexts for chatbot integration. A longitudinal approach to study the sustained effects of chatbot-assisted writing instruction is also recommended, as it can reveal patterns in long-term retention, writing fluency, and critical thinking development.

Moreover, it is essential to scale up the research by increasing the sample size and incorporating diverse learner populations, including students from rural, urban, and alternative learning systems, to evaluate the inclusivity and scalability of chatbot technology in broader educational ecosystems.

Lastly, collaboration with instructional designers, language experts, and AI developers is highly encouraged to refine chatbot responses, integrate culturally responsive

pedagogy, and ensure that the chatbot aligns with curricular standards and language learning outcomes. Monitoring tools and analytics dashboards could also be integrated to help teachers track student progress and provide data-driven interventions.

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