

AI chatbot-based learning: alleviating students' anxiety in english writing classroom

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ARTICLE INFO

Article history

Received September 7, 2023

Revised October 18, 2023

Accepted November 4, 2023

Keywords

AI Chatbot

ChatGPT

Anxiety

Writing Classroom

ABSTRACT

In the ever-evolving landscape of education, integrating innovative technologies can enhance the learning experience for students. ChatGPT, a cutting-edge language processing tool developed by OpenAI, offers exciting possibilities for teaching writing. This study aims to determine if deploying AI Chatbot-based learning reduces students' anxiety in learning English writing. The study utilizes ChatGPT, a state-of-the-art language processing tool developed by OpenAI. ChatGPT represents the forefront of natural language processing technology, making it an innovative choice for this study. Its ability to generate human-like responses and provide instant feedback distinguishes it from traditional educational tools. The study targets a significant issue in education - student anxiety. It examines how AI Chatbots can reduce anxiety associated with learning English writing. Addressing students' emotional well-being in the context of learning is a novel and vital approach that aligns with the growing emphasis on mental health in education. This advanced AI model can be a powerful asset in the classroom, providing students with valuable resources and support as they develop their writing skills. The study employed a quasi-experimental design that included pre-and post-test assessments to extensively explore and evaluate the educational achievements of two distinct groups. The data from the participants were gathered rigorously before and after the intervention in this methodological framework to find any noteworthy variations between the pre-test and post-test scores. Seventy-three college students participated in the quasi-experiment. The findings demonstrate that AI Chatbot-based instruction reduces students' anxiety about learning English writing. AI Chatbots offer instant feedback, allowing students to correct errors immediately. This quick feedback loop can prevent students from ruminating over their mistakes, thus reducing anxiety. With AI Chatbot, students can learn at their own pace. They can take time to understand concepts, practice writing, and receive feedback without feeling rushed. This flexibility can alleviate the pressure of strict deadlines in traditional classroom settings. The findings imply that teachers should implement Chatbot-based learning in the classroom.

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1. Introduction

Within the language teaching and learning field, Information and Communication Technology (ICT) is Believed to have contexts that facilitate the improvement of second or foreign language abilities [1]. Technology has created opportunities and challenges for teachers and learners to a great extent. A recent surge in ICT impacts how English and other languages are taught and learned. Artificial Intelligence (AI) is currently a form of technological development that is starting to be widely used in teaching, especially in English language teaching. AI is becoming more widespread in various industries, including higher education. AI applications are becoming increasingly important

for schools and universities, whether for individualized learning, computerized evaluation, smart educational systems, or assisting teaching personnel. Ribeiro [2] states that Artificial Intelligence in English Language Teaching (ELT) is the most practical use for English language instructors. English is one of the most widely spoken languages in the world, with a regular grammatical structure. Chabot is one type of AI that is beginning to be widely employed in education. Chabot is an artificial intelligence-based system that can communicate and respond to user questions or instructions. People can communicate with Chabot through websites, apps, social media platforms, or voice interfaces [3]. A Chabot can be used for information retrieval to provide knowledge on a particular subject. This Chabot has many uses, including interactive FAQs and guiding customers through decision-making [4]. One of the most promising AI technologies is ChatGPT, a Natural Language Processing (NLP) system that can generate human-like conversations [5]. The acronym GPT, representing "Generative Pre-Trained Transformer," designates a cutting-edge, extensive language model that undergoes training employing a substantial corpus of textual information. Consequently, this training facilitates the production of contextually appropriate textual responses that imitate human discourse. ChatGPT seamlessly comprehends the textual input and crafts a response that aligns with the context. Notably, the responses generated by ChatGPT stem from the acquired patterns extracted from the training data rather than any specific origin or real-time data [6].

Teaching and learning English also has become easier with the development of technology and digital platforms. These now offer the opportunity to improve English language skills [2]. The use of technology in learning should also help students to more easily develop their language skills, one of which is written communication skills. Writing can be understood as conveying thoughts, ideas, or information on a surface using a set of symbols such as letters, words, or characters. It is a kind of communication that allows people to transmit meaning and share their expertise with others. Despite its importance, writing is also challenging to master [7]. Writing is considered to be the most complex and challenging skill to master, and as a rule, it is more complex and challenging than writing in one's native language [8].

Writing is a type of productive talent widely used in various settings, from enterprises to higher education, and it undoubtedly plays a significant role in second language learning [9]. Few people can write fluently in a foreign language. Anxiety is one of the elements contributing to difficulties in expressing thoughts in writing. Takahashi stated that writing anxiety is more of a fear of the writing process that outweighs the projected gain from writing ability [8]. One of the reasons for writing fear is that writing takes knowledge of how to generate outstanding writing. Technology has significantly transformed how students approach writing tasks, offering various tools and resources to help alleviate writing anxiety. Technology provides many tools and resources catering to the writing process's multiple facets [10], [11]. Technologies offer assistance, improve accessibility, and foster a collaborative and interactive writing environment [12], [13]. Students can use these technologies to lessen writing anxiety and approach writing projects with enhanced confidence and proficiency. Anxiety is a normal and often required reaction to stress or possible dangers. It is apprehension, fear, or uneasiness about something having an unclear consequence. Anxiety commonly happens to EFL learners. Anxiety is a frequent emotion that individuals experience at stressful times [8], and students can experience it in the classroom. Foreign language anxiety is a complex feeling, behavior, and attitude toward a distinctive language-learning process [7], [14]. This anxiety, then, makes the students reluctant to produce the languages. Most second or foreign language learners suffer anxiety [15]–[17]. Anxiety frequently develops because foreign language learners must grasp a language that is unfamiliar to them. Anxiety is an inevitable feeling that affects learners in their learning process [17].

Some research in English writing education has found that writing anxiety significantly influences students' quality and perception of writing [17]–[19]. Anxiety has a significant impact on EFL students' writing skills [8]. While most of it is seen to be one of the primary obstacles in the language process, a little anxiety is often necessary for the learners' focus and accuracy throughout the writing process [19]. Some empirical studies have examined the more specific, subtle effects of language anxiety, and many studies show that anxiety causes cognitive interference in performing particular tasks [20].

Writing is an emotional and cognitive activity, meaning we think and feel when we write explains that [21], [22]. Second language writing is influenced not only by social, cultural, and contextual factors but also by the educational institution's requirements, parental and societal expectations, teaching and assessment practices, and the learner's motivation, personality, self-confidence, and

beliefs [23]. It is also considered a complex system of personal characteristics, learners, L2-knowledge, gender, and even years of schooling [23]. The reasons why second language learners feel anxious when writing may vary and be numerous, but some general causes ranging from highly personal (such as self-confidence) to procedural (such as classroom activities and teaching methods) can be identified based on previous research in the field of L2 writing as well as writing anxiety.

Writing anxiety as a subject and situation-specific anxiety is a general avoidance of writing behavior and situations thought to potentially require some amount of writing accompanied by the potential for evaluating that writing [22]. Writing anxiety can be caused by various factors. A study by [23] has revealed some factors affecting students' writing anxiety, i.e., students' negative perception of writing as a difficult task, linguistic difficulties, including poor understanding of grammar rules and insufficient vocabulary, and fear of negative evaluation from peers and lecturers. These findings are supported by [18]–[20] who stated that writing anxiety can be induced by increased instructor expectations, exam anxiety, a lack of writing skills, and other factors. However, because of the difficulties that must be overcome in writing, most students may feel strained or disheartened. Because of this worry, they will eventually refrain from attempting to write.

ChatGPT is an example of AI technology that may be used to teach individuals how to write. ChatGPT can be an excellent tool for English writing classes. It can help students practice their writing skills by providing a virtual writing partner. It can also help them learn how to construct sentences, improve their grammar, and develop their writing style [12]. The fast advancement of smartphone technology, social media, and AI presents problems for educational practitioners in designing advanced learning media. In recent decades, artificial intelligence has been widely exploited to produce applications, with its products found in practically every part of our lives [13]. A Chabot is a communication application that simulates human conversation via auditory or textual methods. It is also known as a conversational agent, an intelligent agent, or a dialogue system [24]. AI Chabot-Based Learning uses artificial intelligence technology to provide engaging, customized, and efficient learning experiences. The Chabots improve students' learning by offering quick help, individualized instruction, and interactive learning activities. Research revealed that Chabot technology has the potential to be a helpful teaching and learning tool in distance and online education [13]. ChatGPT ("generative, pre-trained transformer"), built by Microsoft-backed OpenAI and set to be delivered in November 2022, is one of the most potent AI-powered Chabots [10]. Further, this technology builds on automated voice recognition, NLP, and rudimentary AI utilized by digital assistants like Siri and Alexa to do simple automatic tasks.

ChatGPT supports language learning by simulating authentic interactions [24], [25]. It can detect a word's meaning in context, correct and explain grammatical faults, produce compositions of various genres (e.g., emails, stories, recipes), build quizzes, annotate texts, and give dictionary definitions, sample sentences and translations [26]. Although ChatGPT is a highly successful language established and promoted, it has several limitations. It can only create text based on feedback and has no access to more knowledge or the ability to search the internet.

Another problem is that ChatGPT is trained on a large dataset of human language, which may result in biased or offensive responses. ChatGPT users must understand these constraints and apply the model appropriately [5], [27]. Furthermore, ChatGPT may generate erroneous data. For learners who rely on ChatGPT, errors would interrupt the learning process and jeopardize the educational experience's integrity and legitimacy, destroying the trust bond essential to effective education. [28], [29] Despite weaknesses, using ChatGPT in learning writing still helps students. At least users can learn from its responses, improving their vocabulary, grammar, and overall writing style [5].

There is no longer any way to avoid using technology in the classroom. It is believed that the use of technology will benefit educators and learners alike by fostering resilience in their engagement with the classroom and, in particular, by lowering anxiety related to learning. Nevertheless, whether we like to admit it or not, integrating technology into the classroom can affect students in both positive and negative ways. The study aims to determine how using technology, in this case, Chat GPT, affects students' psychological well-being in English classes. The investigation is focused on the effect of utilizing ChatGPT on lowering students' anxiety in writing. It aims to answer whether implementing AI Chabot-based learning alleviates students' anxiety about learning English writing.

2. Method

This study aimed to investigate the impact of ChatGPT on students' anxiety in the English writing class. A quasi-experimental design was employed to get the data. This design included pre- and post-test evaluations to explore and evaluate the anxiety levels of two distinct groups. The data were rigorously collected before and after the intervention to find noteworthy variations between the two groups' pre-test scores and post-test outcomes. The quasi-experimental design can be seen in Fig. 1.

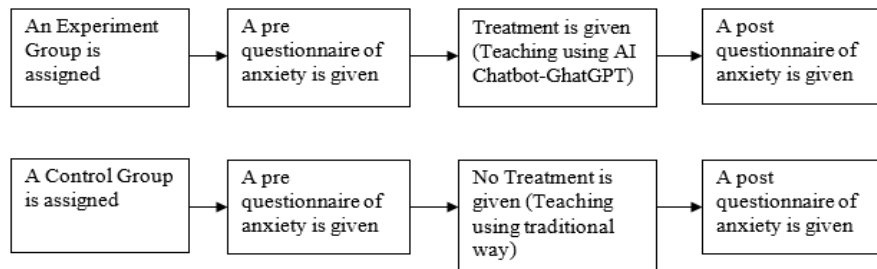


Fig. 1. Quasi Experimental Design

This study included seventy-three bachelor students of the English Department of Universitas Muhammadiyah Purwokerto-Indonesia as participants from different semesters. Before the commencement of the course, participants were separated into two classes, each of which was taught using a different instructional strategy. The experimental group consisted of 36 students taught using an AI Chabot. In another session, 37 students in the control group were taught conventionally. The same teacher taught the participants using the same course materials and assessments. Table 1 presents the treatment given to the experimental group.

Table.1 The teaching of writing in an experimental group

Meeting	Content
1 st meeting	Introduction to Academic Writing for Experiment Group
Introduction	(PPT is available)
2 nd meeting	The teacher gives feedback on the result of the video assignment test and materials review.
Pre-writing I	Pre-Writing, I: Topic 1 (Purwokerto City) Students use AI Chabots
3 rd meeting	The teacher gives feedback on student's homework from the previous meeting
Pre-writing I Feedback	Peer Feedback: Students are divided into a group of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the draft of writing after peer feedback
4 th meeting	The teacher gives feedback on the video assignment test and materials review results.
Pre-writing II	Pre-Writing II: Topic 2 (Pros and Cons of joining student organizations) Students use AI Chabots
5 th meeting	The teacher gives feedback on students' homework from the previous meeting.
Pre-writing II Feedback	Peer Feedback: Students are divided into groups of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the draft of their writing after peer feedback.
6 th meeting	The teacher gives feedback on the result of the video assignment test and materials review.
Pre-writing III	Pre-Writing III: Topic 3 (Early Marriage) Students use AI Chabots
7 th meeting	The teacher gives feedback on students' homework from the previous meeting.
Pre-writing III Feedback	Peer Feedback: Students are divided into groups of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the writing draft after peer feedback.
8 th meeting	Writing: Final Topic (Social-Media)
Writing	Teacher Feedback (Rubrics are available) Students use AI Chabots

Table 2 shows the teaching of writing in the control group.

Table.2 The teaching of writing in a control group (conventional way)

Meeting	Content
1 st meeting Introduction	Introduction to Academic Writing for control group
2 nd meeting Pre-writing I	The teacher gives feedback on the result of the video assignment test and materials review. Pre-Writing, I: Topic 1 (Purwokerto City)
3 rd meeting Pre-writing I Feedback	The teacher gives feedback on student's homework from the previous meeting Peer Feedback: Students are divided into groups of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the draft of writing after peer feedback
4 th meeting Pre-writing II	The teacher gives feedback on the result of the video assignment test and materials review. Pre-Writing II: Topic 2 (Pros and Cons of joining student organizations)
5 th meeting Pre-writing II Feedback	The teacher gives feedback on students' homework from the previous meeting. Peer Feedback: Students are divided into groups of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the draft of their writing after peer feedback.
6 th meeting Pre-writing III	The teacher gives feedback on the result of the video assignment test and materials review. Pre-Writing III: Topic 3 (Early Marriage)
7 th meeting Pre-writing III Feedback	The teacher gives feedback on students' homework from the previous meeting. Peer Feedback: Students are divided into groups of five, and their writings will be exchanged among students within the group (Rubrics are available) The teacher asks the students to check the draft of their writing after peer feedback.
8 th meeting Final Writing	Writing: Final Topic (Social-Media) Teacher Feedback (Rubrics are available)

The experiment was carried out over eight meetings, each lasting 100 minutes. All participants completed the pre-test questionnaire at the first meeting. The questions include some indicators: Communication Apprehension, Fear of Negative Evaluation, Test Anxiety, and English Classroom Anxiety. They also get an introduction to the class they are taking. The experimental group is taught how to use an AI Chabot. The control group is introduced to conventional learning in the first meeting. Students in the experimental group interact with the AI Chabot to learn and gain knowledge through quick feedback. They had 15 minutes to utilize their mobile devices and communicate with the AI Chabot. Students in the control group learned from their lecturer. After all students have completed the pre-test, the main experiment begins. The students studied how to produce academic papers with relevant teaching methodologies across six meetings, from the second to the seventh. The final meeting was spent completing the post-test questionnaire. Data from participants was collected using a questionnaire with a five-point Likert scale. Respondents indicate their degree of agreement on a scale ranging from "strongly agree" to "strongly disagree." The data were collected using the online survey. Respondents were asked to rate 33 items on their feelings about writing activities in an English writing course. We developed a post-questionnaire to measure the students' anxiety levels for both groups (experimental and control groups) that includes some aspects: Communication Apprehension, Fear of Negative Evaluation, Test Anxiety, and English Classroom Anxiety. The completed data was then analyzed using one-way ANCOVA to observe the difference between the pre-test and post-test scores for students' anxiety. The descriptive statistics were presented to describe and compare variables' means and standard deviations.

3. Results and Discussion

Descriptive statistics is an analytical technique used to describe a condition seen from quantity, means, and standard deviation. The following are the descriptive statistical results of this research.

3.1. Test of Homogeneity

The test for homogeneity can be used to conclude whether two groups have the same variance and distribution. We expect that the variance between the two groups is similar. It means there are no different variances between samples. All of the respondents had similar levels in the beginning. Data accessible as show in [Table 3](#).

Ho: The perception of the two groups is the same variance (Homogeny).

Ha: The perception of the two groups is not the same variance (heterogenic)

Table.3 Data is accessible from homogeneity if the sig value is > 0.05

Levene's Test of Equality of Error Variances			
Dependent Variable:	Post Anxiety		
F	df1	df2	Sig.
0.547	1	79	0.462

Tests the null hypothesis that the error variance of the dependent variable is equal across groups. The data shows that the sig value (based on the mean) is > 0.05 , which means that it rejects Ha or states that all participants were at the same variance (same level) before receiving treatment (judged from the pre-test).

3.2. Tests of Between-Subjects Effects

Tests of Between subjects effects as show in [Table 4](#).

Table.4 Tests of Between subjects effects

Tests of Between-Subjects Effects						
Dependent Variable:	Post Anxiety					
Variable	SS	df	MS	F	Sig.	Partial h ²
Pre_Anxiety	1.147	1	1.147	7.545	0.015	0.312
Group	1.845	1	1.845	4.137	0.030	0.576
a. R Squared = .046 (Adjusted R Squared = .021)						

The data shows that group has a significant effect on anxiety ($F = 4.137$ and Sig value $0.030 < 0.05$), which means that post-treatment anxiety is influenced by group differences (control and experiment), which means there are differences in participant anxiety between the two groups (control and experiment), see the [Table 5](#), and plot below :

Table.5 Differences in participant anxiety between control and experimental groups

Estimates				
Dependent Variable:	Post Anxiety			
			95% Confidence Interval	
			Lower	Upper
Group	Mean	Std. Error	Bound	Bound
Experiment	2.895 ^a	0.082	2.732	3.059
Control	3.100 ^a	0.081	2.938	3.261
Covariates appearing in the model are evaluated at the following values: Pre_Anxiety = 3.1299.				

^a Covariates appearing in the model are evaluated at the following values: Pre_Anxiety = 3.1299

From the data of the post-test, it can be interpreted that the experimental group experienced lower anxiety levels on average than the control group. It means the students' anxiety related to learning English writing is significantly and favorably impacted by utilizing an AI Chabot. Students' anxiety has decreased in Chabot-based learning environments compared to conventional classroom settings because of AI Chabot's employment. Students may receive quick feedback from AI Chabot, which would keep them interested and motivated. AI Chabot has many valuable features and interactive methods to help students feel less anxious when writing. ChatGPT aims to interact through conversation, which involves a series of user questions and app responses. The interaction ChatGPT is designed to facilitate is centered around questions and follow-up questions. This type of interaction encourages the use of ChatGPT for learning by asking questions and considering the answers, which are activities at the heart of interactive learning [27]. The students in the experimental class can use the ChatGPT to correct common grammar mistakes in their written work [30]. In addition, they use the ChatGPT to help them seek specific and relevant information to support their ideas in their writing. When the students have difficulties planning and writing, they can ask for ChatGPT assistance to brainstorm their ideas, outline the ideas, and edit their writing. [31] Further, ChatGPT can offer examples of the requested inquiries in any field. It can supply responses, retain the context of a previous dialogue, make follow-up corrections, and has also been trained to acknowledge or reject requests [22], [30].

The research showed that students taught using AI Chabots' assistance in writing activities became more relaxed and had reduced anxiety levels compared to students taught in the conventional writing classroom. Using ChatGPT may lessen writing anxiety, a frequent problem many people have. The use of ChatGPT in the writing classroom has alleviated the students' anxiety in writing since ChatGPT provides students with real-time grammar, spelling, and syntactic advice [31], [32]. Additionally, ChatGPT offers students guidance on word selection and sentence structure, which will enhance their ability to express themselves. Students can challenge and clarify material using ChatGPT's capacity to respond to follow-up inquiries [27]. This AI mode facilitates integration with prior knowledge and a deeper understanding of multiple meanings and concepts. ChatGPT can assist students in coming up with fresh ideas for their writing projects by offering suggestions for themes, topics, and viewpoints that they would not have thought of on their own [26]. Due to the use of Chat GPT in supporting the students' writing, this AI has increased the possibility of generating precise and reliable content. ChatGPT facilitates identifying and removing errors because of its extensive information access [25].

Some factors are causing the students' anxiety in writing, as [22], [23] revealed in the research of students' anxiety in writing, i.e., fear of negative evaluation, time pressure, lack of self-confidence, insufficient writing techniques, lack of topical knowledge, insufficient writing practice, pressure for perfect work, and high frequency of assignment. This study revealed that language difficulties and low self-confidence are the most common factors causing anxiety. Students who lack confidence when a variety of factors such as a restricted vocabulary, poor grammar, or a lack of mastery of the topic can cause writing. The stress of producing flawless work and having little time for writing exacerbates this problem.

A comparative analysis between ChatGPT, Grammarly, and ProWritingAid determined that ChatGPT proved to be the most advantageous tool for enhancing the grammatical proficiency of Japanese English Language Learners. [32] undertook a study to investigate the influence of online chat and word processors on writing skills and discovered that students who engaged in online text chat exhibited noteworthy enhancements in their writing abilities [33]. When the students communicate with Chat GPT about the subjects they will write about, Chat GPT helps them give a general overview of the topics they will develop in their writing. Chat GPT will also assist them with vocabulary. ChatGPT has the remarkable ability to aid students in their quest for lexical enrichment [34] through various engaging activities. By offering comprehensive explanations, alternate expressions, and vivid illustrations of unfamiliar terms, this exceptional language companion enables students to broaden their lexicon enjoyably and interactively.

ChatGPT assists in minimizing student anxiety associated with language mastery issues and low self-confidence [35], [36]. GPT chat is incredibly helpful in helping students understand topics while providing linguistic information that students require, making writing exercises much more enjoyable [37]. ChatGPT could be a supportive tutor, giving feedback on students' work and revising ideas [38], [39]. Despite the merits of employing AI Chabot technology in reducing the students' anxiety in the writing classroom, AI Chabot should be followed by increasing students' linguistic ability and

comprehension of the appropriate use of technology in learning. Some scholars are convinced that some students depended on ChatGPT-generated solutions rather than using their cognitive skills to think critically and respond to situations. Over time, this reliance may erode students' critical thinking and problem-solving abilities [40]. Given the circumstances, this is highly likely because ChatGPT acquires knowledge from text data found on the internet, encompassing various sources. The information it learns may contain biases that are prevalent in society. For instance, if certain websites or forums have a biased or offensive nature, the model can assimilate and reproduce that bias. Should ChatGPT encounter such content while training, there is a possibility it may produce offensive language, hate speech, or profanity. ChatGPT may encounter challenges in fully comprehending the context of a conversation. Consequently, it may generate inappropriate or offensive responses when a sensitive or nuanced context is necessary. ChatGPT may exhibit cultural or regional biases, showing a preference for certain norms, languages, or dialects over others [36], [38]. In addition, ChatGPT may provide inconsistent reactions to the same question, leading to confusion for users. The quality of answers can vary depending on how the question is phrased. However, Chat PT offers benefits that can aid students in writing, particularly when it comes to writing in English, from an educational standpoint. According to [24], there are some pedagogical benefits of ChatGPT in education, i.e., 1) ChatGPT can explain terms and continue the interaction by answering follow-up questions. Learners can also ask for an explanation in their first language (e.g., Chinese). 2) ChatGPT can also be used to write dialogue or produce various genres of text relating to a single topic. 3) ChatGPT can then adjust the complexity of the dialogue to make it more suitable for beginners or advanced learners. It can also rewrite the dialogue in another language for students to translate later, 4). ChatGPT can be used to prepare vocabulary notes in both the target and primary language, for instance, to help learners understand a lesson about a short story, 5) Teachers can also ask ChatGPT to generate comprehension and expansion questions (open-ended or multiple-choice) to accompany reading tasks. In addition, individual students may receive individualized support through ChatGPT according to their learning requirements and preferences. It may customize its replies to the student's level of comprehension, giving personalized help. ChatGPT can help to enhance active learning strategies [10], [11].

4. Conclusion

In summary, advancing artificial intelligence-based technologies is inevitable and must be addressed appropriately. The involvement of technology in learning is said to generate a sense of optimism in students by assisting them in the learning process. AI-Chabot is a technology that can be used to teach foreign languages. This study has revealed that ChatGPT, a kind of AI-Chabot, has been shown to lessen students' anxiety levels during writing exercises compared to traditional learning. It can be seen from the data analysis results comparing the experiment and control groups. The students in the experimental group had lower anxiety levels compared to the control group in the English writing classroom. The alleviation of students' anxiety might be caused by the assistance of ChatGPT, which can be accessed during the writing process. ChatGPT offers some assistance. ChatGPT delivers real-time grammar, spelling, and syntactic advice to students. ChatGPT also provides students with advice on word choice and sentence construction, which will improve their ability to express themselves. ChatGPT's assistance makes things easier for students, giving them a sense of calm when writing. ChatGPT, on the other hand, must be utilized with caution. Teachers must give students a thorough grasp of and instruction on using ChatGPT, particularly when learning English, because language competency must consistently be increased through practice. In addition, the overuse of ChatGPT in language teaching would result in decreased critical thinking abilities and increased reliance on technology. The results emphasize the necessity of ongoing monitoring of AI use in education and the capacity to change approaches. This suggests that educational establishments should keep abreast of artificial intelligence developments and modify their strategies accordingly. Academics and language educators must ensure AI enhances language practice and learning activities rather than taking their place. It is recommended that interdisciplinary research be done to learn more about how ICT is integrated into language classrooms and how it affects students' psychological health and cognitive and language abilities.

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