



## **Exploring the Use of Artificial Intelligence in Boosting Students' Writing in Professional Writing Class**

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### **Abstract**

The rapid advancement of Artificial Intelligence has reshaped academic writing practices, providing new opportunities to enhance students' writing. This study explores the role of Artificial Intelligence in improving students' writing within a Professional Writing class at Pattimura University. Employing a mixed-method explanatory sequential design, data were collected through questionnaire. This study administered to 30 undergraduate students and follow-up interviews with three selected participants. The quantitative data were analyzed using descriptive statistics, while the qualitative data were examined through thematic analysis. Findings reveal that ChatGPT emerged as the most widely used Artificial Intelligence tool (73%), followed by Grammarly (23%) and Turnitin (4%). Students perceived Artificial Intelligence as highly beneficial for generating ideas, refining grammar, enhancing vocabulary, and overcoming writer's block, which collectively contributed to improved their writing. However, challenges were also identified, including risks of overreliance, diminished originality, and ethical concerns regarding academic integrity. The study concludes that Artificial Intelligence functions effectively as a supportive learning tool when employed critically and ethically, serving to complement rather than replace human writing. It recommends that lecturers integrate Artificial Intelligence literacy into academic curricula, students maintain reflective engagement with Artificial Intelligence outputs, and future research expand to longitudinal and cross-institutional contexts.

**Keywords:** *Artificial Intelligence, Challenges, Mixed-Method Research, Professional Writing Class, Writing*

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### **INTRODUCTION**

Artificial Intelligence has experienced more than 50 years of development become an interdisciplinary and frontier science (X. Yu et al., 2023). Artificial Intelligence has become an integral part of the human world, including education. There has been a growing research interest in the application of generative artificial intelligence in the field of education, especially since the

release of ChatGPT in November 2022, which brought the concept of generative Artificial Intelligence to the public attention and sparked increasing interest in its potential impact on education (H. Yu & Guo, 2023). Artificial Intelligence have capability to mimic human-like text generation, reshape education practices with offering real-time feedback, idea generation, and stylist suggestion (Halaweh, 2023).

Effective professional writing, enabling individuals to craft original, engaging, and impactful content. Writing, as one of the essential English productive skills, plays a crucial role in communication and intellectual expression (Zulaiha & Triana, 2023). Moreover, “writing skills, being a vital part of language proficiency, are a fundamental part of both research and higher education” (Jamshed et al., 2024). Writing not only enhances cognitive and imaginative abilities but also serves as a medium for recording and refining idea (Bora, 2023). Despite its importance, fostering creativity in writing remains a challenge, particularly in Professional Writing class where rigid structures and standardized assessments often dominate. This gap underscores the need for innovative tools and methodologies, such as, to nurture creative thinking among students.

The rise of Artificial Intelligence in education has introduced new opportunities to address this challenge. The use of Artificial Intelligence powered writing tools in English as a Foreign Language (EFL) classroom is increasing rapidly (Marzuki et al., 2023). Artificial Intelligence - powered tools like ChatGPT, Grammarly, and Turnitin are increasingly being adopted in classrooms to assist with various aspects of writing, from grammar checks to content generation (H. N. Tran & Nguyen, 2024). These tools leverage advanced algorithm to mimic human-like text generation, providing students with instant feedback and suggestions (Halaweh, 2023). For instance, ChatGPT can generate outlines, summarize texts, and offer alternative phrasing, thereby reducing the cognitive load on students and allowing them to focus on higher-order creative tasks (Orrù et al., 2023). Similarly, Grammarly ensures refining language use, while Turnitin ensures academic integrity by detecting plagiarism.

Numerous studies have investigated the role of Artificial Intelligence in enhancing students’ writing. Students who used generative Artificial Intelligence tools like ChatGPT exhibited higher level of divergent thinking and originality in writing assignments compared to control groups (Habib et al., 2024). Artificial Intelligence tools enhanced student engagement by offering dynamic prompts, personalized feedback, and emotional support through gamified learning environments (Lin & Chen, 2024). EFL students who integrated Artificial Intelligence tools into their writing process experienced higher motivation, greater enjoyment, and improved writing quality (He, 2024). Artificial Intelligence tools facilitated the ideation phase of writing, helping students overcome initial barriers but warned about the dangers of over-reliance on Artificial Intelligence generated content (Orrù et al., 2023). ChatGPT’s feedback significantly improved students’ grammar and syntax, empowering them to identify and correct mistakes independently (Sekewael & Anaktototy, 2025). This study that was done by the researcher addresses the following questions: 1) What types of Artificial Intelligence tools do students use in Professional Writing class? 2) How do students perceive the impact of Artificial Intelligence on their writing process? 3) In what ways do Artificial Intelligence improve students’ writing abilities in Professional Writing class?

## **LITERATURE REVIEW**

### **The Role of Technology in Education**

Technology has revolutionized education by providing tools that enhance learning efficiency and accessibility. AI, as the result of the development of technology. Artificial Intelligence, for the first time, John McCarthy defining it as “the science and engineering of making intelligent machines”. Artificial Intelligence (AI) has quickly established itself as a transformative force in a wide range of industries, including education (Kamalov et al., 2023). Moreover, according to (Sagin et al., 2023), Artificial Intelligence (AI) tools and systems are tools and systems that learn from the data sets provided to them, gain experience by adapting to new inputs, and are able to perform tasks that humans do by imitating human intelligence.

Sagin et al., (2023) stated that AI has shown significant promise in enhancing various aspects of education, from personalized learning to administrative efficiencies. Leveraging the power of AI, educators can provide personalized feedback, adaptive learning experiences, authentic resources, and collaborative opportunities for students (Vera, 2023). Moreover, Tran & Nguyen (2024) mentioned that AI tools, such as language models, chatbots, and intelligent tutoring systems, can provide tailored learning experiences and immediate feedback, allowing students to develop their skill at their own pace. In the context of writing, AI tools like ChatGPT, Grammarly, and Turnitin are increasingly used to support students in various writing processes, including idea generation, structure, grammar correction, and plagiarism detection (Zhai, 2023). While the application of AI in education has focused primarily on improving students’ technical writing abilities, there has been growing interest in its potential to foster creativity (Halaweh, 2023). Creativity in writing is complex and involves more than just producing error-free-content. It requires students to think critically, combine different ideas, and engage in iterative processes of drafting and revising. The challenge, therefore, is not just teaching students to write well, but creatively. According to Orru et al., (2023), AI has the potential to address this challenge by providing students with tools that can inspire new ideas, suggest alternative phrasing, and offer stylistic improvements, thereby reducing the cognitive load associated with writing tasks.

### **Artificial Intelligence in Education**

Artificial Intelligence, as Yu et al., (2023) stated in their paper, first conceptualized by John McCarthy in 1956, has evolved into a transformative force across industries, including education. In writing instruction, AI tools like ChatGPT, Grammarly, and Turnitin are widely adopted. Chat Generative Pre-Trained Transformer (ChatGPT) is a 175-billion-parameter natural language processing model that can generate conversation style responses to user input (A. El-Seoud et al., 2023). Furthermore, ChatGPT, for instance, generates human-like text, provides outlines, and suggests alternative phrasing, reducing cognitive load and fostering idea generation (Halaweh, 2023). Zhai (2023) mentioned that Grammarly enhances language precision, while Turnitin ensures academic integrity. These tools exemplify AI’s capacity to support human writing. However, debates persist about AI’s role in creativity. Some scholars like Habib et al., (2024) argue that over-reliance on AI may diminish original thought, while Kamalov et al., (2023) contend AI serves as a catalyst by offering diverse perspectives and overcoming creative blocks.

### **AI Tools and Techniques for Enhancing Students’ Writing**

Chatbot is a computer program based on artificial intelligence that can carry out conversations through audio or text (Haristiani, 2019). Moreover, chatbot, short for chatterbot, is a computer program that simulates human conversation through voice commands or text chat or both, that also can be embedded and used through any major messaging application (Qasem et al., 2023).

Chatbot be able to assist in brainstorming, drafting and refining content. Study by Orru et al., (2023) shows AI mimic human-like responses, aiding ideation. AI has enabled programmers to generate texts with human-like meaning (Fitria, 2024b).

Grammar Checker, for example Grammarly. Grammarly is an online grammar checker that was founded by Maz Lytvyn and Alex Shevchenk in 2009 (Y. D. Pratama, 2020). Grammarly improve linguistic accuracy, freeing students to focus on creative expression. Before using Grammarly, the performance students' text score is 34 out of 100, but after using Grammarly, the score is 77 out of 100 (Fitria, 2021).

Plagiarism is the act of using someone else's words, ideas, or creations without giving proper acknowledgement (Baron, 2024). So, plagiarism detector is the tools that detect the plagiarism. On these days, Baron (2024) mentioned that a few examples of such tools include Copyleaks, Copyscape, Duplichecker, Grammarly, iThenticate, Originality, PlagAware, PlagScan, SafeAssign, Turnitin, and Unicheck. In higher education context, Turnitin is the most use plagiarism detector.

Content generators like Jasper and Writesonic automate idea generation, draft outlines, or even full-text paragraphs based on prompts. The participants of their study agree that AI tools are an advantage for scholars in research writing (Venkatesan et al., 2023). According to Fitria (2024), these tools can spark creativity by offering starting points for assignments, helping students visualize different ways to approach a topic.

Image Generators like DALL-E and Midjourney generate text-to-image. The Midjourney technique is the most complete technology for many similar previous experiences, such as technique called Dall-E, which is a technology that is currently under development as well, and it can be tried for free (Hanna, 2023). DALL-E is a groundbreaking artificial intelligence (AI) that developed by OpenAI used a-state-of-the-art deep learning model to produce high-quality, detailed images that can be used in a range of application, from product design to advertising (Zhou & Nabus, 2023).

## **The Impacts of Artificial Intelligence on Students Writing Ability**

### **Positive Impacts**

The integration of Artificial Intelligence in Education has shown significant positive impacts on students' creativity. AI tools enhance creative thinking by providing innovative teaching methods, personalized learning experiences, and fostering critical thinking. This multifaceted approach not only supports artistic expression but also encourages students to engage in independent and innovative thought process. Artificial Intelligence in art education promote creativity through innovative teaching strategies, allowing students to explore new artistic avenues (Fan, 2024). Generative AI has been shown to improve creative cognition among design students, with studies indicating a strong positive correlation between AI use and innovative thinking skills (Hwang & Wu, 2025). AI stimulate creativity by introducing new ideas and problem-solving techniques, enhancing engagement through interactive elements, providing personalized feedback, and supporting emotional well-being with gamified features and constant availability, ultimately fostering a more dynamic learning environments for students (Lin & Chen, 2024). AI tools enable writers to generate content quickly, allowing for experimentation with different styles and techniques (Plate & Hutson, 2022). AI writing tools are designed to be user-friendly, enabling students and professionals to create high-quality text efficiently (Subramanian et al., 2024). AI-assisted writing tools significantly enhance students' writing quality, particularly in vocabulary richness and sentence structure, by providing timely feedback and guiding writing strategies, thus

improving overall writing ability and structuring skills (Xi, 2024). ChatGPT's feedback significantly improved students' grammar and syntax, empowering them to identify and correct mistakes independently (Sekewael & Anaktototy, 2025). AI feedback show significant improvements in essay quality, demonstrating the effectiveness of AI in enhancing writing proficiency (Chan et al., 2024).

### **Negative Impacts**

The integration of Artificial Intelligence in education has raised concerns about its potential negative impacts on students' creativity. The use of AI in writing has been shown negative impact affecting the originality and content generation, as students may relay on AI-generated content rather than developing their own ideas (Niloy et al., 2024). Moreover, excessive reliance on AI tools may diminish students' critical thinking and problem-solving skills, as they become dependent on technology for answers (Nadim & Di Fuccio, 2025). AI can lead to a lack of personal interaction, resulting in students feeling isolated and disconnected from their peers and lecture (Abd Rahman et al., 2023).

### **Professional Writing**

Professional writing demands more than technical correctness, it emphasizes clarity, persuasiveness, creativity, and appropriateness for different genres and audiences. As Zulaiha & Triana (2023) stressed, students often struggle with maintaining originality, voice, and coherence under academic pressures. Creativity in professional writing involves synthesizing information from multiple sources, generating new insights, and presenting ideas in compelling ways (Habib et al., 2024). Effective professional writers must balance adherence to conventions with the innovative presentation of ideas. Here, AI tools can serve as a double-edged sword, providing support in structuring arguments and refining style but also posing risks to authentic voice if not used critically (Kamalov et al., 2023).

## **METHODOLOGY**

This research used a mixed-method research explanatory sequential design to explore what types of Artificial Intelligence that students' use in Professional Writing class, the impact of Artificial Intelligence in boosting students' writing at Professional Writing class. The researcher used two questionnaires to identify the types of Artificial Intelligence that students used and explore the impact of using Artificial Intelligence in boosting student's writing in Professional Writing class and explore how they perceive the use of Artificial Intelligence. The researcher also used an interview to validate the answer given by study participants in questionnaires. This research was conducted in English Education Undergraduate Study Program, Faculty of Teacher Training and Education, Pattimura University at October-November 2024 to collect data. This study participant' are 30 students from 2021/2022 academic year. Researcher using purposive sampling technique to determine the participants of the study. The questionnaire was distributed through Microsoft Forms. The researcher analyzes quantitative data that will receive through descriptive statistics percentages by Sudjana (1989).

$$P = \frac{F}{N} \times 100\%$$

P: percentages

F: numbers of participants based on their answer

N: numbers of total participants

100%: constant number

The data collection process was commenced with the distribution of the questionnaire links through Whatsapp. This initial phase aims to gather preliminary insights into participants' experience with Artificial Intelligence in Professional Writing class. The responses from the questionnaire was analyze using descriptive statistics, specifically percentages. After the descriptive statistical analysis is complete, a second phase will involve conducting structured interviews with three random participants. The participants will be chosen based on the responses provided in the questionnaire, particularly those who present divergent or insightful answer. The interview was analyzed using thematic analysis. Thematic analysis is an increasingly popular method for analyzing qualitative data within the social sciences (Thompson, 2022). Finally, a comprehensive conclusion was drawn from the triangulated data, integrating findings from the descriptive statistics and thematic analysis to provide a well-rounded understanding of how Artificial Intelligence impacts students' writing in Professional Writing class.

## FINDINGS

### Quantitative Data: Questionnaire Results

The questionnaire collected responses from 30 students enrolled in Professional Writing class to answer the types of Artificial Intelligence and students' perception. The data were analyzed using descriptive statistics analysis to identify trends and patterns.

#### 1. The Types of Artificial Intelligence

Table 1. Type of Artificial Intelligences

| <i>No.</i> | <i>Type of Artificial Intelligences</i>   | <i>Total</i> | <i>Percentages</i> |
|------------|-------------------------------------------|--------------|--------------------|
| 1.         | Chatbots (ChatGPT)                        | 22           | 73                 |
| 2.         | Grammar Checker (Grammarly)               | 7            | 23                 |
| 3.         | Plagiarism Checkers (Turnitin, Copyscape) | 1            | 4                  |
| 4.         | Content Generators (Jasper, Writesonic)   | 0            | 0                  |
| 5.         | Image Generators (DALL-E, Midjourney)     | 0            | 0                  |

Artificial Intelligence that students used in Professional Writing class are ChatGPT with the using number 22 students (73%), Grammarly using by 7 students (23%), and only 1 (4%) student that use plagiarism checker. Other tools such as Jasper, Writesonic, DALL-E, and Midjourney were not used. This trend suggests that students are inclined to use tools that directly assist with content generation and language refinements.

#### 2. The Impacts of Artificial Intelligence

##### a. Positive Impacts

Table 2a. Positive Impacts of ARTIFICIAL INTELLIGENCE

| <i>No.</i> | <i>Positive Impacts</i>                                                         | <i>1</i> | <i>2</i> | <i>3</i> |
|------------|---------------------------------------------------------------------------------|----------|----------|----------|
| 1.         | Artificial Intelligence help me become more creative                            | 3.3%     | 10%      | 30%      |
| 2.         | Artificial Intelligence allowed me to explore new writing styles and techniques | 0        | 16.7%    | 3.3%     |
| 3.         | Artificial Intelligence writing tools are easy to use                           | 3.3%     | 0        | 20.1%    |

|     |                                                                                            |      |       |       |
|-----|--------------------------------------------------------------------------------------------|------|-------|-------|
| 4.  | Artificial Intelligence has improved my ability to structuring my writing                  | 0    | 10%   | 26.7% |
| 5.  | Artificial Intelligence enhanced my vocabulary and language skills                         | 0    | 6.7%  | 23.3% |
| 6.  | Feedback from Artificial Intelligence helped me improve my grammar and syntax              | 0    | 10%   | 6.7%  |
| 7.  | Artificial Intelligence makes writing become more engaging for me                          | 3.4% | 13.3% | 20%   |
| 8.  | Artificial Intelligence tools help me produce higher quality of writing                    | 0    | 10%   | 30%   |
| 9.  | Artificial Intelligence helps me to approach diverse writing topics                        | 0    | 6.7%  | 20%   |
| 10. | Artificial Intelligence helps me to more focus on innovative ideas and complex expressions | 0    | 10%   | 23.3% |

Artificial Intelligence can stimulate writing ability by introducing new ideas, problem-solving techniques, interactive elements, personalized feedback, and emotional well-being (Lin & Chen, 2024). It also allows students to explore new writing styles and techniques. Artificial Intelligence writing tools are easy to use, with 43.3% agreeing and 33.3% strongly agreeing. Artificial Intelligence has improved writing structuring, vocabulary, language skills, grammar, and syntax. It makes writing more engaging, with 53.3% agreeing and 10% strongly agreeing. Feedback from Artificial Intelligence leads to enhancements in EFL learners' writing skills, motivation, enjoyment, academic buoyancy, and academic success. Artificial Intelligence tools help produce higher quality writing, approach diverse writing topics, and focus on innovative ideas and complex expressions.

#### **b. Negative Impacts**

Table 2b. Negative Impacts of ARTIFICIAL INTELLIGENCE

| <i>No.</i> | <i>Negative Impacts</i>                                                                        | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|------------|------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|
| 1.         | Artificial Intelligence tools limiting my original ideas                                       | 13.3%    | 40%      | 16.7%    | 23.3%    | 6.7%     |
| 2.         | Artificial Intelligence suggestions can lead to repetitive phrasing                            | 3.3%     | 16.7%    | 40%      | 40%      | 0        |
| 3.         | Artificial Intelligence decrease my confidence in my writing                                   | 23.3%    | 33.3%    | 23.3%    | 16.7%    | 3.4%     |
| 4.         | Artificial Intelligence can produce irrelevant suggestions                                     | 6.7%     | 26.7%    | 26.7%    | 33.3%    | 6.6%     |
| 5.         | Artificial Intelligence generated ideas might reduce my original voice and creative expression | 13.3%    | 26.7%    | 20%      | 26.7%    | 13.3%    |
| 6.         | Artificial Intelligence tools can misinterpret subtle cultural                                 | 3.3%     | 30%      | 36.7%    | 23.3%    | 6.7%     |
| 7.         | Artificial Intelligence can lead to ethical concerns                                           | 3.3%     | 33.3%    | 46.7%    | 13.3%    | 3.4%     |
| 8.         | Artificial Intelligence might reducing my time for deeply reflecting my ideas                  | 20%      | 26.7%    | 26.7%    | 13.3%    | 13.3%    |

|    |                                                                                         |       |     |       |       |      |
|----|-----------------------------------------------------------------------------------------|-------|-----|-------|-------|------|
| 9. | Artificial Intelligence tools may make me uncomfortable sharing my work with my friends | 23.3% | 30% | 26.7% | 16.7% | 3.3% |
|----|-----------------------------------------------------------------------------------------|-------|-----|-------|-------|------|

This study reveals that Artificial Intelligence tools can limit original ideas, lead to repetitive phrasing, decrease confidence in writing, produce irrelevant suggestions, reduce original voice and creative expression, misinterpret subtle cultural aspects, lead to ethical concerns, reduce time for deeply reflecting ideas, and make sharing work uncomfortable. The majority of students disagree with these statements, with 13.3% disagreeing, 40% disagreeing, and 16.7% neutral. Additionally, Artificial Intelligence tools can produce irrelevant suggestions, misinterpret subtle cultural aspects, and lead to ethical concerns. Overall, the study highlights the potential limitations and challenges of Artificial Intelligence tools in writing.

## **Qualitative Data: Interview Results**

### ***Types of Artificial Intelligence Tools***

All participants reported frequent use of ChatGPT and Grammarly for brainstorming ideas, refining drafts, and checking grammar. The effectiveness of ChatGPT in text correction among English language learners, observing its ability to identify spelling errors rather than more complex issues such as sentence structure and pragmatics (Algaraady & Mahyoob, 2023). Brainstorming, motivates writers to generate ideas and solve problems related to a topic, facilitating connections between diverse concepts (Almumen & Jouhar, 2025). For university students, Grammarly is a useful tool to help them find mistakes in their writing and correct the writing (Ananda et al., 2021).

### ***Experiences of Using Artificial Intelligence***

Participants described their positive experiences when using Artificial Intelligence. “Tools like ChatGPT help me overcome writers’ block and generate ideas quickly, while grammar checkers like Grammarly improve my writings’ clarity and accuracy” (ML). Students reported feeling more confident in their writing abilities after using ChatGPT, which helped them tackle writers’ block effectively (Dewi, 2024). Students can leverage ChatGPT to produce innovative concepts that can be further refined, enhancing the writing process (Honcharuk, 2024). “I use Artificial Intelligence to help me making the instructions to be easier to understand using the simply words or sentences” (R). Artificial Intelligence tools can create lecture outlines, scripts, and slides based on user input, allowing students and educators to customize content for different levels (Willaert et al., 2025). “I see Artificial Intelligence tools as helpers, not replacement for my ideas. First, I write down my own thoughts and create a draft. Then, I use Artificial Intelligence tools to check grammar, suggest better words, or improve the structure” (RMB). Artificial Intelligence writing tools like ChatGPT assist students by creating ideas, providing writing prompts, and suggesting enhancements (Syarifah & Fakhruddin, 2024). “Artificial Intelligence tools offer quick, practical assistance, like generating ideas or checking grammar, while traditional resources, like books and peer feedback, provide deeper insights and broader perspectives” (ML). Artificial Intelligence tools assist in brainstorming and synthesizing information, helping students develop new ideas quickly (Hemalatha et al., 2024). Books and peer feedback encourage deeper analysis and critical engagement with content, fostering essential cognitive skills (Aljuaid, 2024). “Artificial Intelligence tools are most beneficial in brainstorming by generating ideas or prompts to overcome writers’ block, drafting by offering structured suggestions and enhancing coherence, and editing by checking grammar, spelling, and style to improve clarity and readability” (RMB).

Technologies like ChatGPT offer vocabulary enhancements and brainstorming support, fostering a more engaging writing experience (Pratama & Sulistiyo, 2024)

### ***Impact on Writing Process***

Participants described Artificial Intelligence tools aids in overcoming writers' block, exploring new styles, and improving the clarity of their writing. One participant stated that "When I am confused about structure or style, Artificial Intelligence gives ideas that I had not considered before, helping me to move forward". Writers' block refers to a competent writer's inability or difficulty to produce new written material for a certain period (Boice, 1985; Flaherty, 2004; Rose, 1984) in (Zorba, 2023). He (2024) finds that Artificial Intelligence-enhanced feedback boosts motivation and creative risk-taking. "Artificial Intelligence tools have helped improve my writing by generating fresh ideas and offering alternative perspectives, which boosts creativity. They also help me overcome writers' block by suggesting prompts, rephrasing sentences, and providing new angles to explore, making the writing process smoother and more efficient" (ML).

### ***Challenges in Using Artificial Intelligence***

This study found that students still encountered challenges while using Artificial Intelligence in their writing process. "Challenges with Artificial Intelligence tools in writing include a lack of deep understanding, difficulty with nuances, and producing generic text. Artificial Intelligence can also miss cultural or contextual details, and over-reliance may lead to a loss of personal style" (ML). "Yes, challenges include over reliance on Artificial Intelligence leading to reduced creativity or personal input. Limited customization in certain tools, making it hard to align results with specific needs. Privacy concerns when inputting sensitive or original ideas" (RMB). "The challenges is when Artificial Intelligence cannot give the right sources so I confused how to put the references" (R).

## **DISCUSSION**

### **The Types of Artificial Intelligence**

Most of the students choose Chatbots, especially ChatGPT, as their most used Artificial Intelligence. It is because this Artificial Intelligence very popular and easy to use. Chatbots is a computer, program, algorithm, or artificial intelligence which the main goal is a communication with a person, or another interlocutor (Skrebeca et al., 2021). ChatGPT became the most popular Artificial Intelligence platform in history after its launch in November 2022, reaching one million users within five years, marking a significant inflection point in society (Twinomurinzi & Gumbo, 2023). The second most used Artificial Intelligence that choose by students is Grammarly. Students used Grammarly to check grammar, spelling and errors in their writing. Grammarly is an internet-based tools to check many errors such as punctuation, spell check, plagiarism, and writing style (Fitriana & Nurazni, 2022). Grammarly effectively identifies errors in grammar, spelling, punctuation, and provides vocabulary suggestions, which are crucial for writing in academic context (Tran, 2024). Beyond error correction, Grammarly serves as a learning tool, offering explanations that enhance students' understanding of English grammar rules (Nurhidayah & Irawati, 2024). The disparity of these sentence is "Grammarly excels at identifying grammatical errors, punctuation, and spelling mistakes but falls short in providing feedback on higher-order writing skills such as coherence, argumentation, and style" (Llausas et al., 2024). The least used Artificial Intelligence in this study is Plagiarism Checker, in this context is Turnitin. This happened because students saw Turnitin as only plagiarism detector not the tools to improve their writing skills. It is supported with, many students view Turnitin primarily as an plagiarism detection tool

rather than a resource for improving writing skills, which can lead to anxiety and poor academic practices (Silvey et al., 2016). It is different with, in Indonesia, the use of Turnitin as a tool to promote academic integrity and improve writing skills faces various challenges, most of which are influenced by technology, culture, and education factors (Wulandari et al., 2025). Other tools such as Jasper, Writesonic, DALL-E, and Midjourney were not used. This trend suggests that students are inclined to use tools that directly assist with content generation and language refinements.

### **Students' Perceptions of Artificial Intelligence in Boosting Students' Writing**

The integration of Artificial Intelligence in Professional Writing class is becoming increasingly prevalent, offering a range of benefits that enhance learning experiences. Artificial Intelligence tools are being utilized to assist in generating ideas, evaluating essays, and providing feedback, thereby improving writing skills and efficiency. These tools are particularly beneficial, especially for students and professionals to produce high-quality, coherent text. The familiarity and use of Artificial Intelligence in writing classes are growing, as educators and students recognize the potential of Artificial Intelligence to transform traditional writing practices and foster creativity. Most of the students agree that Artificial Intelligence boosting their creativity. The participant of this study implied that “tools like ChatGPT help them overcome writers’ block and generate ideas quickly, while grammar checkers like Grammarly improve my writings’ clarity and accuracy”. It is aligned with “Artificial Intelligence like ChatGPT and Grammarly are widely used in education to assist with writing tasks, offering features such as grammar checking, style suggestions, and content generation” (Subramanian et al., 2024). Furthermore, these tools automate repetitive tasks, allowing students to focus on creative aspects of writing and improving overall writing proficiency (Subramanian et al., 2024). It is contrast with “Both ChatGPT and Grammarly can facilitate cheating and plagiarism by providing students with ready-made answers and writing assistance, undermining the development of independent thinking skills” (Memarian & Doleck, 2023)

### **The Impacts of Artificial Intelligence on Students Writing Process**

The integration of Artificial Intelligence in students’ writing processes has generated diverse impacts. Furthermore, “by developing critical thinking, students can analyze complex ideas, evaluate the facts, recognize logical associations, and argue the assumptions that lead to in-depth understanding” (Jumariati et al., 2024). Research indicates that Artificial Intelligence tools, such as ChatGPT can enhance various aspects of writing. This improvements is evident in studies where students demonstrated higher writing scores after utilizing Artificial Intelligence tools (Salihi et al., 2024). However, the relationship between Artificial Intelligence and writing is complex, as it also rise concerns about passive learning and the potential loss of originality (Naima et al., 2024). Many students report productivity and creative directions when collaborating with Artificial Intelligence, leading to a more dynamic writing process (Suchy, 2024). Artificial Intelligence tools have been shown to improve students’ writing skills across multiple components, including content generation and feedback mechanism (Naima et al., 2024). Research emphasize the efficiency of ChatGPT on mobile for enhancing ESL/EFL students’ writing skills, demonstrating that Artificial Intelligence driven feedback significantly improves grammatical accuracy in challenging areas such as present, past, and plural tense (Jamshed et al., 2024). Studies show that students using Artificial Intelligence report increased confidence and reduced anxiety in their writing tasks (Eragamreddy, 2024). Artificial Intelligence fosters decision-making and problem-solving abilities, enhancing overall writing competence (Ratih & Kastuhandani, 2024).

Grammarly helps students in understanding complex grammar issues and refining writing skills (Pane et al., 2025).

### **The Improvements of Students' Writing in Professional Writing class**

Improving students' writing in Professional Writing class is a key goal for educators as creativity is closely linked to writing proficiency, motivation, and academic achievement. Most of the students reported that, although Artificial Intelligence could never match human creativity, it could certainly help them develop their writing (Marrone et al., 2022). The present study showed that student co-creation with ChatGPT considerably improved creative problem-solving performance together with their on-task self-efficacy (Urban et al., 2024). Implementing diverse writing activities, such as storytelling and journaling, has been effective in increasing students writing skills (Bhandari, 2024). Encouraging students to explore various genres and styles, including poetry and narrative forms, helps develop their imaginative capabilities (Fitria, 2024a). Artificial Intelligence could serve as effective facilitators of students' writing when used critically and ethically. Ethically, which means, use it follow/based on the rules. Research ethics are the set of ethical guidelines that guide us on how scientific research should be conducted and disseminated. Critically means that students have the ability to process and synthesize information (Arafat, 2024). Critically is to analyze and evaluate information, reasoning and situations, according to appropriate standards, for the purpose of constructing sound and insightful new knowledge, understandings, hypotheses and beliefs (Heard et al., 2020). These findings indicate that the integration of Artificial Intelligence in writing instruction may reshape how writing skills are taught in EFL contexts.

### **CONCLUSION**

The results reveal that ChatGPT is the most frequently used Artificial Intelligence tool, followed by Grammarly and Turnitin. Students predominantly use Artificial Intelligence for grammar checking, idea generation, and drafting with many reporting positive experiences related to overcoming writers' block and structuring their writing. While a significant number of students agreed that Artificial Intelligence helped them become more creative and improved their vocabulary, style, and expression, others voiced concerns about overreliance, reduced originality, and potential ethical issues. This study concludes that Artificial Intelligence tools can serve as effective facilitators of students' writing when used critically and ethically. However, their effectiveness depends on the students' awareness, the instructor guidance, and the learning context. Rather than replacing human thought, Artificial Intelligence must be framed as a support system that complements the writing process.

Students are encouraged to use Artificial Intelligence tools such as ChatGPT and Grammarly for generating ideas, refining grammar, and organizing content. However, they should ensure that the final product reflects their original thought and creative input. Before, accepting Artificial Intelligence suggestions, students should evaluate the accuracy, relevance, and originality of the output. This practice enhances digital literacy and safeguards the integrity of their work. While Artificial Intelligence can suggest improvements, students should be careful not to lose their unique writing style and creativity. Striking a balance between Artificial Intelligence generated content and personal input is essential for developing authentic writing skill.

Lecturers are advised to include Artificial Intelligence tools as part of writing, not only for grammar correction, but also for supporting idea development and organization. Lessons should

incorporate ethical guidelines and promote reflective use. Lecturers should guide students in using Artificial Intelligence constructively by providing frameworks for revision and writing. Encouraging peer and lecturer feedback alongside Artificial Intelligence generated input ensures a holistic writing experience. As Artificial Intelligence becomes increasingly common in education, it is essential for lecturers to teach students how to interact with Artificial Intelligence tools responsibly—emphasizing issues like plagiarism, citation, and reliability of Artificial Intelligence outputs.

Future studies may involve more diverse institutions, class levels, or academic disciplines to explore how Artificial Intelligence affects creativity in different learning environments. A long-term study would help evaluate the sustained effects of Artificial Intelligence in students' writing proficiency over multiple semesters or academic years. Research focusing on each Artificial Intelligence tools, for example comparing ChatGPT with Grammarly, could provide more detailed insight into which features are most beneficial for specific writing tasks. Including lecturers' views on the pedagogical role of Artificial Intelligence in writing class would enrich the discourse and offer a more balanced understanding of its implementation.

## REFERENCES

- A. El-Seoud, S., Ayman, S. E., Nagaty, K., & H. Karam, O. (2023). The Impact of ChatGPT on Student Learning/performing. *SSRN Electronic Journal*.  
<https://doi.org/10.2139/ssrn.4532913>
- Abd Rahman, A. B., Rodzi, Z. M., Razali, I. N. B., Mohamad, W. N., Nazri, I. S. B. M., & Al-Sharqi, F. (2023). Breaking the illusion: The reality of Artificial Intelligence's (AI) negative influence on university students. *2023 4th International Conference on Artificial Intelligence and Data Sciences (AiDAS)*, 194–199.
- Algaraady, J., & Mahyoob, M. (2023). ChatGPT's Capabilities in Spotting and Analyzing Writing Errors Experienced by EFL Learners. *Arab World English Journal*, 9.  
<https://doi.org/10.24093/awej/call9.1>
- Aljuaid, H. (2024). The impact of artificial intelligence tools on academic writing instruction in higher education: A systematic review. *Arab World English Journal (AWEJ) Special Issue on ChatGPT*.
- Almumen, H. A., & Jouhar, M. R. (2025). The Impact of ChatGPT as a Brainstorming Tool on Gifted Students' Persuasive Writing. *Journal of Writing Research*.
- Ananda, M., Nisa, R., & Safura, S. (2021). Students' Perceptions toward the Use of Grammarly in Checking Grammar in Assignments. *ACCENTIA: Journal of English Language and Education*, 1(2). <https://doi.org/10.37598/accentia.v1i2.1144>
- Arafat, M. Y. (2024). Research ethics: Meaning and principles. *This Research Paper Has Been Published on International Journal of Academic Multidisciplinary Research On*, 8(1).
- Baron, P. (2024). Are AI detection and plagiarism similarity scores worthwhile in the age of ChatGPT and other Generative AI? *Scholarship of Teaching and Learning in the South*, 8(2), 151–179. <https://doi.org/10.36615/sotls.v8i2.411>
- Bhandari, B. L. (2024). Increasing Secondary School Students' Creativity in Writing Skills: An Action Research. *Butwal Campus Journal*, 7(2), 70–80.
- Bora, P. (2023). Importance of Writing Skill to Develop Students' Communication Skill. *Journal for Research Scholars and Professionals of English Language Teaching*, 7(35).  
<https://doi.org/10.54850/jrspelt.7.35.009>

- Chan, S., Lo, N., & Wong, A. (2024). Generative AI and Essay Writing: Impacts of Automated Feedback on Revision Performance and Engagement. *REFlections*, 31(3), 1249–1284.
- Dewi, F. (2024). The Inception of Ideas: How Students Use ChatGPT for Academic Writing. *Jurnal Sosiologi*, 23(2), 291–304. <https://doi.org/https://doi.org/10.5614/sostek.itbj>
- Eragamreddy, N. (2024). The Impact of AI in Creating Writing Skills in English Language Learners. *International Journal of Social Science Humanity & Management Research*, 03(12), 1573–1586. <https://doi.org/10.58806/ijsshr.2024.v3i12n05>
- Fan, Y. (2024). The promotion strategy of artificial intelligence on students' creativity and critical thinking in college art education. *International Theory and Practice in Humanities and Social Sciences*, 1(1), 260–269.
- Fitria, T. N. (2021). Grammarly as AI-powered English Writing Assistant: Students' Alternative for Writing English. *Metathesis: Journal of English Language, Literature, and Teaching*, 5(1). <https://doi.org/10.31002/metathesis.v5i1.3519>
- Fitria, T. N. (2024a). Creative writing skills in English: Developing student's potential and creativity. *EBONY: Journal of English Language Teaching, Linguistics, and Literature*, 4(1), 1–17. <https://doi.org/https://doi.org/10.37304/ebony.v4i1.10908>
- Fitria, T. N. (2024b). Using ChatBot-Based Artificial Intelligence (AI) for Writing an English Essay: The Ability of ChatGPT, Perplexity AI, and ChatSonic. *Journal of Language Intelligence and Culture*, 6(2), 103–128. <https://doi.org/10.35719/jlic.v6i2.139>
- Fitriana, K., & Nurazni, L. (2022). Exploring English Department Students' Perceptions on Using Grammarly to Check the Grammar in Their Writing. *Journal of English Teaching*, 8(1), 15–25. <https://doi.org/10.33541/jet.v8i1.3044>
- Habib, S., Vogel, T., Anli, X., & Thorne, E. (2024). How does generative artificial intelligence impact student creativity? *Journal of Creativity*, 34(1). <https://doi.org/10.1016/j.yjoc.2023.100072>
- Halaweh, M. (2023). ChatGPT in education: Strategies for responsible implementation. *Contemporary Educational Technology*, 15(2). <https://doi.org/10.30935/cedtech/13036>
- Hanna, D. M. (2023). The use of artificial intelligence art generator “midjourney” in artistic and advertising creativity. *Journal of Design Sciences and Applied Arts*, 4(2), 42–58.
- Haristiani, N. (2019). Artificial Intelligence (AI) Chatbot as Language Learning Medium: An inquiry. *Journal of Physics: Conference Series*, 1387(1). <https://doi.org/10.1088/1742-6596/1387/1/012020>
- He, Y. (2024). The Metaphor of AI in Writing in English : A Reflection on EFL Learners ' Motivation to Write , Enjoyment of Writing , Academic Buoyancy , and Academic Success in Writing The Metaphor of AI. *International Review of Research in Open and Distributed Learning*, 25(3), 271–286.
- Heard, J., Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020). Critical thinking: Definition and structure. *Australian Council for Educational Research*, 9. [https://research.acer.edu.au/cgi/viewcontent.cgi?article=1039&context=ar\\_misc](https://research.acer.edu.au/cgi/viewcontent.cgi?article=1039&context=ar_misc)
- Hemalatha, K; Sasirekha, T; Priyadharsani, K; Vishnupriya, T'; Haribala, R, K. (2024). Influence of Artificial Intelligence ( AI ) Tools on the Research Capabilities of College Students. *International Journal of Scientific Research in Engineering and Management (IJSREM)*, 08(10), 1–7. <https://doi.org/10.55041/IJSREM37999>
- Honcharuk, S. F. K. (2024). The use of ChatGPT in creative writing assistance. *XLinguae*, 17(1), 3–19. <https://doi.org/10.18355/XL.2024.17.01.01>
- Hwang, Y., & Wu, Y. (2025). The influence of generative artificial intelligence on creative

- cognition of design students: a chain mediation model of self-efficacy and anxiety. *Frontiers in Psychology*, 15, 1455015.
- Jamshed, M., Ahmed, A. S. M. M., Sarfaraj, M., & Warda, W. U. (2024). The Impact of ChatGPT on English Language Learners' Writing Skills: An Assessment of AI Feedback on Mobile. *International Journal of Interactive Mobile Technologies(IJIM)*, 18(19), 18–36. <https://doi.org/https://doi.org/10.3991/ijim.v18i19.50361>
- Jumariati, J., Nasrullah, N., Sutiono, C., & Utomo, M. K. (2024). A STUDY ON EFL STUDENTS' LEVELS OF CRITICAL THINKING SKILLS. *Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics*, 11(2), 215–231.
- Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution. *Sustainability (Switzerland)*, 15(16). <https://doi.org/10.3390/su151612451>
- Lin, H., & Chen, Q. (2024). Artificial intelligence (AI) -integrated educational applications and college students' creativity and academic emotions: students and teachers' perceptions and attitudes. *BMC Psychology*, 12(1). <https://doi.org/10.1186/s40359-024-01979-0>
- Llausas, S. M., Ruiz, E., Ayucan, S. M., & Evardo Jr, O. J. (2024). *A Systematic Literature Review on the Use of Grammarly in Improving the Writing Skills of ESL/EFL Students*.
- Marrone, R., Taddeo, V., & Hill, G. (2022). Creativity and Artificial Intelligence—A Student Perspective. *Journal of Intelligence*, 10(3). <https://doi.org/10.3390/jintelligence10030065>
- Marzuki, Widiati, U., Rusdin, D., Darwin, & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2). <https://doi.org/10.1080/2331186X.2023.2236469>
- Memarian, B., & Doleck, T. (2023). ChatGPT in education: Methods, potentials, and limitations. *Computers in Human Behavior: Artificial Humans*, 1(2). <https://doi.org/10.1016/j.chbah.2023.100022>
- Nadim, M. A., & Di Fuccio, R. (2025). Unveiling the Potential: Artificial Intelligence's Negative Impact on Teaching and Research Considering Ethics in Higher Education. *European Journal of Education*, 60(1), e12929.
- Naima, S., Boughena, K., & Abdelhadi, A. (2024). A SYSTEMATIC REVIEW OF EMPIRICAL STUDIES ON THE IMPACT OF ARTIFICIAL INTELLIGENCE ON UNIVERSITY STUDENTS' WRITING SKILLS. *Annals of the University of Craiova, Series Psychology, Pedagogy*, 46(2), 285–297.
- Niloy, A. C., Akter, S., Sultana, N., Sultana, J., & Rahman, S. I. U. (2024). Is Chatgpt a menace for creative writing ability? An experiment. *Journal of Computer Assisted Learning*, 40(2), 919–930.
- Nurhidayah, A., & Irawati, T. (2024). Grammarly in Essay Writing through the Lens of Student Perception. *Jurnal Bahasa, Sastra, Dan Studi Amerika*, 30(1), 11–18. <https://doi.org/10.20961/jbssa.v30i1.87858>
- Orrù, G., Piarulli, A., Conversano, C., & Gemignani, A. (2023). Human-like problem-solving abilities in large language models using ChatGPT. *Frontiers in Artificial Intelligence*, 6. <https://doi.org/10.3389/frai.2023.1199350>
- Pane, I. I. I., Alvindi, Dimas, & Sadri, I. (2025). EXPLORING STUDENTS' PERCEPTIONS OF GRAMMARLY AS A TOOL FOR ENHANCING GRAMMAR ACCURACY IN WRITING. *VISION*, 20(2), 90–104. <https://doi.org/10.30829/vis.v20i2.4192>
- Plate, D., & Hutson, J. (2022). Augmented creativity: Leveraging natural language processing for creative writing. *Art and Design Review*, 376–388.

- Pratama, A., & Sulistiyo, U. (2024). A Systematic Review of Artificial Intelligence in Enhancing English Foreign Learners' Writing Skills. *PPSDP International Journal of Education*, 3(2), 170–181. <https://doi.org/10.59175/pijed.v3i2.299>
- Pratama, Y. D. (2020). The Investigation of Using Grammarly as Online Grammar Checker in The Process of Writing. *English Ideas: Journal of English Language Education*, 1(1), 46–54.
- Qasem, F., Ghaleb, M., Mahdi, H. S., Al Khateeb, A., & Al Fadda, H. (2023). Dialog chatbot as an interactive online tool in enhancing ESP vocabulary learning. *Saudi Journal of Language Studies*, 3(2). <https://doi.org/10.1108/sjls-10-2022-0072>
- Ratih, M. C., & Kastuhandani, F. C. (2024). Students' Lived Experiences in Utilizing Artificial Intelligence for Thesis Writing. *NUSRA: Jurnal Penelitian Dan Ilmu Pendidikan*, 5(2), 760–769.
- Sağın, F. G., Özkaya, A. B., Tengiz, F., Geyik, Ö. G., & Geyik, C. (2023). Current evaluation and recommendations for the use of artificial intelligence tools in education. *Turkish Journal of Biochemistry*, 48(6), 620–625. <https://doi.org/10.1515/tjb-2023-0254>
- Salihu, A., Aliyu, M. M., & Nurchalis, N. F. (2024). Impact of Artificial Intelligence (Chatgpt and Google-Bard) on Undergraduates' Creative Writing Skills at A University in Northeastern Nigeria. *INSPIRING*, 257–273.
- Sekewael, M., & Anaktototy, K. (2025). Chat-GPT Feedback: Fostering Growth in English Writing Abilities. *Interdisciplinary Themes of Sociolinguistic Studies-Language Learning, Technology, and Identity in the Age of AI and Globalization: Language Learning, Technology, and Identity in the Age of AI and Globalization*, 9, 169.
- Silvey, V., Snowball, T., & Do, T. (2016). Bridge over troubled water: A literacy approach to using Turnitin. *Journal of Academic Language and Learning*, 10(1), A206–A222.
- Skrebeca, J., Kalniete, P., Goldbergs, J., Pitkevica, L., Tihomirova, D., & Romanovs, A. (2021). Modern development trends of chatbots using artificial intelligence (ai). *2021 62nd International Scientific Conference on Information Technology and Management Science of Riga Technical University (ITMS)*, 1–6.
- Subramanian, R., Vidalis, S. M., & Najafi, F. T. (2024). Writing skills can be improved using AI tools: An Analysis. *2024 Fall ASEE Mid-Atlantic Section Conference*.
- Suchy, S. T. (2024). Artificial Intelligence in Creative Writing Studies: Threat or Opportunity. In *Creativity in Contemporaneity* (pp. 1–16). IntechOpen. <https://doi.org/http://dx.doi.org/10.5772/intechopen.1008429>
- Syarifah, E. F., & Fakhruddin, A. (2024). Exploring Students' Experience In Using Ai To Assist Their Writing. *Journal of English Language Learning*, 8(1), 558–564.
- Thompson, J. (2022). A Guide to Abductive Thematic Analysis. *Qualitative Report*, 27(5). <https://doi.org/10.46743/2160-3715/2022.5340>
- Tran, H. N., & Nguyen, L. T. (2024). *Artificial Intelligence and Language Education : The Role of ChatGPT in Improving Writing Skills for English Major Students*. 7(9), 25–33.
- Tran, N. N. (2024). The Use of Grammarly Application in Writing a Graduation Project among Senior Students Majoring in English Language at Nam Can Tho University. *International Journal of Science and Management Studies (IJSMS)*, 7(4), 23–30. <https://doi.org/10.51386/25815946/ijms-v7i4p103>
- Twinomurinzi, H., & Gumbo, S. (2023). ChatGPT in scholarly discourse: Sentiments and an inflection point. *Annual Conference of South African Institute of Computer Scientists and Information Technologists*, 258–272.

- 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*, 215. <https://doi.org/10.1016/j.compedu.2024.105031>
- Venkatesan, D., Chandramohan, S., Monika, M., Divyavarsini, V., & Suganthan, C. (2023). A Survey on Analyzing the Effectiveness of Ai Tools Among a Survey on Analyzing the Effectiveness of Ai Tools Among Research Scholars in Academic Writing and Publishing. *International Journal Of Advance Research And Innovative Ideas In Education*, 9(6), 1293–1305. <https://www.researchgate.net/publication/376198760>
- Vera, F. (2023). Integrating Artificial Intelligence (AI) in the EFL Classroom: Benefits and Challenges. *Transformar Electronic Journal*, 4(2).
- Willaert, T; Stockl, A; Rudisch-Sommer, R. (2025). Humans and AI writing Lectures Together. *Intelligent Human Systems Integration (IHSI 2025): Integrating People and Intelligent Systems*, 160, 45–55. <https://doi.org/https://doi.org/10.54941/ahfe1005809>
- Wulandari, W., Sakti, N. C., Nurlaili, E. I., Irawan, N., & Saputra, M. D. (2025). Turnitin as a Dual-Function Tool: Detection and Education in Academic Writing Practices. *Educational Researcher Journal*, 2(1), 47–65.
- Xi, H. (2024). A Study of Artificial Intelligence-Assisted English Writing Teaching Paths. *Frontiers in Artificial Intelligence and Applications*.
- Yu, H., & Guo, Y. (2023). Generative artificial intelligence empowers educational reform: current status, issues, and prospects. In *Frontiers in Education* (Vol. 8). <https://doi.org/10.3389/feduc.2023.1183162>
- Yu, X., Ma, N., Zheng, L., Wang, L., & Wang, K. (2023). Developments and Applications of Artificial Intelligence in Music Education. *Technologies*, 11(2). <https://doi.org/10.3390/technologies11020042>
- Zhai, X. (2023). ChatGPT and AI: The Game Changer for Education. *AI4STEM Education Center, March*.
- Zhou, K.-Q., & Nabus, H. (2023). The ethical implications of DALL-E: Opportunities and challenges. *Mesopotamian Journal of Computer Science*, 2023, 16–21.
- Zorba, M. G. (2023). Undergraduate Students' Writer's Block in English as an Academic Language: Causes, Coping Strategies Needs. *Bayburt Eğitim Fakültesi Dergisi*, 18(39). <https://doi.org/10.35675/befdergi.1262440>
- Zulaiha, D., & Triana, Y. (2023). Students' Perception toward the Use of Open Educational Resources to Improve Writing Skills. *Studies in English Language and Education*, 10(1). <https://doi.org/10.24815/siele.v10i1.25797>