

**STUDENTS' PERCEPTIONS OF GEMINI AI AS A LEARNING ASSISTANT  
IN WRITING CLASS OF FOURTH SEMESTER OF  
STKIP MUHAMMADIYAH PAGARALAM**

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**ABSTRACT**

This study investigates students' perceptions of Gemini AI as a learning assistant in the writing class of fourth-semester students at STKIP Muhammadiyah Pagaralam. Using a descriptive qualitative approach, data were collected through open-ended questionnaires distributed to 30 fourth-semester students from Class A (17 students) and Class B (13 students) selected via purposive sampling. The data were analyzed using thematic analysis following Braun and Clarke's framework. The findings reveal that students hold predominantly positive perceptions of Gemini AI, perceiving it as a comprehensive writing support tool that assists in idea generation, writing structure organization, writing quality improvement, time efficiency, vocabulary development, and overcoming writing difficulties. Students also reported increased confidence and motivation after using Gemini AI. However, challenges were identified, including concerns about output accuracy, potential dependency on AI, and issues related to plagiarism. Overall, Gemini AI functions as a multifaceted learning assistant that positively influences both the technical and emotional dimensions of students' writing experiences, although balanced and critical use is strongly recommended.

Keywords: artificial intelligence, EFL writing, Gemini AI, qualitative study, students' perceptions

**INTRODUCTION**

Digital Literacy is crucial in education because it helps students adapt to technological advancements, use digital tools effectively, and create interactive learning materials (Anggraeni et al., 2023) Indonesia, with its large population, increasing number of internet users, and rapid digital technological growth, faces significant challenges in strengthening digital literacy as a fundamental element of democracy in the digital era (Zulqadri et al., 2022) Data from the Indonesia Digital Literacy Status 2022 survey conducted by the Ministry of Communication and Information Technology in collaboration with the Katadata Insight Centre KIC show that Indonesia achieved a digital literacy index score of 3.54, which falls within the moderate category. This indicates that the level of digital literacy among Indonesian citizens still requires improvement. In addition, the Global Digital Literacy Index 2022 survey by Ipsos ranked

Indonesia 62<sup>nd</sup> out of 70 countries, further emphasizing the urgency of enhancing digital literacy competencies (Komunikasi & Informatika, 2019).

Digital literacy at STKIP Muhammadiyah Pagaralam refers to students' ability to access, understand, evaluate, and use digital information and technologies effectively to support learning and academic activities. This includes skills such as searching for information online, evaluating the credibility of sources, creating digital content, and communicating via digital platforms. Digital literacy includes using technology and internet access and understanding, disseminating, and critically using information.

Along with the development of digital literacy, Artificial Intelligence (AI) has been increasingly used in educational settings, particularly in learning to write. AI-based tools assist students in various stages of the writing process, such as generating ideas, checking grammar, improving vocabulary, and organizing texts. These tools help students write more efficiently and provide instant feedback, which can support learning and improve writing quality when used appropriately. However, the perceived usefulness of AI tools plays a crucial role in determining how effectively students engage with them during the writing process.

One AI application that has become increasingly popular among university students is Gemini AI. According to (McIntosh et al., 2023), Gemini is an artificial intelligence system developed by Google to support diverse user needs, such as assisting in writing, answering questions, generating summaries, translating texts, and explaining learning materials. This AI can also be used to create various types of written work, including papers and presentations. Its multimodal technology allows Gemini to process text, images, and audio simultaneously within a unified platform.

Gemini AI is designed to support learners in various aspects of writing, such as improving grammar, enriching vocabulary, and producing more organized texts. It can be utilized in multiple academic activities, including helping students complete standard writing tasks as well as scientific papers (Anggi Prasetia, 2023). Recently, many students have shown great enthusiasm for using AI in writing activities. With rapid advancements in AI technology, tools such as Gemini are now more accessible and easier to use (Azmi & Fithriani, 2025). Students commonly rely on these tools to correct grammatical errors, generate ideas, or even produce complete essays. Rather than focusing on concerns about academic honesty or plagiarism, many students view AI as a helpful resource for improving their writing skills and addressing writing difficulties.

For students, the presence of AI-based learning tools like Gemini AI greatly supports their learning process. This tool can be accessed anytime and anywhere. Students do not need to read long textbooks. By simply typing a question or commands, Gemini AI can provide quick and easily understandable answers or explanations (Aprilia et al., 2024)

However, the use of Gemini AI does not always run smoothly. Many students do not fully understand how to optimize this technology. Some students merely copy AI-generated answers without checking their accuracy. Others become overly dependent on AI, which reduces their motivation to think independently. Such conditions may hinder the learning process, resulting in less optimal outcomes (Ahmad & Nasution, 2025). Students' perceptions of Gemini AI's usefulness and accuracy also vary depending on their technological experience, task type, and digital literacy level (Limna & Kraiwanit, 2024).

Previous studies have explored the role of AI in academic writing from different perspectives. (Afidawati, Arrasyid, 2024) emphasized the role of AI in improving writing quality through idea development, grammatical accuracy, vocabulary selection, and writing clarity. Meanwhile, (Susyla and jaya, 2024) reported both the benefits of AI in academic writing and concerns regarding students' dependence on AI and the potential decline in critical thinking skills. Similarly, (Bashah et al., 2025) examined multiple AI platforms, including Gemini, ChatGPT, and Perplexity, and highlighted issues related to academic integrity and excessive

reliance on AI technologies. Overall, these studies tend to emphasize either the benefits and risks of AI use or comparative analyses across different AI platform.

In contrast, the present study focuses specifically on Gemini AI as a learning assistant in writing instruction. This study examines not only its role in supporting the writing process but also students' perceptions of their experiences in using Gemini AI, particularly in relation to motivation, self-confidence, and engagement in learning. It also explores cognitive, emotional, and practical dimensions of AI-assisted writing that remain underexplored in previous research. Accordingly, this study extends previous findings by providing a more comprehensive understanding of the role of Gemini AI in supporting writing instruction within the EFL context of Indonesian higher education.

Based on the pre-survey and observations, fourth-semester students at STKIP Muhammadiyah Pagaralam used Gemini AI to help complete writing assignments. Therefore, understanding how they perceive the use of Gemini AI as a learning assistant is essential. Gemini AI helps students gain knowledge more efficiently and save time when completing assignments. Meaningful learning occurs when students are engaged in challenging guidance that helps develop their existing abilities. Thus, (Lang et al., 2024) Gemini AI not only serves as a technical assistant but also functions as a pedagogical tool that promotes growth and independence through continuous writing practice.

This study aimed to provide a comprehensive description of how fourth-semester students at STKIP Muhammadiyah Pagaralam perceive the use of Gemini AI as a learning assistant in writing activities. While previous studies have generally examined the effectiveness of AI tools in improving writing performance or compared multiple AI platforms, limited research has specifically explored students' perceptions of Gemini AI as a learning assistant in EFL writing contexts. Furthermore, previous studies have primarily focused on technical writing improvement, such as grammar, vocabulary, and writing quality, while giving less attention to students' motivation, self-confidence, learning engagement, and overall learning experience. Therefore, the novelty of this study lies in its focus on Gemini AI as a specific AI platform and its exploration of the cognitive, emotional, and practical dimensions of students' experiences. By investigating how students perceive the benefits, challenges, and learning support provided by Gemini AI, this study extends previous research and contributes to a more comprehensive understanding of AI-assisted writing in the context of Indonesian higher education.

## **METHOD**

### **Research Design**

This study used a descriptive qualitative approach that aimed to describe and interpret the perceptions of fourth semester students of STKIP Muhammadiyah Pagaralam regarding the use of Gemini AI as a learning assistant in writing classes. This approach allowed the researcher to explore students' opinions, experiences, and perspectives regarding the usefulness, convenience, and accuracy of Gemini AI in supporting writing activities. According to (Creswell & Creswell, 2023) descriptive qualitative research focuses on understanding and describing participants' experiences and meanings related to a particular phenomenon rather than identifying variables or measuring relationships statistically.

This research design is appropriate for exploring students' attitudes, preferences, and experiences related to the use of educational technology. Data for this study were collected through an open-ended questionnaire distributed to fourth semester students of STKIP Muhammadiyah Pagaralam. The questionnaire consisted of open-ended questions designed to explore various aspects of students' experiences and use of Gemini AI in writing class. The collected responses were analyzed descriptively by organizing the data, identifying recurring patterns and themes, and presenting the findings in narrative form. This analytical process

highlighted students' perceptions, experiences, and opinions regarding the use of Gemini AI as a learning assistant in writing classes.

### Research Setting and Participants

This research was carried out in the English Language Education study program at STKIP Muhammadiyah Pagaram. The academic context of this study involved students from semester 2, 4, 6, and 8, totaling 114 students. However, the primary focus was on fourth semester students who had experience using Gemini AI in writing classes. The distribution of the research context is presented in Table 1.

**Table 1.**  
**Research Context**

No.	Study Program	Semester	Number of Students
1	English Language Education	2	38
2	English Language Education	4	30
3	English Language Education	6	16
4	English Language Education	8	30
<b>Total</b>			<b>114</b>

*Source: STKIP Muhammadiyah Pagaram*

The participants in this research were fourth semester students from the English Language Education study program at STKIP Muhammadiyah Pagaram. They were selected by using purposive sampling technique because they had previous experience using Gemini AI to assist with their writing assignments. A total of 30 students participated in this study, drawn from Class A and Class B. These participants were selected because they matched the research criteria and were considered capable of providing in-depth information related to their perceptions of Gemini AI. Details of participants are presented in Table 2.

**Table 2.**  
**Participants**

No.	Study Program	Semester	Number of Students
1.	English Language Education	4 (Class A)	17
2.	English Language Education	4 (Class B)	13
<b>Total</b>			<b>30</b>

### Instrument of the Research

The open-ended questionnaire consisted of 15 questions developed based on the research objectives and a review of the literature on artificial intelligence in writing instruction. The questions were intended to explore students' perceptions, experiences, benefits, challenges, and responses to the use of Gemini AI in writing activities. Examples of the questionnaire items included: "How does Gemini AI help you in writing activities?", "What benefits do you gain from using Gemini AI?", "What challenges do you encounter when using Gemini AI?", and "How do you feel when Gemini AI helps you complete writing tasks?". These items were designed to ensure alignment with the research objectives and to provide a comprehensive understanding of students' perceptions of Gemini AI as a learning assistant in writing. The

instrument consisted of open-ended questions that allowed respondents to express their views, experiences, and opinions in their own words.

The content validity of the instrument in this study was established through expert judgment involving one expert in English Education. The expert who validated the instrument was Luthfiah Apriani, M.Pd., a lecturer at Institut Agama Islam Pagaralam and STKIP Muhammadiyah Pagaralam in the English Education Department. She earned her Bachelor's degree in English Education from STKIP Muhammadiyah Pagaralam in 2016 and her Master's degree in English Education from Universitas Bengkulu in 2019.

The validation process focused on evaluating the relevance, clarity, appropriateness, and alignment of each questionnaire item with the research objectives. The expert reviewed all 15 open-ended questions included in the questionnaire and provided suggestions to improve the wording and clarity of several items. Based on the expert's evaluation, the questionnaire was considered valid and suitable for data collection. Several minor revisions were made to enhance the clarity of the questions and ensure their consistency with the focus of the study. The expert judgment was conducted prior to the data collection process to ensure the content validity of the instrument used in this study.

### **Data Collection Procedure**

The data in this study were collected using two types of instruments, namely the researcher as the primary instrument and an open-ended questionnaire as the supporting instrument. The researcher played a direct role in designing the instrument, managing the data collection process, and interpreting the findings. The questionnaire consisted of 15 open-ended questions covering various aspects, such as initial experiences using Gemini AI, the benefits they gained, the challenges encountered, and evaluations of the effectiveness of AI in learning. The use of an open-ended questionnaire as the sole data collection instrument was considered appropriate because the study aimed to explore students' perceptions and experiences regarding the use of Gemini AI in writing activities. Open-ended questions allowed participants to express their views freely in their own words and provided rich qualitative data for thematic analysis. In addition, this instrument enabled the researcher to collect responses from all participants efficiently within a limited period of time. Although interviews could have provided more detailed information, the questionnaire was considered sufficient to capture the range of students' perceptions relevant to the objectives of the study.

The questionnaire was distributed online through the Google Form platform. The link was shared with fourth-semester students of the English Education Study Program from Class A and Class B at STKIP Muhammadiyah Pagaralam via their respective WhatsApp groups.

### **Data Analysis Technique**

Data were analyzed using thematic analysis following the six-phase framework proposed by (Braun & Clarke, 2006). First, the researcher familiarized herself with the data by reading and rereading all responses obtained from the open-ended questionnaires to gain a thorough understanding of the participants' perspectives. Second, initial codes were generated by identifying meaningful statements related to students' perceptions of Gemini AI. For example, responses such as "Gemini AI helps me generate ideas more quickly" and "Gemini AI makes it easier to start writing" were coded as idea generation support. Similarly, statements such as "Gemini AI improves my grammar" and "It helps me correct language mistakes" were coded as language improvement support. Third, the generated codes were grouped into broader categories based on similarities in meaning. Codes related to idea generation, brainstorming, and content development were combined into a category labelled writing assistance, while codes related to grammar correction, vocabulary enhancement, and sentence improvement were grouped into a category labelled language support. Fourth, these categories were examined and organized into

broader themes that represented recurring patterns across participants' responses. For instance, the categories writing assistance and language support contributed to the broader theme of perceived benefits of Gemini AI. Fifth, the identified themes were reviewed and refined to ensure that they accurately reflected the dataset and addressed the research objectives. Sixth, the themes were clearly defined and named before being presented in the findings section using representative excerpts from participants' responses. Finally, conclusions were drawn by interpreting the themes and relating them to previous studies and relevant theories concerning AI-assisted writing and EFL learning.

### **Trustworthiness of the Study**

In qualitative research, trustworthiness refers to a concept used to ensure that research findings are credible, valid, and accurate Lincoln & Guba (Anney, 2014). Four criteria were applied:

1. **Credibility.** Credibility concerns the accuracy of the data in reflecting participants' views and experiences. It ensures that the findings genuinely represent reality and are not influenced by the researcher's misinterpretation. Forms:
  - Using direct quotations from participants
  - Reviewing the data multiple times
  - Cross-checking responses among participants
2. **Transferability.** Transferability refers to the degree to which the findings can be relevant or applicable to other similar contexts. By presenting detailed and clear descriptions, readers are able to judge whether the results can be applied elsewhere. Forms:
  - Providing detailed information about participants (e.g., fourth-semester students)
  - Describing the research setting clearly
  - Explaining the data collection procedures
3. **Dependability.** Dependability relates to the consistency of the research process. The study should be conducted through well-organized and systematic procedures so that it can be understood and potentially replicated. Forms:
  - Outlining the research steps in a systematic way
  - Explaining the data analysis procedures
  - Presenting a well-structured research process
4. **Confirmability.** Confirmability refers to the objectivity of the findings, ensuring that the results are derived from the data rather than the researcher's personal bias or assumptions. Forms: Relying on data instead of personal opinions, Supporting findings with evidence (e.g., quotations or responses), Maintaining clear records of the analysis process.

## **FINDINGS AND DISCUSSION**

### **Research Data Description**

This study was conducted to investigate students' perceptions of Gemini AI as a learning assistant in writing class of fourth-semester at STKIP Muhammadiyah Pagaram. A total of 30 students were selected as respondents using a purposive sampling technique. The respondents were from the English Education Study Program, specifically from Class A (17 students) and Class B (13 students).

### **Findings**

To collect data for this study on students' perceptions of Gemini AI as a learning assistant in writing class, the researcher used an open-ended questionnaire comprising 15 questions. The

data were analyzed using thematic analysis through several stages: data collection, data familiarization, coding, categorization, and theme development. Each theme was then described descriptively in narrative form, supported by excerpts from respondents' answers. The following sections present the findings from each questionnaire item.

### ***Question 1: First Experience Using Gemini AI in Writing***

**Table 3.**  
**First Experience using Gemini AI in Writing**

No	Codes	Important Answer	Respondents
1.	Idea Generation Support	<i>Membantu menemukan ide</i>	R1, R5, R9, R21, R23, R26
2.	Writing Efficiency	<i>Mempercepat proses menulis</i>	R2, R7, R16, R17, R30
3.	Writing Improvement	<i>Membantu memperbaiki tulisan</i>	R4, R11, R15, R18, R20, R22
4.	Positive Experience	<i>Pengalaman positif menggunakan Gemini AI</i>	R3, R8, R10, R12, R19, R27, R28, R29
5.	Initial Confusion/Doubt	<i>Awalnya bingung atau ragu lalu terbantu</i>	R13, R14, R24, R25
6.	Not Used	<i>Belum pernah menggunakan</i>	R6

Based on the coding results, several key codes were identified from students' responses regarding their initial experiences in using Gemini AI for writing. The most dominant code is Positive Experience, reported by 8 respondents, indicating that students had a favorable overall impression when first using Gemini AI. Idea Generation Support and Writing Improvement were each reported by 6 respondents, indicating that the tool assists in generating ideas and improving writing quality. Writing Efficiency was identified in 5 respondents, and Initial Confusion or Doubt was expressed by 4 respondents who experienced uncertainty before recognizing the benefits. One respondent reported never having used Gemini AI.

Theme: Gemini AI as a Positively Perceived Writing Support Tool in the Initial Experience. The findings show that most students had positive initial experiences using Gemini AI, reporting that it helped them generate ideas, improve their writing, and work more efficiently. Although a few students initially felt confused or doubtful, they ultimately found the tool beneficial.

### ***Question 2: How Gemini AI Helps in Finding Errors in Writing***

**Table 4.**  
**How Gemini AI helps in finding errors in writing**

No	Codes	Important Answer	Respondents
1.	Grammar Correction	<i>Memperbaiki kesalahan tata bahasa</i>	R1, R2, R4, R7, R9, R11, R13, R15, R16, R18, R22, R25, R27
2.	Vocabulary Improvement	<i>Memperbaiki pilihan kata</i>	R5, R10, R17, R20, R23, R28
3.	Spelling and Punctuation	<i>Memperbaiki ejaan dan tanda baca</i>	R3, R6, R12, R19, R24
4.	Sentence Structure	<i>Memperbaiki struktur kalimat</i>	R8, R14, R21, R26, R29
5.	General Writing Assistance	<i>Bantuan umum tanpa spesifik</i>	R30

Based on the coding results, Grammar Correction is the most dominant code, reported by 13 respondents, indicating that Gemini AI is primarily used to correct grammatical errors. Vocabulary Improvement was identified in 6 respondents, Spelling and Punctuation in 5 respondents, and Sentence Structure in 5 respondents. Theme: Gemini AI as a Comprehensive Writing Error Detection Tool. The findings show that Gemini AI helps students identify and correct various types of writing errors, with grammar correction being the most frequently mentioned benefit. The prominence of grammar correction may indicate that grammatical accuracy remains one of the major challenges faced by EFL students in writing. As English is learned as a foreign language, students often experience difficulties in applying grammatical rules accurately when constructing sentences. Consequently, they tend to rely on Gemini AI to identify and correct grammatical errors quickly and efficiently.

This pattern may occur because grammatical accuracy is often perceived as a key indicator of writing quality in EFL contexts. Many students may feel uncertain about their grammar knowledge and lack confidence in evaluating the accuracy of their own writing. As a result, they view Gemini AI as a reliable source of immediate feedback that helps them identify errors and improve their writing independently. This finding suggests that students value Gemini AI not only for its corrective function but also for its role in supporting language development throughout the writing process. Furthermore, the prominence of grammar correction compared to other categories may reflect students' awareness that grammatical competence is essential for producing clear, understandable, and academically acceptable written texts. Therefore, Gemini AI is perceived not only as an error detection tool but also as a learning assistant that supports the development of students' writing proficiency.

### **Question 3: Challenges in Using Gemini AI in Writing**

**Table 5.**  
**Challenges in using Gemini AI in writing**

No	Codes	Important Answer	Respondents
1.	Inaccurate Output	<i>Hasil kurang akurat atau tidak sesuai</i>	R3, R5, R9, R13, R20, R22, R25
2.	Over-dependency	<i>Terlalu bergantung pada AI</i>	R1, R7, R14, R18, R26, R28
3.	Language/Context Mismatch	<i>Tidak sesuai konteks atau bahasa</i>	R2, R10, R15, R21, R24, R29
4.	Internet Dependency	<i>Butuh koneksi internet</i>	R4, R6, R11, R16, R23, R27, R30
5.	No Challenge	<i>Tidak ada tantangan</i>	R8, R12, R17, R19

Based on the coding results, Internet Dependency and Inaccurate Output are the most frequently reported challenges, with 7 and 7 respondents respectively. Over-dependency on AI was identified in 6 respondents, and Language/Context Mismatch in 6 respondents. Four respondents reported experiencing no challenges. Theme: Technical and Cognitive Challenges in the Use of Gemini AI for Writing. The findings indicate that while Gemini AI is generally perceived as helpful, students also encounter challenges related to internet connectivity, output accuracy, over-reliance, and contextual mismatches.

### Questions 4–15: Summary of Key Findings by Theme

The remaining eleven questionnaire items explored additional dimensions of students' perceptions including the impact on thinking processes, benefits, writing experience before and

after using Gemini AI, sentence clarity and structure, vocabulary support, idea development, ease of use, emotional responses, main reasons for use, pre-writing idea organization, and overall writing improvement. The key findings from each question are summarized below according to the major themes identified through thematic analysis.

The remaining eleven questionnaire items explored broader dimensions of students' perceptions toward the use of Google Gemini AI in writing activities, including its influence on thinking processes, writing experience, vocabulary development, idea organization, emotional responses, and overall writing improvement. Based on the thematic analysis, the findings indicate that students generally perceived Gemini AI as a supportive and practical writing assistant that contributes positively to various stages of the writing process.

Regarding the impact on students' thinking processes, most respondents (18 students) believed that Gemini AI supports their thinking by providing ideas, guidance, and writing assistance that help them continue writing more effectively. However, some respondents (12 students) also expressed concerns that overreliance on AI might reduce independent thinking and creativity. These responses suggest a balanced perception in which Gemini AI is viewed both as a helpful cognitive support tool and as a potential source of dependency. Therefore, the theme identified in this question was Balanced Cognitive Impact of Gemini AI: Support versus Dependency.

In terms of benefits, students commonly reported that Gemini AI helps them develop ideas, improve writing quality, and complete writing tasks more efficiently. Many respondents perceived the tool as practical because it saves time and simplifies the writing process. This finding demonstrates that students value Gemini AI not only for linguistic assistance but also for its efficiency and convenience. Thus, the theme generated from this question was Gemini AI as a Multi-Benefit Writing Support Tool.

The findings also revealed significant changes in students' writing experiences before and after using Gemini AI. Most respondents stated that their writing became more organized, grammatically accurate, and easier to develop after using the AI tool. Students felt more capable of expressing ideas clearly and structuring their writing effectively. These responses indicate that Gemini AI contributes to a positive transformation in students' writing experiences. Consequently, the theme identified was Positive Transformation in Writing Experience through Gemini AI Use.

Similarly, many students confirmed that Gemini AI improved sentence clarity and writing structure. Twenty-two respondents explained that their writing became clearer, more coherent, and easier to understand after using the tool, although a small number reported little or no significant change. This finding highlights the role of Gemini AI in helping students refine sentence construction and organization. Therefore, the theme was identified as Gemini AI as a Tool for Enhancing Sentence Clarity and Writing Structure.

Vocabulary development also emerged as a major benefit. Most respondents (25 out of 30) reported that Gemini AI introduced them to new vocabulary and helped them use more varied and appropriate language in their writing. Students felt that the tool enriched their word choices and improved the overall quality of their language use. This indicates that Gemini AI can support vocabulary acquisition for EFL learners. Accordingly, the theme generated was Gemini AI as a Vocabulary Enhancement Tool for EFL Writers.

In addition, students reported that Gemini AI helps transform simple ideas into more complex and detailed writing. Respondents explained that the AI provides elaboration, examples, and organizational guidance that allow them to expand their ideas more effectively. This finding suggests that Gemini AI supports higher levels of writing development and complexity. Therefore, the theme identified was Gemini AI as a Tool for Developing Writing Complexity.

When discussing situations in which Gemini AI is most helpful, many students stated that they rely on the tool when facing writer's block, difficulties organizing ideas, or problems

revising their writing. Students perceived Gemini AI as particularly useful in challenging writing situations where they need additional support or inspiration. This finding reflects the contextual role of AI as an assistant during difficult stages of writing. Hence, the theme identified was Gemini AI as a Contextual Writing Assistant in Challenging Writing Situations.

The emotional responses of students also showed predominantly positive perceptions. Most respondents reported feelings of happiness, satisfaction, confidence, and relief when Gemini AI successfully helped them complete writing tasks. Nevertheless, a few students expressed mixed emotions, particularly concerns about plagiarism or overdependence on AI-generated content. Overall, the responses indicate that Gemini AI contributes positively to students' psychological experiences in writing. Thus, the theme identified was Positive Emotional and Psychological Response to Gemini AI in Writing Assistance.

Concerning the main reasons for using Gemini AI, the majority of students mentioned ease of writing, time efficiency, idea generation, and improvement of writing quality. Students perceived Gemini AI as a practical solution that simplifies the writing process while also helping them produce better writing outcomes. These findings reinforce the perception of Gemini AI as an accessible and supportive learning tool. Therefore, the theme generated was Gemini AI as a Practical Writing Support Tool for Enhancing Efficiency, Ease, and Writing Quality.

Furthermore, students explained that Gemini AI is especially helpful during the pre-writing stage. Respondents reported that the tool assists them by generating outlines, suggesting writing structures, providing key points, and helping organize initial ideas before writing begins. This demonstrates that Gemini AI plays an important role not only during drafting and revising but also during the planning process of writing. Accordingly, the theme identified was Gemini AI as a Writing Support Tool for Generating Ideas and Structuring Initial Writing.

The findings related to students' writing results after using Gemini AI also showed strong positive perceptions. Most respondents (22 students) believed that their writing quality improved significantly, particularly in terms of clarity, organization, coherence, and structure. Students felt that the AI helped them produce more polished and understandable texts. Therefore, the theme identified from this question was Gemini AI as a Writing Enhancement Tool for Improving Writing Quality and Clarity.

Finally, when students experienced confusion during writing, Gemini AI was perceived as a useful support system that provides ideas, alternative sentences, examples, guidance, and solutions to writing problems. Respondents explained that the tool helps them continue writing when they feel stuck or uncertain. This finding highlights the cognitive and interactive role of Gemini AI in assisting students throughout the writing process. Consequently, the final theme identified was Gemini AI as a Cognitive and Interactive Writing Support Tool in Overcoming Writing Difficulties.

## Discussion

The findings suggest that students perceived Gemini AI as more than a writing tool, as it provided support across cognitive, linguistic, and emotional dimensions of the writing process. The prominence of writing support and development may be explained by the challenges commonly faced by EFL students when generating ideas, organizing content, and developing coherent texts. Gemini AI appears to reduce these difficulties by providing immediate guidance and suggestions, allowing students to continue writing when they encounter obstacles. This indicates that students use Gemini AI as a form of learning support rather than merely a text-generation tool.

The improvement in writing quality and clarity may be attributed to the instant feedback provided by Gemini AI. Students are able to identify grammatical errors, revise sentence structures, and refine their ideas more efficiently. From the perspective of Vygotsky's Sociocultural Theory, Gemini AI can be viewed as a form of digital scaffolding that assists

learners in performing writing tasks beyond their current level of competence. Through this support, students gradually develop greater confidence in producing academically appropriate texts.

The finding regarding writing efficiency and productivity may be explained by the ability of Gemini AI to reduce the time required for brainstorming, drafting, and revising. This result is consistent with the Technology Acceptance Model (Davis, 1989), which suggests that learners are more likely to adopt technologies that are perceived as useful and easy to use. Students' positive perceptions indicate that Gemini AI offers practical benefits that encourage its continued use in writing activities.

The role of Gemini AI as a cognitive support tool further suggests that students often require assistance when facing difficulties in idea generation and problem solving during writing. However, the concern regarding overreliance indicates that AI support should be used critically. While Gemini AI can facilitate learning, excessive dependence may limit opportunities for students to develop independent thinking and self-regulated learning skills.

The findings related to linguistic and vocabulary development demonstrate that students perceive Gemini AI as a source of language exposure. By interacting with AI-generated responses, students encounter new vocabulary, academic expressions, and alternative sentence constructions. This exposure may contribute to language development by expanding students' linguistic repertoire and increasing their awareness of effective writing practices.

Finally, the positive emotional and experiential impacts may be explained by the reduction of writing anxiety and uncertainty. Students who receive immediate support are more likely to feel confident and motivated when completing writing tasks. Nevertheless, concerns regarding output accuracy and technical limitations indicate that AI-generated content should be evaluated critically. Therefore, Gemini AI should be viewed as a complementary learning assistant rather than a replacement for students' own judgment and writing abilities.

The findings of this study are consistent with those reported by (Majidah et al., 2025), who found that AI-assisted tools can support students in generating ideas, organizing content, and improving the quality of their writing. Similarly, the participants in the present study perceived Gemini AI as a useful learning assistant that facilitated various stages of the writing process.

However, while Majidah et al. (2025) primarily focused on the effectiveness of AI tools in enhancing writing performance, the present study extends these findings by exploring students' perceptions of Gemini AI from a broader perspective. In addition to identifying its role in supporting writing tasks, this study reveals how Gemini AI influences students' motivation, self-confidence, and engagement during learning activities. These findings suggest that the impact of AI in writing instruction is not limited to technical improvements in writing quality but also includes cognitive and affective dimensions that contribute to students' learning experiences.

Overall, these themes suggest that Gemini AI plays a multifaceted role in supporting students' writing processes by improving not only technical aspects of writing but also cognitive and emotional dimensions. The findings contribute to the growing body of literature on AI-assisted learning by demonstrating that the role of AI extends beyond writing support and includes fostering students' motivation, self-confidence, and engagement in learning. This suggests that AI-based learning tools can function not only as technological resources but also as pedagogical supports that facilitate meaningful learning experiences.

From a practical perspective, the findings indicate that writing instructors can integrate Gemini AI into various stages of the writing process, such as brainstorming, outlining, drafting, and revising. However, educators should provide clear guidelines for its use and encourage students to critically evaluate AI-generated content rather than relying on it uncritically. Classroom activities that combine AI assistance with peer feedback, reflection tasks, and independent writing exercises may help students benefit from AI technology while maintaining their critical thinking and autonomous writing skills. Nevertheless, the effectiveness of Gemini

AI depends on balanced and responsible use to ensure that students continue to develop their independent writing abilities

## CONCLUSION

Based on the findings of this study, Gemini AI was generally perceived by fourth-semester students of the English Education Study Program at STKIP Muhammadiyah Pagaralam as a valuable learning assistant in writing activities. Beyond supporting technical aspects of writing, such as idea generation, text organization, and language accuracy, students perceived Gemini AI as a tool that enhanced their confidence, motivation, and engagement during the writing process.

The findings suggest that the value of Gemini AI lies not only in its ability to facilitate writing tasks but also in its potential to support students' learning experiences. However, the benefits of Gemini AI depend on how it is used. Students should engage with AI-generated content critically and responsibly to avoid overreliance and to maintain the development of independent writing and critical thinking skills.

Given that this study focused on a specific group of students within one higher education institution, the findings should be interpreted within this context. Nevertheless, the study provides insight into how AI-based tools can be integrated into writing instruction to support students' learning while encouraging active and reflective engagement in the writing process.

The use of Gemini AI also enhances writing efficiency, as students are able to complete their writing tasks more quickly and practically. Furthermore, Gemini AI serves as cognitive support by helping students overcome challenges such as idea block and confusion during the writing process. From a linguistic perspective, Gemini AI supports vocabulary development and provides language variation, making students' writing richer and more academic. Moreover, its use also has a positive emotional impact, including increased confidence, motivation, and satisfaction in writing.

These findings contribute to the existing literature on EFL writing and AI-assisted learning by demonstrating that the role of AI extends beyond improving linguistic accuracy and writing performance. The findings suggest that Gemini AI can function as a cognitive and affective support tool that assists students throughout the writing process. This expands current understanding of AI-assisted writing by highlighting its potential to support not only language development but also students' motivation, engagement, and confidence in EFL learning contexts.

However, several challenges were identified, particularly related to output accuracy and the potential risk of dependency on AI. Therefore, the use of Gemini AI should be accompanied by critical thinking skills and careful evaluation. Overall, Gemini AI can be considered an effective and multifunctional writing tool that enhances students' writing experience and quality, while still requiring balanced and responsible use.

Based on the findings of this study, several recommendations can be proposed. For students, Gemini AI should be used as a learning support tool during brainstorming, outlining, drafting, and revising stages, while students should continue to evaluate AI-generated content critically and verify information using credible academic sources. For lecturers, Gemini AI can be integrated into writing instruction through guided activities that combine AI assistance with peer feedback, reflective writing tasks, and independent writing exercises to promote critical thinking and writing autonomy. For institutions, clear policies and practical guidelines should be developed regarding the ethical and responsible use of AI tools in academic writing, including guidance on transparency, citation practices, and academic integrity. For future researchers, further studies involving larger and more diverse participant groups are recommended to examine the long-term impact of Gemini AI on writing performance, critical thinking, and learner autonomy.

This study has several limitations. The participants were limited to 30 fourth-semester students from the English Education Study Program at STKIP Muhammadiyah Pagaralam. Therefore, the findings should be interpreted within this specific context and may not fully represent students from different educational settings or disciplines.

Despite these limitations, this study contributes to the growing literature on EFL writing and AI-assisted learning by providing insight into how students perceive Gemini AI as a learning assistant. The findings highlight that Gemini AI can support not only technical aspects of writing but also cognitive and emotional dimensions of learning. As AI technologies become increasingly integrated into education, understanding how they can be used effectively and responsibly will be essential for creating meaningful and learner-centered writing instruction.

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