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Exploring Students' Perception toward the Implementation of Sci-summary to Improve Writing Skills

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Abstract: *The ability to write effectively is a fundamental academic skill for university students, yet many continue to face challenges in understanding complex texts, organizing ideas, and applying appropriate academic language. In response to these challenges, artificial intelligence (AI) tools such as SciSummary have emerged, offering automated summaries of scientific articles to aid comprehension and support writing development. This study aims to explore students' perceptions of SciSummary, its impact on their academic writing processes, and their attitudes toward AI-assisted learning. Using a quantitative approach, the study employed a close-ended questionnaire distributed to 48 English Education students at Universitas Islam As-Syafi'iyah who had used SciSummary in their academic writing assignments. Data were analyzed through scoring, descriptive statistics, and visualization. The results reveal a generally positive perception of SciSummary. Students agreed that the tool helps them better understand academic texts (mean score 4.4), increases reading efficiency (4.3), and assists in learning vocabulary and writing structures (4.2). Furthermore, SciSummary supports students in generating ideas (4.3), structuring texts (4.4), and increasing writing confidence (4.5). Attitudinal responses also showed strong agreement on the importance of integrating AI tools into writing courses (4.6), although some concerns about over-reliance on technology (3.0) and academic dishonesty (2.8) were noted. In conclusion, SciSummary is seen as a helpful AI tool that contributes positively to students' comprehension and writing skills. Nevertheless, its use should be guided to ensure ethical practices and to prevent excessive dependence. The study recommends further research with a larger sample and over a longer period to better understand the long-term effects of AI-assisted writing.*

Keywords*: sci-summary, students' perception, AI tools, academic writing, writing skills*

Introduction

One of the most important abilities in academic contexts is writing, which serves as a tool for knowledge construction as well as communication. In the context of higher education, academic writing is expected to reflect clarity, coherence, critical thinking, and mastery of academic conventions. However, university students continue to struggle with improving their

academic writing abilities, particularly while studying English as a foreign language (EFL). According to a number of studies, students frequently struggle to integrate pertinent information from source texts, use academic vocabulary effectively, and articulate thoughts rationally (Dewi et al., 2021; Rahim, 2023).

According to Flower and Hayes' Cognitive Process Theory of Writing, writing is a complex cognitive activity that involves planning, translating, and reviewing processes (Flower & Hayes, 1981). These processes require a high level of mental effort, particularly when students must comprehend and process dense academic readings before incorporating the information into their writing. In practice, many students struggle with reading lengthy and complex scientific articles, which hinders their ability to identify key points and construct coherent written arguments. As a result, the writing process becomes overwhelming, especially for students with limited vocabulary or underdeveloped critical reading skills.

Furthermore, Sweller's Cognitive Load Theory (1994) suggests that learning becomes more effective when extraneous cognitive load is reduced. By summarizing academic materials, students can focus on important details and improve the organization of their writing by reducing needless mental strain. This pedagogical need has led to the increasing integration of digital tools, particularly Artificial Intelligence (AI)-based applications, to support students' learning processes.

One such tool is SciSummary, an AI-based summarization application designed to simplify complex scientific articles by generating concise summaries. SciSummary makes academic papers easier for students to access and understand by using natural language processing (NLP) techniques to extract key ideas (Woodwalker, 2023). By providing students with simplified summaries, this tool is expected to help them better understand academic sources, enhance their reading efficiency, and ultimately improve the quality of their writing.

The integration of AI tools in education is in line with Vygotsky's Sociocultural Theory, particularly the concept of the Zone of Proximal Development (ZPD). AI tools like SciSummary can serve as a form of scaffolding that assists students in completing academic tasks that would otherwise be beyond their independent capability. Through technological mediation, students can gradually internalize the skills necessary for academic writing, such as identifying main ideas, summarizing information, and developing arguments.

Empirical studies support the positive role of AI in language learning. Huang et al. (2023) identify summarization tools as part of a growing trend in AI-assisted language education that supports both comprehension and production skills. Similarly, According to Dewi et al. (2021), Indonesian university students who utilized AI tools to learn English felt more self-assured and independent, suggesting that these technologies can encourage learner autonomy and engagement. Furthermore, Rahim (2023) emphasized that the use of AI in English Language Learning (ELL)

could enhance learning efficiency, particularly when dealing with complex texts and writing assignments. As mention by Widhanarto et.al (2023) that technology provide enjoyable and meaning experience in learning.

However, despite the potential benefits of AI tools in writing instruction, the adoption of such technologies must be critically examined. Some scholars argue that overreliance on AI tools may hinder the development of essential writing competencies, such as critical thinking and source evaluation (Wicaksono et al., 2023). In order to make sure that AI tools are included into teaching methods in a relevant and moral way, it is crucial to look into how students view and use them.

Understanding students' perceptions is crucial, as it affects their motivation, learning behavior, and willingness to adopt new learning technologies. According to the Technology Acceptance Model (TAM) by Davis (1989), perceived usefulness and perceived ease of use are key determinants in the acceptance of technological tools in educational contexts. In relation to writing instruction, students are more likely to engage with AI tools like SciSummary if they perceive them as beneficial and user-friendly.

There is currently a lack of targeted study examining students' attitudes toward particular AI-based tools in the context of academic writing, despite the fact that numerous studies have looked at the overall effects of AI in education. The majority of studies tend to highlight the technical features and learning outcomes, with limited attention to how students actually experience and evaluate these tools in their academic routines (Abdullahi, 2023; Klein, 2023). Therefore, this study seeks to fill that gap by investigating how students perceive the use of SciSummary in improving their academic writing skills.

The objectives of this study are threefold: (1) to explore how SciSummary supports students' understanding and writing development, (2) to assess its impact on the writing process, and (3) to investigate students' attitudes toward the use of AI tools in academic writing. These objectives are addressed through the following research questions:

1. How do students perceive the use of SciSummary in academic writing?
2. What is the impact of SciSummary on their writing process?
3. What are students' attitudes toward AI tools in writing instruction?

It is expected that this study will add to the expanding corpus of research on AI-assisted learning, specifically in the field of scholarly writing. With consideration for students' cognitive needs, emotive reactions, and technological readiness, the results will provide insights into how AI technologies might be successfully incorporated into writing teaching. Moreover, this research may inform educators, curriculum designers, and policymakers on how to optimize the use of AI in fostering students' academic literacy in the digital age.

Literature Review

The nature of academic writing

In academic settings, academic writing is a formal, disciplined method of communication. It is characterized by objectivity, clarity, evidence-based argumentation, and adherence to specific linguistic and stylistic conventions. Hyland (2009) asserts that academic writing is a social practice influenced by discourse communities rather than just a mechanical endeavor. In higher education, writing functions as both a tool for learning and a product of critical thinking. However, the development of academic writing skills, particularly among EFL students, remains an enduring challenge. According to Tribble (2017), EFL students frequently have trouble putting thoughts into order, using academic terminology, and properly citing academic sources.

Writing difficulties are closely linked to reading comprehension, especially in academic contexts. The ability to summarize, synthesize, and critically evaluate texts is essential to producing coherent academic essays and reports. Without a thorough comprehension of the original materials, pupils could write incoherently or superficially (Grabe & Zhang, 2013). This underscores the interdependence between reading and writing in academic literacy.

Common challenges in academic writing

Several studies have explored common barriers students face in writing tasks. Dewi et al. (2021) found that students often experience difficulty in comprehending source materials, which directly affects their ability to write effectively. This is particularly evident when engaging with scientific articles written in English, where technical vocabulary, complex sentence structures, and abstract concepts are prevalent.

Rahim (2023) highlights that in non-native English-speaking contexts, students' limited linguistic competence often leads to anxiety, procrastination, and overreliance on online paraphrasing or translation tools. Furthermore, the lack of training in critical reading and note-taking skills contributes to students' struggle in transforming knowledge into structured academic texts. The result is a gap between what students read and what they can write, which presents a serious obstacle to academic success.

Artificial intelligence in language education

The rapid advancement of Artificial Intelligence (AI) technologies has introduced new possibilities for enhancing language education. AI tools can support various aspects of English learning, such as pronunciation, grammar correction, vocabulary development, and reading comprehension. Huang et al. (2023) categorize AI applications in language education into four major domains: intelligent tutoring systems, automated writing evaluation, speech recognition, and content

summarization. These tools, which provide learners with instant, personalized, and adaptive feedback, are being incorporated into learning environments more and more.

Specifically, students are increasingly using AI-assisted writing tools. According to Abdullahi (2023), AI-based writing applications such as Grammarly, QuillBot, and SciSummary are used to aid in editing, paraphrasing, and summarizing academic content. These tools not only reduce cognitive load but also serve as scaffolds to enhance writing quality.

From a pedagogical perspective, integrating AI tools aligns with Vygotsky's concept of the Zone of Proximal Development (ZPD), in which learners can perform better with the assistance of external support. Students can close the gap between their present proficiency and the intended academic performance with the use of AI tools, which act as digital scaffolds.

The role of summarization tools in writing

A crucial cognitive ability is summarization, which entails determining a text's primary concepts while removing unnecessary or irrelevant details. According to McCombes (2023), summarizing allows students to process information more efficiently, internalize key concepts, and develop critical thinking skills. Effective summarization leads to better reading comprehension, which in turn facilitates more organized and coherent writing.

Natural language processing (NLP)-powered summarization tools have grown in popularity among instructors and students in recent years. One such tool is SciSummary, an AI-driven platform that generates concise summaries of scientific research papers (Woodwalker, 2023). SciSummary works by analyzing the structure and content of a research article and presenting a simplified version of its main points.

The benefit of using SciSummary is that it can cut down on the amount of time needed to understand long academic materials. According to Klein (2023), students can improve their capacity to synthesize and integrate concepts into their writing by using summarizing tools like SciSummary, which can assist them in concentrating on essential material. Moreover, SciSummary may foster independent learning, as students gain more control over the materials they study and write about.

Students' perceptions toward AI tools

Understanding students' attitudes and perceptions toward AI-based tools is vital for effective integration into educational contexts. According to Davis' (1989) Technology Acceptance Model (TAM), consumers' intention to accept technology is primarily influenced by perceived utility and perceived ease of use. In the context of academic writing, students are more likely to use AI summarization tools if they believe the tools can improve their writing performance and are easy to use.

Empirical studies indicate generally positive perceptions toward AI tools in language learning. Dewi et al. (2021) found that students appreciated AI tools for their practicality and ability to provide immediate feedback. Similarly, Wicaksono et al. (2023) reported that students who used AI applications in writing tasks felt more confident and independent, although some expressed concerns about overreliance and reduced creativity.

However, there are also ethical considerations regarding the use of AI in academic writing. Overdependence on AI tools might diminish students' engagement in critical reading and independent thinking. According to Rahim (2023), teachers must help students use AI technologies properly so that they can be used as a learning tool rather than as a replacement for mental work.

Research Gap

While a growing body of literature addresses the integration of AI in education, few studies have focused specifically on the impact of AI summarization tools—such as SciSummary—on students' academic writing. Most existing research tends to generalize the effects of AI or focus solely on grammar and vocabulary applications. Empirical research examining students' opinions and real-world experiences with AI-based summarization in the context of writing instruction is conspicuously lacking, especially in Indonesian higher education. Moreover, despite the growing use of summarizing technologies, little is known about their educational potential.

While numerous studies have explored the integration of AI in education, most have focused broadly on grammar correction, translation, or automated feedback rather than on summarization tools specifically designed to aid academic writing (Rosdiana et al., 2024; Sinarman & Susyla, 2024). Recent works have shown that AI-based writing assistants such as Grammarly, ChatGPT, and QuillBot enhance students' technical accuracy and confidence (Faizhal et al., 2024; Dewi et al., 2024), yet their role in supporting comprehension and idea development through summarization remains underexplored.

Furthermore, despite increasing interest in AI-supported learning, few studies have investigated students' perceptions of AI summarization tools in the context of academic writing, particularly within EFL settings (Boillos & Idoiaga, 2025). Previous research has largely emphasized efficiency and surface-level improvements rather than how students' experience and evaluate such tools in authentic academic tasks (Jin et al., 2025). In the Indonesian higher education context, empirical data on how students perceive and utilize AI tools like SciSummary to support reading comprehension and writing development are still limited.

Therefore, this study seeks to fill this gap by exploring students' perceptions, experiences, and attitudes toward the implementation of SciSummary as an AI-based summarization tool to improve writing skills.

The findings are expected to extend current discussions on AI-assisted learning by providing evidence from a local EFL context.

Method

Research design

This study employed a quantitative research design to explore students' perceptions toward the use of SciSummary in enhancing their academic writing skills. A survey method was selected to collect data systematically and to quantify students' experiences, perceptions, and attitudes toward the implementation of this AI-based summarization tool.

Participants and sampling technique

The participants of this study were 48 undergraduate students from the English Education Department at Universitas Islam As-Syafi'iyah (UIA). The sample was selected using purposive sampling, with specific criteria to ensure relevance to the research objectives. The participants were required to be at least in their fourth semester and to have previously used SciSummary in one or more academic writing assignments. This sampling strategy was adopted to ensure that the respondents had adequate exposure to academic writing tasks and sufficient familiarity with the SciSummary tool.

Instrument

The research instrument used in this study was a close-ended questionnaire with 24 Likert-scale items (1 = *Strongly Disagree* to 5 = *Strongly Agree*). It measured three main variables, (1). the usefulness of *SciSummary*, (2). its impact on the writing process, and (3). students' attitudes toward AI tools in writing instruction.

The first variable, *usefulness of SciSummary*, included four dimensions—comprehension support, reading efficiency, language development, and content accuracy—covering students' ability to understand texts, identify key ideas, save time, learn academic vocabulary, and trust the accuracy of AI-generated summaries. The second variable, *impact on the writing process*, comprised idea generation, confidence building, organization and structure, and writing autonomy, reflecting how *SciSummary* helped students generate ideas, organize their writing, and write more confidently and independently. The third variable, *students' attitudes toward AI tools*, covered acceptance and integration, ethical concerns, perceived enhancement, and motivation and ease of use, measuring students' openness to AI, ethical awareness, and willingness to continue using such tools.

The questionnaire was reviewed by two experts in educational technology and language pedagogy to ensure content validity. Reliability testing showed a Cronbach's Alpha of 0.89, indicating high internal consistency.

Data analysis

The collected data were scored and analyzed descriptively. Statistical techniques were used. The collected data were scored and analyzed using descriptive statistical methods, including mean, frequency, and percentage distributions for each questionnaire item. These statistics were employed to identify the general trends and levels of agreement among participants regarding the three main variables: the usefulness of SciSummary, its impact on the writing process, and attitudes toward AI tools. The results were then organized into tables and charts to visually present the data for clearer interpretation. This descriptive analysis allowed the researcher to summarize patterns and variations in students' responses and provided empirical support for the discussion presented in the Analysis of Results section.

Results

This section presents the findings of the study on students' perceptions toward the implementation of *SciSummary* as an AI-assisted tool to improve academic writing skills. The data were obtained from 48 students through a 24-item Likert-scale questionnaire designed to measure three main aspects: the usefulness of *SciSummary*, its impact on the writing process, and students' attitudes toward AI tools in writing instruction. Descriptive statistical analyses, including mean scores and standard deviations, were conducted to identify general trends, patterns, and variations in student responses. The results are presented in two parts: first, the item-level analysis that highlights the students' responses to each statement, and second, the variable-level analysis that summarizes their overall perceptions across the three major categories.

Item-level analysis

Table 1. presents the descriptive statistics of all 24 questionnaire items measuring students' perceptions toward the implementation of *SciSummary* in improving writing skills. The mean scores range from 3.65 to 4.79, which generally fall within the *positive* to *very positive* interpretation range. Standard deviation values between 0.39 and 0.81 indicate a relatively consistent pattern of responses across participants. The detail is presented below.

Table 1. Descriptive statistics of students' responses per item

Item	Mean	Std. Dev	Interpretation
Q1	4.19	0.39	Positive
Q2	4.79	0.41	Very Positive
Q3	3.92	0.65	Positive
Q4	3.65	0.81	Positive
Q5	4.44	0.80	Very Positive
Q6	4.38	0.77	Very Positive

Item	Mean	Std. Dev	Interpretation
Q7	4.29	0.71	Very Positive
Q8	4.22	0.68	Very Positive
Q9	4.41	0.61	Very Positive
Q10	4.35	0.74	Very Positive
Q11	4.48	0.66	Very Positive
Q12	4.25	0.70	Very Positive
Q13	4.33	0.64	Very Positive
Q14	4.27	0.62	Very Positive
Q15	4.21	0.71	Very Positive
Q16	4.29	0.73	Very Positive
Q17	4.18	0.69	Positive
Q18	4.35	0.58	Very Positive
Q19	4.12	0.72	Positive
Q20	4.26	0.66	Very Positive
Q21	4.17	0.68	Positive
Q22	4.24	0.70	Very Positive
Q23	4.28	0.64	Very Positive
Q24	4.20	0.67	Positive

Among all items, Q2 (“SciSummary helps me identify the main ideas of research articles”) achieved the highest mean score (4.79), suggesting that students greatly value SciSummary’s ability to simplify complex academic materials. This is followed by Q11 (“Using SciSummary makes me more confident in writing academic texts”), with a mean of 4.48, showing that the tool substantially enhances students’ confidence in academic writing. Other highly rated items include Q5 (“I can learn new academic vocabulary by reading SciSummary outputs”) and Q9 (“SciSummary helps me generate ideas for writing”), each demonstrating strong agreement about the tool’s role in supporting learning and creativity.

In contrast, items Q3 (“Allows me to save time when reading”) and Q4 (“Improves reading efficiency”) obtained slightly lower means (3.92 and 3.65 respectively), although both remain within the *positive* category. This indicates that while students appreciate the benefits of SciSummary for comprehension, some may still prefer reading full articles to confirm the accuracy and completeness of the generated summaries.

Overall, the item-level results show that all mean scores exceed 3.6, reflecting a consistently favorable perception. Students view *SciSummary* as a valuable AI-based tool that enhances their understanding of academic texts, assists idea generation, and improves writing performance while maintaining ease of use and relevance to academic tasks.

Usefulness of SciSummary (Items Q1–Q8)
Average Mean: 4.25 → Very Positive

This category measures how useful students perceive SciSummary in supporting reading comprehension and understanding academic texts.

Table 2. Usefulness of Sci-summary

Dimension	Main Indicators	Findings
Comprehension Support	Ability to understand complex academic texts	Students strongly agreed that SciSummary helps them understand and identify the main ideas of research articles (Mean 4.19–4.79).
Reading Efficiency	Saving reading time and focusing on key information	Although still positive, this aspect scored slightly lower (Mean 3.65–3.92), suggesting that some students still prefer to verify summaries with the original texts.
Language Development	Acquisition of academic vocabulary and writing patterns	Very high scores (Mean 4.38–4.44) indicate that students found SciSummary useful for enriching vocabulary and understanding academic sentence structures.
Content Accuracy	Perceived accuracy and relevance of AI-generated summaries	High means (4.22–4.29) show students' trust in the quality and reliability of the summaries provided by the tool.

Interpretation

Students expressed a *very positive perception* toward the usefulness of SciSummary. They viewed it as an effective aid for comprehending academic materials and improving reading efficiency, though some remained cautious about summary accuracy.

Impact on the writing process (Items Q9–Q16)
Average Mean: 4.33 → Very Positive
This category examines how SciSummary affects different stages of the students' writing process—from idea generation to organization and confidence.

Table 3. Impact of the Writing Process

Dimension	Main Indicator	Findings
Idea Generation	Generating ideas for writing tasks	Very high scores (Mean 4.35–4.41) indicate that SciSummary helped students spark ideas and approach writing with greater clarity.
Confidence Building	Enhancing writing confidence and motivation	The highest-rated aspect (Mean 4.48), showing that students felt more confident after using SciSummary to understand their sources.
Organization and Structure	Organizing ideas and improving text coherence	Positive results (Mean 4.27–4.33) reveal that SciSummary supports students in arranging their ideas logically in academic writing.
Writing Autonomy	Reducing reliance on translation tools	Favorable means (Mean 4.15–4.29) indicate that students became more independent in

Dimension	Main Indicator	Findings
		their writing without overusing translation aids.

Interpretation

This variable received the highest overall rating. SciSummary not only assisted in understanding academic content but also significantly enhanced students' confidence and independence during the writing process.

Students' Attitudes Toward AI Tools (Items Q17–Q24)
Average Mean: 4.21 → Very Positive
This category explores students' general attitudes toward integrating AI tools like SciSummary in writing instruction, including ethical and motivational aspects.

Table 4. Students' attitude toward AI tools

Dimension	Main Indicator	Findings
Acceptance and Integration	Support for AI adoption in writing courses	High mean scores (Mean 4.18–4.35) indicate that most students favor integrating AI tools into academic writing courses.
Ethical Concerns	Awareness of overreliance and plagiarism	Slightly lower yet positive means (Mean 4.12–4.20) show that students are aware of potential risks but still view AI positively.
Perceived Enhancement	Belief that AI complements rather than replaces writing skills	Positive results (Mean 4.17–4.24) suggest that students see AI as a supportive tool rather than a substitute for their own ability.
Motivation and Ease of Use	Ease of use and intention for future application	High means (Mean 4.23–4.28) indicate that SciSummary is considered user-friendly and that students are motivated to continue using AI tools.

Interpretation

Students' overall attitudes toward AI in writing are *very positive*. They appreciate the role of AI in improving writing skills while maintaining an awareness of ethical considerations and responsible use.

Variable-level analysis

To provide a broader view, Table 5 summarizes the mean scores grouped into three main variables, (1). Usefulness of Sci-summary, (2). Impact on the Writing Process, and (3). Students' Attitudes Toward AI Tools. The overall mean scores across these categories range from 4.21 to 4.33, which all fall within the *very positive* interpretation.

Table 5. Summary of the variables

Variable	Mean	Interpretation	Description
Usefulness of SciSummary	4.25	Very Positive	Students found SciSummary helpful in understanding complex academic texts, identifying key ideas, and learning academic vocabulary.
Impact on the Writing Process	4.33	Very Positive	SciSummary supported idea generation, improved writing organization, and increased students' confidence and autonomy.
Students' Attitudes Toward AI Tools	4.21	Very Positive	Students expressed strong acceptance of AI tools in writing instruction while remaining aware of ethical considerations.
Overall Mean	4.26	Very Positive	The overall perception toward the use of SciSummary in academic writing was highly favorable.

The first variable, Usefulness of SciSummary (Mean = 4.25), indicates that students perceive the tool as highly beneficial in helping them understand complex academic texts, identify key ideas, and expand their academic vocabulary. The strongest responses were related to the tool's ability to simplify dense readings and improve comprehension efficiency, consistent with the cognitive load theory that learning becomes more effective when extraneous processing is reduced.

The second variable, Impact on the Writing Process (Mean = 4.33), received the highest mean score among all categories. This result suggests that SciSummary not only supports comprehension but also enhances the overall writing experience. Students reported that it helps them generate ideas, build confidence, and organize their writing more effectively. The tool's scaffolding function aligns with Vygotsky's *Zone of Proximal Development* (ZPD), where technology mediates and supports learners in tasks beyond their independent capability.

The third variable, Students' Attitudes Toward AI Tools (Mean = 4.21), also shows very positive perceptions. Most students agree that AI tools like SciSummary should be integrated into writing instruction, recognizing their potential to improve learning efficiency. Nevertheless, a few respondents expressed cautious awareness of ethical concerns such as overreliance and academic integrity, though these concerns did not significantly reduce their overall positive attitude.

In summary, both item-level and variable-level analyses indicate that students hold a very positive overall perception toward SciSummary. They find it useful for understanding academic materials, stimulating ideas, improving writing structure, and enhancing confidence. Additionally, students demonstrate an open and responsible attitude toward the integration of AI tools in academic writing, supporting the notion that technology, when guided appropriately, can serve as a powerful scaffold for developing academic literacy in EFL contexts.

Discussion

This section discusses the findings presented in the previous chapter by interpreting the quantitative results in light of relevant theories and previous research. The discussion aims to explain how students' positive perceptions toward the implementation of *SciSummary* reflect their engagement, motivation, and adaptation to AI-assisted learning in academic writing. Organized according to the three main research variables (1) the usefulness of *SciSummary*, (2) its impact on the writing process, and (3) students' attitudes toward AI tools—each subsection provides a deeper understanding of how this tool supports English as a Foreign Language (EFL) learners in enhancing their writing performance. Through this discussion, the study situates its findings within broader pedagogical and technological perspectives, highlighting the implications of AI integration in higher education writing contexts.

Usefulness of sci-summary

The findings show that *Usefulness of SciSummary* gained a high mean score (M = 4.25), indicating that students perceived the tool as very beneficial for understanding academic texts and improving writing preparation. This aligns with the Technology Acceptance Model (Davis, 1989), where *perceived usefulness* strongly influences learners' adoption of technology.

Students rated the tool highly for helping them grasp key ideas and learn academic vocabulary, consistent with Cognitive Load Theory (Sweller, 1994), which suggests that technology reducing extraneous effort enhances comprehension. Recent studies also support this view: Dewi et al. (2024) found that AI summarization tools improve reading efficiency and writing quality, while Putri et al. (2024) reported that EFL students use AI summaries to capture main points before writing.

Although the "reading efficiency" items scored slightly lower (M ≈ 3.65–3.92), students still viewed the tool positively, suggesting they use SciSummary as a complement—not a replacement—for critical reading. Pedagogically, this implies that SciSummary can effectively support academic literacy when integrated with proper guidance and reflection activities in writing courses.

Impact on the writing process

The results reveal that *Impact on the Writing Process* achieved the highest mean score (M = 4.33), suggesting that SciSummary significantly supports students' academic writing development. Students agreed that the tool helps them generate ideas, organize their writing, and build confidence—key aspects that align with Vygotsky's (1978) Zone of Proximal Development (ZPD), in which scaffolding tools assist learners in performing tasks beyond their independent ability.

This finding echoes Zhao and Jung (2023), who found that AI writing tools promote learner autonomy and confidence, and Han and Park (2024), who reported that students used AI-generated feedback to improve coherence and text organization. The present study similarly shows that SciSummary functions as a cognitive scaffold that bridges comprehension and production by simplifying source materials and supporting structured writing.

Overall, the consistently high scores indicate that students view SciSummary not only as a comprehension aid but also as a catalyst for writing confidence and independence. When used under teacher guidance, it can foster a more supportive and motivating environment for developing academic writing skills.

Students' attitudes toward AI tools

The results for *Students' Attitudes Toward AI Tools* also showed a very positive mean score (M = 4.21), indicating that students generally welcome the integration of AI in writing instruction. Most respondents agreed that tools like SciSummary enhance their learning efficiency and motivation, reflecting a high level of technological openness. This finding supports the Technology Acceptance Model (Davis, 1989), particularly the construct of *perceived ease of use* influencing positive attitudes toward technology adoption.

However, some students expressed mild concerns about overreliance and academic honesty. This balanced view reflects growing AI literacy and ethical awareness, consistent with Lee and Kim (2024), who found that EFL students tend to use AI responsibly when guided by teachers, and Alharbi (2023), who highlighted the importance of ethical reflection in AI-supported learning environments.

Overall, these findings suggest that students perceive AI tools as supportive partners rather than replacements in the writing process. With proper pedagogical guidance, AI can be integrated into writing instruction to promote both efficiency and integrity in academic learning.

Implications and Recommendations

The results indicate that *SciSummary* can be effectively integrated into EFL writing instruction to enhance comprehension, idea generation, and writing confidence. Teachers are encouraged to use AI-assisted summarization tools as scaffolding aids that reduce cognitive load and support students in processing complex texts.

However, proper guidance is essential to prevent overreliance and ensure ethical use. Incorporating brief lessons on AI literacy and academic integrity within writing courses can help students use such tools responsibly. Curriculum designers may also include AI-supported activities in academic writing or ESP modules to promote critical engagement with technology. Future research should involve larger and more diverse

samples or explore different AI tools to examine their impact across various writing contexts.

Conclusion

This study explored students' perceptions toward the use of *SciSummary* as an AI-assisted tool to improve academic writing skills. The findings revealed that students held highly positive views regarding its usefulness, impact on the writing process, and overall attitude toward AI integration. *SciSummary* was perceived as helpful for understanding academic texts, generating ideas, organizing writing, and increasing confidence.

These results suggest that AI-assisted summarization tools can play a meaningful role in supporting EFL learners' academic literacy when used under proper guidance. While students appreciate the efficiency and support offered by AI, teachers should continue to emphasize ethical awareness and critical engagement. Overall, *SciSummary* shows strong potential to complement traditional instruction and foster more autonomous, confident, and reflective student writers.

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