

The Use of ChatGPT as a Writing Assistant in Accomplishing Students' Thesis Proposal Writing

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Abstract: *This research is driven by the increasingly widespread use of Artificial Intelligence (AI) in higher education over the past few years. This research has a clear objective to analyze the potential benefits and possible challenges that may arise from the use of ChatGPT as an assistant to help students in writing complex academic assignments, namely the Undergraduate Thesis Proposal Course. This research employs a Qualitative Research as the research design, focusing on an in-depth exploration of user experiences. In selecting the most suitable research participants, a screening process was conducted via Google Form Questionnaire. Then, the data for this research were collected through face-to-face semi-structured interviews with six participants who best met the required criteria. After that, the research data was analyzed by Thematic Analysis, and the Member Checking Technique was used to validate the research data. The research finding evinced that students experienced both benefits and challenges in using ChatGPT as a writing assistant in accomplishing their thesis proposal writing. Specifically, the benefits students perceived could be categorized into three types: Cognitive, Technical, and Affective assistances. In addition, the encountered challenges were related to accuracy and relevancy issues, contextual inconsistencies, and accusations of plagiarism. Besides, this research contributes to understanding of how Artificial Intelligence-based assistant can be integrated to accelerate and facilitate the undergraduate student thesis writing process, with the caveat that ChatGPT must be used wisely and serve only as a digital scaffolding or as support mechanism, rather than as a complete substitute for students' responsibility in accomplishing their thesis proposal writing.*

Keywords: *AI-based Assistant; ChatGPT Application as Writing Assistant; Thesis Proposal Writing; Digital Scaffolding*

INTRODUCTION

In the modern technology-based era, the use of digital technology cannot be separated from many aspects of life, including education. This massive technological growth has given rise to a new trend in the use of advanced technology to enhance the learning process, including the completion of academic writing assignments. One form of advanced technology that has seen widespread adoption in recent times is the Artificial Intelligence-based chatbot. Among the various Artificial Intelligence -based chatbots, Chat Generative Pre-training (ChatGPT) is one of the most frequently used. According to An et al. (2023) ChatGPT is an effective text-generating conversation system. In response to user input, this Natural Language Processing (NLP) model produces responses that resemble those of a human. This ability to generate human-like responses in the form of conversations is what enables ChatGPT to help accelerate and facilitate the completion of writing the academic assignments.

At the tertiary level, there are several types of academic writing assignments that students should encounter. One of the most difficult academic writing assignments is the accomplishment of thesis proposal writing. This difficulty arises because the process of developing and finalizing the proposal must not only be substantively accurate but also comply with established guidelines from the university, ensuring that the thesis proposal writing serves as a solid foundation before the process of writing the thesis begins. Karjo (2020) stated that the thesis proposal can be defined as the foundation of the thesis and it should contain around 40% contents of the thesis. In many cases, undergraduate students face various major challenges in organizing their ideas due to linguistic factors, such as grammar, vocabulary, and sentence structure (Rizwan & Naas, 2022). Furthermore, Safitri et al. (2021) assert that these difficulties are directly related to the process of thesis proposal writing, guidance, and revision. During these processes, undergraduate students commonly have difficulty determining what should be written in their thesis proposals.

The difficulties that frequently arise during the thesis proposal writing process have led to an exploration of innovative solutions to facilitate and expedite the thesis writing process, such as the use of ChatGPT. In the context of this research, ChatGPT an Artificial Intelligence-based assistant does not function as a direct answer generator, but rather as a digital support. Theoretically, this concept is rooted in Lev Vygotsky's theory of the Zone of Proximal Development (ZPD), as outlined in his translated book

'Mind in Society' (1978). This concept was later popularized and operationalized by Wood et al. (1976) into the term "scaffolding," meaning that the process of assistance involves not only providing examples but also offering support for difficult tasks and giving learners the opportunity to work at a level appropriate to their abilities over time. Therefore, to comprehensively examine the complexity of this AI-mediated interactions, this research employs two specific analytical frameworks.

The use of these two distinct analytical frameworks is based on the depth of analysis intended to be achieved, taking into account the existing benefits and challenges. The first framework is a general type of digital scaffolding divided into three categories: cognitive, technical, and affective scaffoldings (Yelland & Masters, 2007). This analytical tool is used to examine the forms of assistance students receive when using ChatGPT as a writing assistant to accomplish their thesis proposal. Complementing this framework, this research also incorporates the research by Van de Pol et al. (2010) on the characteristics of scaffolding, which were then adapted into principles of digital scaffolding within the context of digital interaction, such as digital contingency, digital fading, and digital transfer of responsibility. This framework analyzes the types of challenges that may arise if these principles are not fully implemented when using ChatGPT as a writing assistant to complete a thesis proposal writing.

Furthermore, the widespread use of ChatGPT as a writing assistant in academic settings has generated a wealth of previous research on the topic. For example, previous research has shown that ChatGPT as a writing assistant can help students generate ideas, correct grammar and spelling, expedite the writing process, and improve their writing style (Harunasari, 2023 ; Huang & Tan, 2023). Despite, previous research has also pointed out that ChatGPT, as a writing assistant, bestows challenges to students' capacity. To be more specific, the use of ChatGPT can decrease students' critical thinking skills and ability to write research independently as well as provide inaccurate information (Chukuwere, 2024 ; Arbi, 2024). As previously mentioned, most research has focused on the benefits and challenges of using ChatGPT as a general writing assistant, rather than on its use for more complex academic writing, such as thesis proposal writing. This limitation has created a gap in our understanding of the benefits and challenges encountered by students when using ChatGPT to assist them with more complex writing tasks at undergraduate level. In particular, it is viewed from the lens of digital scaffolding theory.

To address this gap, this research aimed in identifying the benefits and challenges of using ChatGPT as a writing assistant, specifically as a digital scaffold that focused on full interaction between the undergraduate students and ChatGPT. In this interaction, ChatGPT acted as a 'More Knowledgeable Other' (MKO) in assisting the accomplishment of the thesis proposal writing. Different analytical tools were used for the data analysis. For example, to dissect the benefits and challenges the frameworks of Yelland and Masters (2007) and Van de Pol et al. (2010) were employed as this research pursued to provide an in-depth understanding of how digital scaffolding function in completing complex academic writing tasks, particularly in addressing the various benefits and inherent difficulties undergraduate students face during thesis proposal writing process.

Research Questions

Based on the background research previously explained, it can be addressed that the intended research questions number one is "What benefits do students experience when using ChatGPT as a writing assistant in accomplishing their thesis proposal?" and number two is "What challenges do students experience when using ChatGPT as a writing assistant in accomplishing their thesis proposal?"

Research Objectives

The purpose of this research was to investigate the benefits and challenges of using ChatGPT as a writing assistant, specifically as a digital scaffold in accomplishing students' thesis proposal.

METHODS

Research Design

This research employed Qualitative Descriptive Research Design in analyzing the interview data of the students' experiences in using ChatGPT as the writing assistant in the process of thesis proposal writing completion. Regarding with the research questions, the experiences covered both sides of the benefits and challenges of ChatGPT use. This is in line with the statement of Creswell and Creswell (2018) that Qualitative Research is an approach that focuses on exploring individual or collective perspectives on existing problems or phenomena. By employing a Qualitative Descriptive Research Design, the deeper understanding of the authentic phenomenon that existed and were actually experienced by the research participants could be documented by the researchers, which then was analyzed comprehensively.

Research Participant

This research involved students from a state university in East Java who had just completed their thesis proposal writing or remained in the process of writing the project. The participants were selected through Purposive Sampling, using a Google Form Questionnaire as a screening tool. The use of Google Forms made it easy to identify the participants best suited to the objectives

of this research. The online questionnaire covered students' general technical experiences and specific questions relating to the thesis proposal structure and content when they interacted with ChatGPT as their writing assistant. As a result, six students who best fit the criteria were selected as the research participants.

Data Collection

The research data were collected through semi-structured interviews with six respondents who had been selected as research participants. The choice of semi-structured interview was intended to allow the researchers to explore in depth the research participants' authentic experiences, while still being guided by the researchers to ensure that the participants' responses remained within the scope of the topic being discussed. The researchers conducted face-to-face interview with each participant, following an interview guide to ensure all questions were covered. The interviews were recorded using an audio recorder with the participants' consent to ensure their identities remained confidential. These recordings were then transcribed using an Artificial Intelligence-based transcription tool and manually proofread to facilitate the data analysis process. The interview process was conducted at the English Education Program on the working days once per participant with an average interview duration of 20–30 minutes.

Data Analysis

This research employs Inductive Thematic Analysis as the data analysis method, which consists of interview transcripts. This method was chosen because it allows the researchers to analyze themes based on the existing data, and allows the data to guide the emergence of themes in a systematic yet flexible way. Braun and Clarke (2021) said that this method is used to find, examine, and interpret meaningful patterns or "themes" in qualitative data through the systematic processes. During the data coding process, the researchers employed inductive coding, which allowed the coding to emerge directly from the participants' responses, without being constrained by existing theories. The researchers initially read the transcripts repeatedly, then identified codes, until finally determining the themes. Once the themes were identified, the researchers linked them to the suitable analytical framework, in this case digital scaffolding.

In addition, to ensure the validity of the data, the researchers used member checking. According to (Lincoln and Guba, 1986, as cited in Candela, 2019), member checking is a technique to verify the data collected and analyzed by directly involving participants and asking them to confirm whether the analysis conducted by the researchers is consistent with the perceptions of the participants involved in the research. Member checking was chosen because this technique is best suited to the participants' circumstances and also gives them the opportunity to review the analysis results, ensuring that the analysis aligns with their perceptions when reported, thereby enhancing credibility and reducing researchers' bias in the findings.

RESULTS

This section presents the research findings derived from semi-structured interviews with six participants regarding their authentic experiences of using ChatGPT as a writing assistant to complete their thesis proposals. Thematic analysis identified several key categories emerging from the coding process, which were further divided into two main categories: the benefits and challenges of integrating ChatGPT into the thesis proposal writing process. To provide more comprehensive overview, the relevant themes and codes are summarized in Table 1 below.

Table 1. Summary in Benefits and Challenges of ChatGPT Integration in Students' Thesis Proposal Writing

Themes	Codes
Cognitive and Writing Support	Developing and brainstorming ideas, simplifying complex information, remembering dimension, enhancing academic language, grammar and coherence correction
Technical and Mental Support	Information support, speeding up writing and revision process, providing mental support
Technical and Ethical Constraints	Irrelevant information and references, limited context understanding, over-reliance, academic discrepancies, plagiarism concern
Coping Strategies	Manual paraphrasing, fact-check the sources

Based on the table above, the researchers find that there are four major themes representing several interrelated codes. Further details are provided below:

1. Cognitive and Writing Support

During the data analysis process, the first and most frequently emerging theme was related to cognitive support and writing support. Most participants felt that their cognitive load was reduced when using ChatGPT to complete their thesis proposal drafts. In addition, writing support related to the mechanics of writing was also found to be helpful. Specifically, students receive cognitive support in the form of brainstorming to spark ideas and provide guidance on what to write next if they experience writer's block, as described by S2:

"Sometimes my brain gets stuck trying to think of ideas or what other sentences I need to put in my proposal, so I often ask questions and often request brainstorm from ChatGPT." (S2)

In addition to its role in developing ideas, the participant explicitly stated that ChatGPT helped by simplifying the academic language in the academic source, making it easier to understand, as S4 explained:

"...if sometimes I don't understand an article or certain information, I always ask ChatGPT, because ChatGPT can explain it in the simplest way, in a language that is easier to me and I can understand." (S4)

Then, the other cognitive support perceived by the participant explicitly refers to ChatGPT's ability to remember the dimension, thereby reducing the cognitive burden of having to repeat the question multiple times, as it stated by S5:

"ChatGPT can memorize everything we give it from start to finish, so it's always on track." (S5)

Apart from cognitive support, ChatGPT also helps students by improving their writing output. One participant who received support in the form of academic vocabulary suggestions appropriate for a thesis proposal was S4. In addition, S5 and S3 also experienced support related to writing mechanics, specifically help with correcting grammar and improving the coherence of their writing, resulting in improved writing quality.

"Yes, very much so, especially in my word choice, because sometimes I have a vocabulary that's not very academic. So, I asked ChatGPT a lot about what vocabulary is more academic" (S4)

The data indicates that ChatGPT serves not only as a writing assistant that provides direct answers, but can also act as a discussion partner to address students' cognitive and linguistic challenges.

2. Technical and Mental Support

The next theme that emerged regarding the benefits of using ChatGPT was technical support. This support provided several participants with easy access to references related to their thesis. This support gives them the opportunity to quickly find information relevant to their thesis. One participant who received this support was S6. In addition, S1 believes that ChatGPT also provides technical support that speeds up writing time, so that participants can quickly complete other parts of the thesis proposal.

"The most massive benefit is that as long as I use ChatGPT to look for references.." (S6)

Another form of support that rarely appears but should not be overlooked is mental support. This support is related to satisfy participants' affective needs. It makes them feel like they are being accompanied and reduced their mental burden. As S3 explained:

"Yes, and ChatGPT is like a friend, so it's like we have a friend to chat with, so when we get stuck or confused, we don't have to face it alone."(S3)

3. Technical and Ethical Constraints

In addition to the various benefits participants gained from using ChatGPT as a thesis proposal writing assistant, data shows that ChatGPT can also pose several challenges. Technically, these challenges typically relate to inconsistencies in the answers provided. This can lead to challenges such as providing irrelevant information, ChatGPT's limitation to process the context of the questions attached, and even giving responses that do not match the lecturer's requirements. This experience was felt by several participants, including S3 and S1:

"Of course, because AI isn't 100% accurate, and it only helps, not completely being us, and we can't use all the answers directly..." (S3)

"...sometimes what we understand from ChatGPT doesn't match the lecturer's understanding, so we get confused." (S1)

In addition to the technical challenges associated with ChatGPT as a writing assistant, participants also experienced challenges related to dependency and plagiarism issue. Participants felt that ChatGPT made them dependent and gradually decrease their critical thinking skills. Regarding plagiarism, most participants were also concerned about potential accusations of plagiarism arising from using ChatGPT's assistance. Participants who experienced this included S4 and S6:

"In my opinion, it slightly reduces my ability to think critically because I'm somewhat dependent on ChatGPT." (S4)

"That's one of the things I'm most wary of when using ChatGPT AI. I don't want my writing to be unoriginal or even considered plagiarism." (S6)

4. Coping Strategies

After recognizing several challenges arising from using ChatGPT as a writing assistant, the data also showed that participants had ways to mitigate these challenges. This can be seen in the answers given by S4 and S6:

"I have to write in my own words, write it with what is it called? paraphrased, like that, and I also use Grammarly and I also use Grammarly after that to avoid plagiarism and to keep it original.." (S4)

"I double-check the references they've listed. If they're the same, then I use that. If there are any differences, I correct them again." (S6)

Based on the prior explanation, it can be concluded that the limitations of ChatGPT as a writing assistant for completing the thesis proposals can be minimized if undergraduate students maintain full control over the tool and avoid becoming entirely dependent on it.

DISCUSSION

Perceived Benefits of ChatGPT Integration in Thesis Proposal Writing

The purpose of this research is to explore in depth the benefits and challenges experienced by students when using ChatGPT as an assistant to help them in accomplishing their thesis proposals. Based on the findings above, it can be indicated that ChatGPT is highly beneficial as a digital temporary scaffold. These diverse benefits are then discussed with the digital scaffolding framework by Yelland and Masters (2007), which categorizes digital scaffolding into three types, which is cognitive, technical, and affective scaffolding. Using this framework as a lens to examine the benefits will clearly map out the specific forms of assistance students receive when using ChatGPT to complete their thesis proposals. Based on the types of digital scaffolding, the initial findings point to cognitive scaffolding. Cognitively, ChatGPT assists students by providing initial sparks of ideas, and then continues to serve as a discussion partner that facilitates brainstorming, thus helping to prevent writer's block. This findings align with Lingard (2023) which found that ChatGPT can be used as an advanced brainstorming tool because it can help students to complete various tasks according to students' needs. In addition to providing contextually relevant answers, ChatGPT can also ease students' cognitive burden by remembering the context of previous conversations, eliminating the need to repeat explanations, which keeps ChatGPT's answers on track. This further clarifies argument by Haleem et al. (2022) that ChatGPT possesses several unique features, including a "remembering dimension". Other than remembering dimension and brainstorming ability, ChatGPT serves a crucial role in helping students comprehend texts written in complex academic language. In this phase, ChatGPT assistance focuses on students' understanding of the initial ideas that form the foundation of their thesis proposal through in-depth discussions with the assistant. After that, cognitive support not only focuses on improving students' conceptual understanding, but also helps to improve the quality of writing from the linguistic aspects. The findings indicate that ChatGPT can help students to develop a more academic vocabulary and correcting grammar. Consistent with the findings of Chukwuere (2024) that shown ChatGPT can assist non-native students in writing activities by providing grammar suggestions, sentence structure suggestions, and several vocabulary choices. Aside from enhancing the quality of writing mechanics, ChatGPT also

help students to improve the coherence of their thesis proposal, so that the flow of their thesis proposal can scientifically readable.

Moving forward to the second types of digital scaffolding from Yelland and Masters's framework (2007), ChatGPT as digital scaffold also provides technical scaffolding. In the context of this research, participants' experiences indicated that ChatGPT is beneficial in expediting the thesis proposal writing process and speeding up the revision process. As well as saving time, ChatGPT is also useful for finding relevant references to support the arguments being developed. This is aligned with the finding of Mondal and Mondal (2023) that ChatGPT can help students find relevant literature relating to their research. In short, this technical scaffolding can simplify students' workload, making the process require less time and be more efficient.

Finally, the affective scaffolding as proposed by Yelland and Masters (2007) is observed in how ChatGPT makes the thesis proposal writing process less burdensome. The findings discovered that ChatGPT contributed to enhance student motivation during their thesis proposal writing process. It was supported by sense of emotional comfort it provided, which made them feel accompanied. Nevertheless, alongside the various benefits in the form of support that have been mapped out according to the type of digital scaffolding, ChatGPT also presents a variety of challenges that need to be considered.

Diverse Challenges of ChatGPT Integration in Thesis Proposal Writing

Although ChatGPT offers a variety of benefits as discussed previously, its use as a writing assistant often fails to fulfill the principles of scaffolding. The framework adapted to the digital interaction from the framework developed by Van de Pol et al (2010), which divides the characteristic of scaffolding into three categories: contingency, fading, and transfer of responsibility. In this research, researchers use the term "principles" rather than "characteristics" because this theory is tailored to analyze the interaction between users and ChatGPT. This aims to enable researchers to map any failures in interaction principles that create challenges in writing a thesis proposal with ChatGPT's help. The lack of digital scaffolding principles led to various challenges in the process of writing a thesis proposal using ChatGPT. The first challenge focusing on a lack of digital contingency. According to Van de Pol et al. (2010), contingency refers to the scaffolding's ability to provide support based on students' needs and abilities. Consequently, ChatGPT's failure to implement the principle of contingency leads to issues of inaccuracy and reliability. Findings indicate that students sometimes receive answers that are contextually irrelevant. In addition to inaccurate answers, the lack of contingency also causes ChatGPT to provide invalid references. This is in line with the results of research by Mondal and Mondal (2023), which found that although ChatGPT can provide reference suggestions that align with the research topic, the references provided may be fictitious. Besides that, the lack of contingency is also linked to the confusion students experience because ChatGPT provides too much information, leaving students unsure of which information is most relevant for their research. Furthermore, this lack of contingency leads to discrepancies between the answers provided by ChatGPT and the lecturer's intended meaning. This is similar to the findings by Osama and Afridi (2023) that ChatGPT can potentially produce biased answers, inappropriate responses, and incorrect answers.

Beyond the lack of contingency, the use of ChatGPT as a writing assistant to accomplish students' thesis proposals is hindered by a lack of fading. According to Van de Pol et al. (2010), fading is a principle whereby scaffolding should gradually reduce support as students' abilities develop. This lack of fading could lead to the decrease of students' critical thinking skills because they become overly reliant on ChatGPT's assistance. This further confirms the arguments by Mubaroq et al. (2024) that ChatGPT can cause dependency and reduce critical thinking and decision-making skills.

Finally, one challenge derived from the findings is the ethical consideration issue. In the process of writing a thesis proposal, plagiarism is something that must be avoided. This concern regarding plagiarism typically arises due to a lack of transfer of responsibility. The principle of transfer of responsibility is explained by Van de Pol et al. (2010) as the goal of digital scaffolding, which aims for responsibility to fully shift from the instructor to the student. In the context of this research, it was found that students experienced concerns about accusations of plagiarism when responsibility was still largely held by ChatGPT, which acted as a digital scaffold. This is similar to the statement by Dergaa et al. (2023) that users can be detected as plagiarists because they include biased answers and incorrect information directly in their articles.

Despite the various challenges that arise when completing a thesis proposal with the help of ChatGPT, students also have strategies to mitigate these challenges. The most common answers emerged in interviews were double-checking the sources or references provided and rewriting ChatGPT's answers in their own words. This in line with Tai et al. (2023) argument, that ChatGPT's challenges can be reduced by rewriting the feedback or the answers from ChatGPT with their own word, and avoid using too artificial language or word choices.

Researchers observed when analyzed the findings through the lens of digital scaffolding theory, ChatGPT offers various benefits as a writing assistant for writing thesis proposals. Students receive various forms of support, ranging from cognitive and technical support to affective support. However, using ChatGPT as a writing assistant can also present various challenges that

may lead to difficulties if not guided by scaffolding principles. ChatGPT can provide inaccurate answers, reduce critical thinking skills, and even lead to accusations of plagiarism. That is why ChatGPT should only be used as a writing assistant, not as a substitute that takes over the thesis proposal writing process.

CONCLUSION

The research reveals that the use of ChatGPT as a writing assistant has two distinct sides. As an advanced AI-based writing assistant, ChatGPT certainly offers many benefits in helping students complete complex academic writing assignments, for example thesis proposal writing. Notwithstanding, as an AI-based writing assistant, ChatGPT also presents challenges if not used in accordance with the principles of digital scaffolding. The interview results with the participants who actively use ChatGPT as writing assistant reveal the three forms of supports in terms of cognitive, technical, and affective scaffoldings. Furthermore, the diverse assistances also pass several challenges comprising inaccuracy, reliability, dependability, and ethical issues that lead to accusations of plagiarism. This may warn that the use of ChatGPT as a thesis proposal writing assistant should be done wisely to maximize the benefits and minimize the challenges; hence, the undergraduate students can make better-quality proposal writing.

Moreover, two restraints of this research are openly acknowledged. The first limitation relates to the scope of the research that focuses partly on thesis proposal, not the entire thesis. Thus, the research result may not capture the more comprehensive benefits and challenges. The second restraint due to the limited number of the research participants. This research only involved six participants with the same educational background. Consequently, it presents a restricted result that is impossible to generate conclusion.

In line to obtain more comprehensive research result, suggestions for future researchers possibly concern with examining a complete or the whole thesis or other academic writing assignments for the use of ChatGPT as the writing assistant. Also, increasing the number of participants with diverse educational backgrounds can be a good alternative for assessing the function of ChatGPT as the writing assistant for students who are experiencing academic live.

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