



lens. Thus, this study investigates the relationship between TPB variables (attitude, subjective norm, and perceived behavioural control) and the intention of TESL students at a semi-private university to use AI in academic writing. The study will employ a quantitative approach, using an anonymous online questionnaire to gather primary data from TESL students. The findings of the study will provide valuable insights into the role of attitudes, social expectations, and students' perceived confidence in using AI tools, which significantly influence their intention to adopt AI for academic writing. The results will contribute to a deeper understanding of factors influencing AI usage in educational settings, offering practical implications for educational policymakers, university administrators, and the field of educational technology. These insights may help shape future initiatives to promote AI adoption in academic writing, addressing existing gaps and supporting students in enhancing their writing practices.

Keywords: TESL Students, Artificial Intelligence (AI), English as a Second Language, Academic Writing, Theory of Plan Behaviour (TPB), Research Protocol.

INTRODUCTION

The rapid development of Artificial Intelligence (AI) has transformed various aspects of education, particularly in academic writing. AI tools such as Grammarly, ChatGPT, and Quillbot are increasingly used to improve the quality, organisation, and efficiency of writing, especially among students learning English as a second language. This study focuses on TESL (Teaching English as a Second Language) students in a semi-private university and examines the factors influencing their intention to use AI tools in English academic writing, using the Theory of Planned Behaviour (TPB) as a framework. This paper is a research protocol for the study that will be undertaken later.

Background

In Malaysia, English academic writing poses significant challenges, especially for second-language learners. These students often struggle with linguistic accuracy, structure, and coherence, leading to anxiety and frustration in producing high-quality academic work (Lin & Pua, 2024). AI tools present a promising solution, offering features like grammar correction, idea generation, and content enhancement, which can significantly reduce the time and effort required for academic writing. Despite the potential benefits, students' intentions to adopt these technologies vary widely, influenced by factors such as their attitudes, social norms, and confidence in using AI tools.

The TPB, developed by Ajzen (1991), is a widely accepted model for understanding human behaviour, particularly in the context of technology adoption. According to TPB, three main factors (attitude, subjective norms, and perceived behavioural control) shape individuals' intentions to engage in a particular behaviour. In the context of this study, attitude refers to TESL students' positive or negative evaluation of AI tools for academic writing; subjective norms reflect the perceived expectations of peers, teachers, and family; and perceived behavioural control involves the students' confidence in their ability to effectively use AI tools (Ajzen, 1991). These factors are critical in understanding the intention to adopt AI in educational and academic practices.



While AI technologies hold promise, the extent of their use among TESL students remains under-researched. Several recent studies in Malaysia have started to explore how TESL students use AI tools like Grammarly and ChatGPT. Additionally, while some students are open to using them, others are still cautious because of concerns about accuracy, dependence, and ethics (Subramaniam & Mohamad, 2024). Previous studies have focused on AI adoption in broader educational contexts but rarely address the specific challenges and opportunities TESL students face in academic writing (Harsyah, 2024). Given that English is the primary medium of instruction at many Malaysian universities, proficiency in English academic writing is essential for academic success (Huey, 2021). However, students' writing is often hindered by interference from their first language, leading to grammatical errors and a lack of coherence (Zhang & Hasim, 2023). AI tools could potentially mitigate these challenges, but their successful adoption depends on a variety of motivational and contextual factors.

This study aims to fill this research gap by examining the relationships between the TPB constructs and TESL students' intentions to use AI tools in their academic writing at a semi-private university. Semi-private universities in Malaysia often blend public oversight with private funding, resulting in a unique educational environment that combines structured curricula with innovative teaching approaches. These institutions typically offer smaller class sizes and greater access to digital resources, which can influence students' interactions with AI tools. By focusing on this specific cohort, the research seeks to provide valuable insights into the factors that drive or hinder AI adoption in academic writing, thereby informing policies and instructional practices that can support students' engagement with these technologies.

This research is timely, given the increasing integration of AI tools in education and the growing need for effective academic writing support for second-language learners. By applying the TPB model, this study offers a structured approach to understanding how attitudes, subjective norms, and perceived behavioural control affect students' intention to use AI tools in their academic writing. This framework provides a basis for further research and development in the field of educational technology, particularly in improving academic writing skills among TESL students.

Problem Statement

Despite the growing availability and proven effectiveness of AI tools, their adoption among students is inconsistent, particularly among TESL students. Some students demonstrate familiarity and proficiency with these AI technologies, while others lack awareness or harbour misconceptions about their functionality and potential benefits. This disparity has raised concerns about the factors influencing students' intentions to utilise AI tools in academic writing. While a survey by BestColleges reported that 56% of students have used AI tools for academic purposes, a significant proportion (41%) have not, suggesting hesitation or uncertainty about AI integration in learning contexts (Nam, 2023). Supporting this, Fošner (2024) found that although many students in European higher education institutions are aware of AI tools, adoption varies significantly by discipline, academic experience, and perceived usefulness. Additionally, Subramaniam and Mohamad (2024) observed that Malaysian TESL students' adoption of AI is influenced by factors such as perceived accuracy, ethical concerns, and digital confidence. These findings highlight the need to further examine the psychological and contextual drivers behind AI adoption, especially among TESL learners who face unique linguistic challenges.



The current body of research has highlighted the potential of AI tools to enhance the quality of academic writing by improving content organisation, grammar, and overall coherence (Marzuki et al., 2023). However, the specific intentions of TESL students, particularly at a semi-private university, to adopt these tools for English academic writing remain unclear. Limited research has been conducted to investigate the factors, such as attitudes, subjective norms, and perceived behavioural control, that might shape these students' intentions, despite the importance of academic writing in their discipline.

Therefore, this study seeks to address this gap by investigating the correlation between these factors, as outlined in the Theory of Planned Behaviour, and the intention to use AI in academic writing among TESL students at a semi-private university. Understanding these relationships is critical for developing targeted interventions aimed at promoting the effective integration of AI technologies in academic settings.

Research Aim and Objectives

This research aims to investigate semi-private university TESL students' intention to use AI in English academic writing based on the Theory of Planned Behaviour (1991). Thus, the specific objectives of this research include:

RO1: To examine the relationship between attitudes and intention to use AI in English academic writing among semi-private university TESL students.

RO2: To examine the relationship between subjective norms and intention to use AI in English academic writing among semi-private university TESL students.

RO3: To examine the relationship between perceived behavioural control and intention to use AI in English academic writing among semi-private university TESL students.

Research Questions

The main research question for this research is “What are the relationships between the Theory of Planned Behaviour’s determinants and semi-private university TESL students' intention to use AI in English academic writing?” Therefore, the specific questions of this research include:

RQ1: Is there a relationship between attitudes and intention to use AI in English academic writing among semi-private university TESL students?

RQ2: Is there a relationship between subjective norms and intention to use AI in English academic writing among semi-private university TESL students?

RQ3: Is there a relationship between perceived behavioural control and intention to use AI in English academic writing among semi-private university TESL students?



Literature Review

Artificial Intelligence (AI) is increasingly being adopted across educational contexts to enhance teaching, learning, and administrative efficiency (Wang et al., 2024; Fitria, 2021). From personalised tutoring systems to automated feedback and adaptive learning platforms, AI technologies are reshaping how students interact with content and instructors.

The increasing integration of Artificial Intelligence (AI) into educational practices has sparked a growing interest in how AI can support students, particularly in academic writing. For TESL students, mastering English academic writing presents unique challenges due to linguistic barriers and the complexity of formal writing structures. In response, AI tools like Grammarly, QuillBot, and ChatGPT have emerged as valuable aids that can help students improve their writing skills by providing feedback on grammar, syntax, and style, and assisting with idea generation and coherence.

Academic Writing in English for TESL Students

Academic writing is a critical skill for Malaysian tertiary students, particularly those in TESL programmes, where the primary language of instruction is English. Writing in a second language (L2) presents challenges such as grammatical errors, lack of coherence, and limited vocabulary (Nazar & Mohd Nordin, 2024). As Obaid et al. (2022) note, TESL students often face additional difficulties related to research anxiety, poor time management, and the complexity of integrating sources effectively. Although both studies address barriers to effective writing, neither explores how AI tools might support TESL students. This study aims to fill that gap by examining students' intention to use AI for academic writing through the TPB framework. Additionally, these obstacles can hinder students' academic performance and contribute to high levels of stress. To address these issues, various strategies have been proposed, including one-on-one writing support and explicit instruction on writing strategies (Vaughn & Fletcher, 2021).

The Role of AI in Enhancing Academic Writing

Recent advancements in AI have transformed how students approach academic writing. AI-powered tools can assist with grammar correction, plagiarism detection, and content organisation, helping students produce more polished work (Dizon & Gayed, 2021). Tools like Grammarly provide real-time feedback on sentence structure and writing style, allowing students to make immediate improvements. QuillBot aids in paraphrasing complex texts, while ChatGPT helps students generate ideas and outlines, making the writing process more efficient (Pallivathukal et al., 2024).

While the benefits of AI tools are evident, there are also concerns regarding over-reliance on these technologies. Miao et al. (2023) warn that excessive dependence on AI could inhibit students' development of essential writing skills, such as critical thinking and original expression. Furthermore, the ethical implications of AI use in academic writing, including concerns about academic integrity and plagiarism, are critical areas of ongoing debate (Zhai et al., 2024).

The Theory of Planned Behaviour (TPB) and Technology Adoption

The Theory of Planned Behaviour (TPB), developed by Ajzen (1991), is widely used to predict and explain human behaviour across various domains, including technology adoption. According to TPB, three key factors influence behavioural intentions: attitude, subjective norm, and perceived behavioural control.

- Attitude refers to the individual's positive or negative evaluation of using AI tools. If students believe that AI tools will enhance their writing quality, they are more likely to use them.
- Subjective norm reflects the perceived social pressure to use or not use AI tools. For TESL students, the opinions of peers, instructors, and academic communities can significantly influence their intention to adopt AI.
- Perceived behavioural control refers to the individual's perception of their ability to use AI tools effectively. Students who feel confident in their ability to navigate and use AI tools are more likely to integrate them into their academic writing.

Several studies have applied TPB to understand technology adoption in education. For example, Ivanov et al. (2024) found that positive attitudes and perceived ease of use were significant predictors of students' intention to adopt AI tools in higher education. Similarly, Teo and Lee (2010) demonstrated that students' attitudes towards technology, coupled with perceived social influences, strongly affected their intention to use educational technologies.

University Students' Adoption of AI in Academic Writing and Its Determinants: Gaps in the Literature

While extensive research has been conducted on AI adoption in education, there is a notable gap in studies specifically examining the factors influencing TESL students' intention to use AI in English academic writing. Most existing research focuses on general student populations or on the functionalities of AI tools, rather than on the behavioural and psychological factors that drive adoption in specific educational contexts.

Furthermore, there is limited research on how AI adoption varies across different types of educational institutions. Semi-private universities, which often have distinct student demographics and resources compared to public institutions, present a unique context for examining AI adoption. Harsyah (2024) highlights the need for more focused studies on technology use in private universities to better understand the specific challenges and opportunities faced by students in these settings.

Hypotheses Development

In line with the Theory of Planned Behaviour (TPB) proposed by Ajzen (1991), this study will examine three key determinants that influence TESL students' intention to use AI tools in English academic writing: attitude, subjective norm, and perceived behavioural control. Each of these constructs is examined to develop the hypotheses for this study.



Attitude and Intention to Use AI Tools in Academic Writing

Attitude refers to an individual's positive or negative evaluation of a particular behaviour. In the context of this study, attitude represents TESL students' perception of the benefits and effectiveness of AI tools in enhancing their academic writing skills. Past research indicates that students who have a positive attitude towards AI tools are more likely to adopt them in their writing practices. For instance, Ivanov et al. (2024) found that students who believed AI tools were beneficial in improving writing quality exhibited a strong intention to use them. Given this, it is hypothesised that:

H1: There is a positive relationship between attitude and semi-private university TESL students' intention to use AI tools in English academic writing.

Subjective Norms and Intention to Use AI Tools in Academic Writing

Subjective norms refer to the perceived social pressure an individual feels to perform or not perform a certain behaviour. In the case of TESL students, subjective norms represent the influence of peers, teachers, and the academic community on their decision to adopt AI tools in their writing. Prior studies, such as Knabe (2012), demonstrated that positive social influences significantly encourage the adoption of new technologies in academic settings. Similarly, Ivanov et al. (2024) found that the perception of social approval was a strong predictor of students' intention to use AI in their academic tasks. Thus, the following hypothesis is proposed:

H2: There is a positive relationship between subjective norms and semi-private university TESL students' intention to use AI tools in English academic writing.

Perceived Behavioural Control and Intention to Use AI Tools in Academic Writing

Perceived behavioural control (PBC) reflects the individual's perception of how easy or difficult it is to perform the behaviour in question, influenced by their confidence in their ability to use AI tools effectively. Research by Zheng et al. (2022) and Ivanov et al. (2024) indicates that when students feel confident in their ability to navigate and use AI tools, their intention to adopt these tools increases. Higher perceived control over AI usage has been shown to positively correlate with behavioural intention in technology adoption contexts. Based on this understanding, the third hypothesis is as follows:

H3: There is a positive relationship between perceived behavioural control and semi-private university TESL students' intention to use AI tools in English academic writing.

Conceptual Framework

Based on the Theory of Planned Behaviour (TPB), the conceptual framework for this study includes three independent variables (attitude, subjective norms, and perceived behavioural control), which are hypothesised to influence the dependent variable, intention to use AI tools in English academic writing.

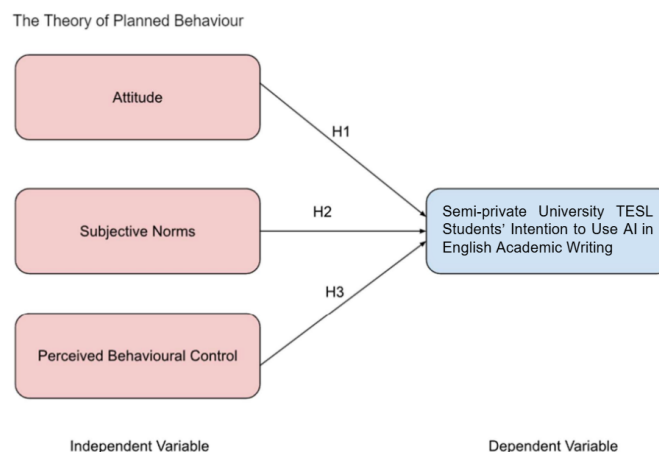


Figure 1. Conceptual framework adapted from Ajzen (1991)

METHODOLOGY

This study will employ a quantitative non-experimental correlational research design to examine the relationships between the determinants of the Theory of Planned Behaviour (TPB) and TESL students' intention to use AI in English academic writing at a semi-private university. The research will adopt a survey-based approach, which allows for the collection of data that could be statistically analysed to provide insights into the key factors influencing AI adoption in academic writing.

Research Design

The study will follow a correlational research design, using an online survey to gather data from TESL students. The survey focuses on the three main constructs of the TPB: attitude, subjective norms, and perceived behavioural control, along with the dependent variable, the intention to use AI in academic writing. According to Jeffers (2024), the collection of quantitative information enables researchers to perform a range of statistical analyses, from simple to highly sophisticated, that aggregate data, reveal relationships among variables, and facilitate comparisons across aggregated data. Thus, this quantitative approach will facilitate the examination of relationships between the constructs and ensure that the data collected addresses the research questions.

Population and Sample

The target population for the study will consist of TESL students enrolled in a semi-private university located in Klang Valley, Malaysia. The sample will be drawn using a non-probability convenience sampling technique. This sampling method is selected due to practical considerations such as accessibility and time constraints, ensuring the collection of sufficient data for analysis while recognising the limitations in representativeness. Although this approach helps collect sufficient data for analysis, it limits how far the findings can be applied, as the sample may not



fully represent all TESL students. Therefore, the results should be viewed with caution, as they may not apply to every context.

This study's sample size will be determined using Tabachnick and Fidell's (1989) sample-to-variable ratio guidelines. According to these guidelines, a minimum sample size of 60 is considered sufficient for a quantitative study. The sample-to-variable ratio suggests a minimum observation-to-variable ratio of 5:1, meaning that at least five respondents should be included for each independent variable in the model. However, to ensure greater robustness and reliability of the results, a ratio of 15:1 or 20:1 is preferred, as recommended by Hair et al. (2018). This implies that, while five respondents per variable may be adequate, increasing the ratio to 15 or 20 respondents can significantly improve the validity and generalisability of the findings, making the results more statistically sound. However, even with a larger sample size, the use of convenience sampling still limits the extent to which the results can be generalised to the broader population.

The inclusion criteria for this study will be TESL students who are currently enrolled at the selected semi-private university in Klang Valley, aged 18 years and above, and willing to participate voluntarily with informed consent. The exclusion criteria will include students from other academic programs, individuals who are not currently enrolled, such as on academic leave, and incomplete or duplicated survey responses.

Instrumentation

The questionnaire that will be used in this study is adapted from established TPB scales, particularly from Ajzen (2006) and Kanbe (2012). It is structured into five sections: demographic information, intention to use AI, attitude towards AI usage, subjective norms, and perceived behavioural control. A 5-point Likert scale is used throughout to capture participants' responses, with options ranging from "strongly disagree" to "strongly agree." The questionnaire will include a total of 28 items: 9 demographic questions and 18 closed-ended questions aligned with the TPB constructs. To ensure content validity, the survey instrument was reviewed by the research supervisor, who provided feedback on the relevance and clarity of each item based on the TPB framework. The items were then refined to accurately reflect the constructs of attitude, subjective norm, perceived behavioural control, and intention.



Table 1. Questionnaire Adapted from Ajzen (2006) and Kanbe (2012)

Part	Construct	Items
A	Demographic	Age, Gender, Race, Semester, Previous Education, and Current CGPA.
B	Intention to Use	INTN1- I intend to use AI in my English academic writing. INTN2- I have decided to use AI in my English academic writing. INTN3- I am determined to use AI in my English academic writing.
C	Attitude	ATTD- For me, using AI for my English academic writing is extremely: ATTD1- Good 1 2 3 4 5 Bad ATTD2- Unpleasant 1 2 3 4 5 Pleasant ATTD3- Useful 1 2 3 4 5 Useless ATTD4- Foolish 1 2 3 4 5 Wise ATTD5- Enjoyable 1 2 3 4 5 Unenjoyable ATTD6- Undesirable 1 2 3 4 5 Desirable ATTD7- Important 1 2 3 4 5 Unimportant
D	Subjective Norm	SUBJ1- Most people who are important to me think that _____ use AI in my English academic writing. SUBJ2- It is expected of me to use AI in my English academic writing. SUBJ3- The people in my life whose opinions I value would _____ of me using AI in my English academic writing. SUBJ4- Most students at my university have used AI in their English academic writing, or plan to use AI in their English academic writing.
E	Perceived Behavioural Control	PRCV1- For me to use AI in my English academic writing would be... PRCV2- If I wanted to, I could use AI in my English academic writing. PRCV3- How much control do you think you have over using AI in your English academic writing? PRCV4- It is mostly up to me, personally, whether or not I use AI for my English academic writing.

Data Collection Procedure

After obtaining approval from the relevant university authorities and the necessary ethical clearance, the survey will be distributed to TESL students via email and social media platforms. Participation is voluntary, and informed consent needs to be obtained from all respondents. All responses will be anonymous, and no identifying information will be collected. The data will be stored securely and used solely for research purposes, ensuring strict confidentiality throughout the study. The data collection period will last for two weeks, during which the researcher will



monitor responses and provide technical support to participants experiencing difficulties accessing or completing the survey.

Data Analysis

According to Adeleke et al. (2024), data analysis is a structured process that involves collecting, cleaning, transforming, describing, modelling, and interpreting data, often using statistical techniques. In this study, the researcher will use the Statistical Package for Social Sciences (SPSS) to perform various statistical analyses. As Rahman and Muktadir (2021) note, SPSS ensures that these analyses are both efficient and accurate. The methods will include reliability and validity tests, checking data distribution normality, conducting frequency and descriptive analyses, and using Pearson correlation to examine relationships between variables. To ensure construct validity, Confirmatory Factor Analysis (CFA) will be conducted to verify that the survey items appropriately represent the TPB constructs of attitude, subjective norm, perceived behavioural control, and intention. These steps will help provide a clear understanding of the factors influencing TESL students' intention to use AI in English academic writing at the semi-private university.

RESULTS AND DISCUSSION

Findings

The findings of this study will provide crucial insights into the factors influencing semi-private TESL students' intentions to use AI in English academic writing, guided by the Theory of Planned Behaviour (TPB). The statistical analysis is expected to reveal significant relationships between students' attitudes, subjective norms, perceived behavioural control, and their intention to adopt AI tools, aligning with prior research on technology adoption.

Firstly, the results are predicted to demonstrate a strong positive correlation between students' attitudes towards AI and their intention to use it in academic writing. This will support the notion that students who view AI as beneficial are more likely to incorporate it into their academic practices. This finding is consistent with prior studies, such as Ivanov et al. (2024), which highlighted that positive perceptions of AI's utility lead to a greater intention to use AI technologies in higher education.

Subjective norms will also exhibit a positive relationship with intention, indicating that students are more inclined to use AI when there is positive social pressure or expectations from peers and educators. This aligns with the TPB framework, which posits that social influences play a key role in shaping behavioural intentions. Ivanov et al. (2024) emphasised the significant role of subjective norms in educational settings, demonstrating how social pressures can encourage the adoption of AI. Similarly, Zheng et al. (2022) found that subjective norms were crucial in shaping tourists' adoption of smart technologies, reinforcing the idea that social validation and approval enhance the intention to engage with new technologies.



Lastly, perceived behavioural control is predicted to have a positive impact on the students' intentions to use. This suggests that students who feel confident in their ability to use AI effectively are more likely to adopt it in their academic writing. This mirrors Knabe's (2012) research outcome on technology adoption, which highlighted that confidence in one's ability to manage new tools increases the likelihood of adoption.

Nonetheless, one limitation of this study is its reliance on self-reported data, which may be subject to social desirability or recall bias. Participants might respond in ways they perceive as socially acceptable, potentially affecting the accuracy of the results. Moreover, TPB may not fully account for contextual or emotional influences on AI adoption, as it primarily focuses on rational cognitive predictors. The use of convenience sampling and a cross-sectional design also poses limitations, as they may affect the representativeness of the sample and restrict the ability to infer causality. Additionally, the focus on a single institution may limit the generalisability of the findings to other educational settings.

Despite these limitations, it is anticipated that attitudes, subjective norms, and perceived behavioural control will emerge as influential factors in shaping TESL students' intentions to use AI in academic writing. These potential findings can serve as a foundation for developing targeted interventions aimed at promoting positive perceptions and reducing barriers to AI adoption among students.

IMPLICATION AND CONCLUSION

The study will offer valuable insights for educators, institutions, and policymakers on how to promote AI adoption in academic writing. First, integrating AI tools into TESL curricula and providing students with hands-on training can enhance familiarity and improve their confidence in using such tools. As perceived behavioural control is a strong determinant, it is essential to provide students with adequate resources and technical support to help them feel more capable of using AI in academic contexts. Furthermore, enhancing subjective norms through the creation of a supportive and collaborative learning environment that encourages AI use could motivate more students to adopt these tools.

For policymakers, developing institutional guidelines that promote the responsible use of AI in education can support its effective integration. Implementing AI literacy programs and workshops can empower both students and faculty to understand the benefits and limitations of AI, encouraging its ethical application while enhancing academic performance. Furthermore, the study's anticipated insights are expected to contribute to the advancement of language education by offering practical strategies for integrating AI tools into TESL instruction. Institutions can, for instance, design AI-enhanced writing modules and embed AI support into academic writing curricula to scaffold students' writing development and reduce overreliance on rote memorisation or translation-based practices. This strategic approach will better prepare students to succeed in an increasingly AI-driven academic environment.

As a conclusion, this study will successfully examine the factors influencing semi-private university TESL students' intention to use AI in English academic writing through the Theory of



Planned Behaviour. The findings will indicate that students' attitudes, subjective norms, and perceived behavioural control all play significant roles in shaping their intention to adopt AI tools for academic purposes. Positive attitudes towards AI, supportive social influences, and a high sense of control over AI usage are key drivers in promoting AI adoption among students. These insights will provide a valuable foundation for educators, institutions, and policymakers to design interventions that can further integrate AI into academic practices. By fostering a supportive environment and enhancing AI literacy, students can be better equipped to utilise these technologies ethically and effectively in their academic writing. Future research should consider examining longitudinal changes in students' attitudes and behaviours as they gain more exposure to AI tools. Comparative studies between private, public, and semi-private institutions could reveal contextual differences in adoption patterns. Additionally, integrating alternative models such as the Technology Acceptance Model (TAM) or Unified Theory of Acceptance and Use of Technology (UTAUT) may provide deeper theoretical insights. Ethical implications such as academic integrity, authorship, and AI misuse should also be explored in greater depth.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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Authors' Contributions

The authors confirm contribution to the paper as follows: background of study and problem statement: Ayesha Sofea Ahmad Badri and Muhammad Syafiq Zulkifli; methodology design: Ayesha Sofea Ahmad Badri and Besar Sa'aid, H.; draft manuscript preparation: Ayesha Sofea Ahmad Badri and Besar Sa'aid, H.; all authors reviewed and approved the final version of the manuscript.