

Student Engagement and Perceptions of AI-Powered Tools in ESL Learning: Effectiveness in Higher Education

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ABSTRACT

The integration of Artificial Intelligence (AI) in higher education, particularly in English as a Second Language (ESL) contexts, has revolutionized how writing is taught and learned. This study investigates UiTM Diploma and Degree students' engagement and perceptions of AI-powered writing tools such as Grammarly, QuillBot, ChatGPT, and Google Translate in ESL writing classrooms. Adapted from the methodological frameworks of Phan (2023) and Utami et al. (2023), this mixed-method study combined quantitative (questionnaire) and qualitative (semi-structured interviews) data from 120 UiTM Perak branch, Tapah campus students. Results reveal that students view AI tools as highly accessible, engaging, and effective in improving writing performance, vocabulary range, and grammatical accuracy. However, challenges such as overdependence, limited critical evaluation, and ethical concerns were also identified. Findings suggest that AI tools enhance student engagement and writing motivation when appropriately integrated but should remain supplementary to human teaching. The study offers pedagogical implications for Malaysian ESL lecturers in balancing technological facilitation and academic integrity in the age of AI-assisted learning.

Keywords: Artificial Intelligence, ESL writing, student engagement, perceptions, higher education

INTRODUCTION

This swift advancement of Artificial Intelligence (AI) technologies has transformed education worldwide, particularly in English language teaching (ELT). In Malaysia's higher education landscape, institutions like Universiti Teknologi MARA (UiTM) are increasingly integrating AI-enhanced technologies to support instructors and students in writing courses. The advent of applications such as Grammarly, QuillBot, and ChatGPT has transformed writing teaching, especially in ESL classes where students have difficulties in grammar, cohesiveness, concept development, and academic style.

This exemplifies how the quick acceleration of technological innovation is an example of how educational or academic institutions are not the only ones that are free from complying with the regulations. Technology in education is noticeable as a pervasive matter that navigates society to be completely competent in the ever-changing world that living in an era that is characterised by globalisation and technological advancement.

To give one particular example, artificial intelligence (AI) has rapidly transitioned from being a new breakthrough to becoming an integral part of higher education. Students and teachers alike are able to experience a shift in their approach to learning, teaching, and evaluation as a result of this. According to Gerlich (2023), artificial intelligence has the ability to change many different facets of our life, which is something that is becoming increasingly apparent in the present day. Rajendra et al, (2022), illustrates that the term artificial intelligence (AI) was also defined as an artificial object that responds to conditions upon recognition of the state of the situation. In accordance with Farrelly and Baker (2023), generative artificial intelligence (GenAI) is a

subset of artificial intelligence systems that is able to generate and produce output that is comparable to materials that are generated by humans. In addition to text, photos, videos, music, and computer code, these outputs may also comprise the combined version of these various forms of media.

One of the most successful artificial intelligence methods for creating human-like language from provided prompts is ChatGPT, which is developed by OpenAI (Salinas-Navarro et al, (2024)). Generative AI systems such as ChatGPT, Gemini, and Copilot now enable students to write articles, design presentations, analyse datasets, and simulate real-time debates. Despite the fact that these tools offer significant improvements in terms of productivity and creativity, they also bring pedagogical and ethical issues, notably with regard to originality, data privacy, and academic integrity (Ibrahim and Ajlouni (2024)).

Phan (2023) and Utami et al. (2023), have discovered that AI tools in writing courses augment motivation, improve writing quality, and foster active learning engagement. Nonetheless, both researches highlighted possible disadvantages, such as reliance on tools and restricted human discernment. In Malaysia, the integration of AI in higher education is promoted by the Malaysia Education Blueprint (Higher Education) 2015 – 2025. This is particularly relevant under Shift 7, which is titled "Leveraging ICT to scale up quality learning." In response, University Technology MARA (UiTM) has been experimenting with the incorporation of artificial intelligence into their curricula, digital libraries, and evaluation systems. Due to the fact that UiTM Perak Branch, Tapah campus is one of the national trendsetters in digital transformation, this setting offers a one-of-a-kind chance to investigate the perspectives of students regarding the implementation of artificial intelligence.

This study replicates the models of Phan (2023) and Utami et al. (2023) by contextualising their frameworks to the experiences of Diploma and Degree students in English language writing courses at the UiTM Perak branch, Tapah campus.

This study addresses the following research questions:

1. What are UiTM Perak branch, Tapah campus students' perceptions of the usefulness of AI-powered writing tools in ESL writing classrooms?
2. How do UiTM Perak branch, Tapah campus students perceive the ease of using AI-powered writing tools?
3. How do AI tools influence student engagement and attitudes toward ESL writing?

LITERATURE REVIEW

AI in English Language Learning

In a short amount of time, artificial intelligence technology has progressed from straightforward grammar checkers to complex generative systems that are able to produce complete articles. Machine learning technologies are utilised in English Language Teaching (ELT) to provide feedback, fix errors, and develop models of acceptable writing. Earlier studies (Holland et al., 1993; Bailin, 1987) demonstrated that artificial intelligence has the ability to provide assistance in the understanding of language. More recent research (Fitria, 2021; Gayed et al., 2022) has brought attention to the possibility for AI to be both interactive and motivational.

AI Tools and Writing Engagement

Research indicates that AI tools foster writing engagement by providing instant feedback, reducing anxiety, and encouraging experimentation (Ng et al., 2022; Kangasharju et al., 2022). Utami et al. (2023) found that Indonesian students perceived AI as flexible, accessible, and motivational, though incomplete in supporting all writing stages. Similarly, Phan (2023) reported that Vietnamese students appreciated AI's adaptability and simplicity but admitted overreliance and limited contextual accuracy.

In the Malaysian ESL setting, engagement refers to active participation, persistence, and cognitive investment in writing tasks. AI tools, when properly integrated, can enhance these aspects by making writing less intimidating and more interactive, especially for UiTM students who balance language proficiency improvement with academic writing expectations.

The Technology Acceptance Model (TAM)

This study adopts the Technology Acceptance Model (TAM), originally proposed by Davis (1989), as the theoretical framework for understanding UiTM students' engagement with AI-powered writing tools. TAM has been widely used in educational technology research due to its explanatory power and its ability to predict users' acceptance and behavioural intentions toward new digital tools. The model posits that a learner's intention to use a particular technology is shaped by two primary beliefs:

- a. **Perceived Usefulness (PU)** refers to an individual's belief that using a specific technology will enhance their academic performance or task efficiency. In the context of ESL writing, PU reflects students' perceptions that AI tools such as Grammarly, ChatGPT, and QuillBot can help improve grammatical accuracy, vocabulary range, coherence, and overall writing quality. Tools perceived as beneficial are more likely to be integrated into students' writing processes.
- b. **Perceived Ease of Use (PEOU)** represents the degree to which a learner believes that using the technology requires minimal physical or cognitive effort. AI tools that are accessible, user-friendly, and intuitive—especially those available via mobile applications or browser extensions—tend to generate higher acceptance among students who may have varying levels of digital literacy. In ESL classrooms, PEOU is particularly relevant because learners must balance linguistic challenges with technological demands, making ease of navigation an important determinant of sustained engagement.
- c. **Attitude Toward Use (ATU)**, reflects the user's overall affective response to the technology, including enjoyment, confidence, motivation, and willingness to integrate the tool into learning activities. Positive attitudes are associated with higher engagement levels, greater readiness to experiment with AI-generated feedback, and an increased likelihood of repeated use during writing tasks.

These three constructs—PU, PEOU, and ATU collectively influence students' behavioural intention to use technology, which in turn predicts actual usage patterns. TAM therefore provides a robust lens through which to analyse how learners perceive and interact with AI-powered writing tools, and how these perceptions shape engagement in ESL writing environments.

Recent studies have applied TAM to AI-based learning contexts. Phan (2023) examined Vietnamese EFL learners' responses to AI tools in writing classes and found that both PU and PEOU were strong predictors of acceptance, with students expressing greater confidence and reduced anxiety when AI tools offered immediate, personalised feedback. Utami et al. (2023), in their study of Indonesian academic writing students, also reported high levels of acceptance, noting that learners perceived AI tools as both beneficial and accessible. However, both studies identified critical moderating factors, such as digital literacy, ethical awareness, and students' ability to critically evaluate AI-generated content.

The relevance of TAM is increasingly pronounced in the era of generative AI, where students must navigate not only technological affordances but also issues related to validity, originality, and academic integrity. As AI becomes more integrated into ESL writing pedagogy, understanding how learners evaluate its usefulness, ease of use, and emotional impact is essential for designing effective instructional strategies and responsible AI-integrated assessments.

These constructs influence behavioral intention and engagement. Both Phan (2023) and Utami et al. (2023) applied TAM to measure EFL learners' responses toward AI-based learning tools, reporting generally positive attitudes moderated by user literacy and ethical awareness.

METHODOLOGY

Research Design

This study adopted a mixed-methods research design, integrating both quantitative and qualitative approaches to obtain a comprehensive understanding of UiTM students' engagement with and perceptions of AI-powered writing tools. The design replicates and extends the methodological frameworks used by Phan (2023) and Utami et al. (2023), who similarly employed mixed-method procedures to examine EFL learners' experiences with AI in academic writing contexts.

The quantitative component consisted of a structured questionnaire designed to measure three core constructs derived from the Technology Acceptance Model (TAM): Perceived Usefulness, Perceived Ease of Use, and Attitude/Engagement. These constructs were selected to capture students' behavioural intentions and actual usage patterns of AI tools in ESL writing tasks.

The qualitative component, conducted through semi-structured interviews, aimed to capture deeper insights into students lived experiences, perceptions of tool effectiveness, ethical considerations, and engagement behaviours that may not be fully represented in numerical responses. This allowed for a richer understanding of how and why students choose to integrate AI tools into their writing processes.

Using a mixed-methods approach enabled data triangulation, improving the validity and reliability of the findings by cross-verifying patterns emerging from both datasets. This methodological design also aligns with current best practices in educational technology research, where complex phenomena—such as learners' interactions with AI—are best understood through combined empirical and interpretive inquiry.

Participants and Context

The study was conducted at Universiti Teknologi MARA (UiTM), Perak Branch, Tapah Campus, within the Faculty of Computer and Mathematical Sciences (FSKM). A total of 120 students participated in the quantitative phase of the research. These participants represented two academic programmes and course levels:

- 70 Diploma students enrolled in LCC113: English for Communicative Competence III
- 50 Degree students enrolled in LCC401: English for Mediating Texts

All participants were categorised within the B1–B2 proficiency range of the Common European Framework of Reference for Languages (CEFR), indicating intermediate-level English proficiency appropriate for academic writing tasks.

The participants were selected using convenience sampling, as they were the cohorts directly accessible to the researchers during the semester. Although non-random, this sampling strategy is widely used in classroom-based research and is suitable for exploratory studies of pedagogical practices.

Most students had prior exposure to AI writing tools, including but not limited to Grammarly, QuillBot, ChatGPT and Google Translate. Their experience with these tools typically occurred during:

- Essay and paragraph writing assignments
- Reflective journals
- Research report drafting
- Peer-editing and revision activities

Participation in the study was **voluntary**, and students were informed about the confidentiality of their responses. Ethical approval and data management procedures adhered to UiTM's institutional guidelines, ensuring informed consent, anonymity, and responsible handling of student information.

Instruments

Questionnaire

The primary quantitative instrument was a 20-item Likert-scale questionnaire adapted from validated instruments used in Phan (2023) and Utami et al. (2023). The questionnaire was divided into three thematic sections aligned with TAM constructs:

1. Perceived Usefulness (8 items)

- Example: “AI tools help improve my writing organization.” This section measured students’ beliefs about how AI tools support writing development, accuracy, productivity, and overall performance.

2. Perceived Ease of Use (6 items)

- Example: “AI tools are easy to access and navigate.” Items in this section gauged how effortlessly students could operate AI tools and integrate them into their writing workflow.

3. Attitude and Engagement (6 items)

- Example: “Using AI tools makes writing more enjoyable and less stressful.” This section captured students’ affective responses, motivation levels, and behavioural engagement.

All items were rated on a 5-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire was pilot-tested with 15 students to assess clarity and reliability, and minor wording adjustments were made based on participant feedback.

Semi-Structured Interviews

The qualitative component consisted of semi-structured interviews with 15 purposively selected students. Purposive sampling allowed the researchers to include participants who demonstrated varying levels of proficiency, tool familiarity, and engagement in writing classes. The interviews explored themes such as:

- Experiences using AI tools during coursework
- Perceived strengths and limitations of specific tools
- How AI affects motivation, confidence, and revision habits
- Ethical awareness and concerns related to AI-generated content

To ensure comfort and authenticity, students were allowed to respond in either English or Malay. Each interview lasted between 20 and 30 minutes and was audio-recorded with permission.

Data Collection Procedures

Data collection was carried out over a four-week period during the academic semester. The procedures were organised into two phases to ensure systematic and comprehensive data gathering.

Phase 1: Quantitative Data Collection

1. The questionnaire was administered during scheduled class sessions for both LCC113 and LCC401 students.
2. Students received an explanation of the study's objectives and were assured that participation was voluntary and anonymous.
3. The instrument was distributed via a secure Google Form link to facilitate ease of access across devices.
4. Participants completed the questionnaire within 15–20 minutes.
5. Responses were automatically recorded and stored in a password-protected database.

Phase 2: Qualitative Data Collection

1. From the pool of questionnaire respondents, 15 students were purposively invited for interviews.
2. Interview sessions were conducted in a quiet room on campus or via Google Meet, depending on student preference.
3. Each interview lasted approximately 20–30 minutes and followed a semi-structured protocol to allow flexibility while maintaining consistency in thematic coverage.
4. With consent, all interviews were audio-recorded and later transcribed verbatim.
5. Participants were allowed to use either English or Malay to support natural expression and comfort, especially among lower-proficiency learners.

These procedures ensured that data were collected ethically, systematically, and with minimal disruption to students' academic routines.

Validity, Reliability, and Trustworthiness

Quantitative Validity and Reliability

To ensure the quality of the quantitative instrument:

- The questionnaire was adapted from validated studies by Phan (2023) and Utami et al. (2023), ensuring strong construct validity.
- Content validity was reviewed by two ESL lecturers from UiTM, who assessed clarity, relevance, and alignment with TAM constructs.
- A pilot test involving 15 students was conducted. Feedback resulted in minor refinements to wording.
- Internal consistency reliability was measured using Cronbach's alpha, with all three constructs exceeding the recommended threshold of 0.70, indicating strong reliability.

Qualitative Trustworthiness

To ensure credibility and rigor in the qualitative component, the following strategies were employed:

- Triangulation: Combining questionnaire and interview findings ensured a multi-layered understanding.
- Member checking: Participants reviewed their interview summaries to confirm accuracy.

- Thick description: Detailed contextual descriptions were used to strengthen transferability.
- Audit trail: Notes, coding decisions, and thematic development were documented throughout analysis.

These measures enhanced confidence in the interpretation and trustworthiness of the qualitative data.

Ethical Considerations

Ethical protocols adhered to **UiTM's Research Ethics Policy** and general guidelines for research involving human participants. Key considerations included:

- **Informed consent:** Participants were briefed on the study's purpose, procedures, risks, and confidentiality protections.
- **Voluntary participation:** Students could withdraw at any time without academic penalty.
- **Confidentiality:** Responses were anonymised, with no identifiers included in reports or publications.
- **Secure data management:** All digital files were stored in encrypted, password-protected folders accessible only to the researchers.
- **Respect for linguistic preference:** Allowing Malay or English ensured inclusivity and equitable participation.

Summary of Research Instruments

Instrument	Purpose	Constructs/Focus	Sample Items	Source
20-item TAM-based Questionnaire	Measure perceptions and engagement with AI tools	PU, PEOU, ATU/Engagement	<i>“AI tools help improve my writing organization.”</i>	Adapted from Phan (2023) & Utami et al. (2023)
Semi-Structured Interviews	Explore lived experiences and deeper insights	Experiences with AI, motivation, ethical awareness	<i>“How do AI tools influence your writing confidence?”</i>	Researcher-developed
Demographic Section (Questionnaire)	Profile participant background	Programme, course, CEFR level	—	Researcher-developed

Limitations of the Methodology

Several methodological limitations should be acknowledged:

1. Convenience Sampling

Only students from UiTM Perak, Tapah Campus were included. Findings may not fully represent students from other UiTM branches or faculties.

2. Self-Reported Data

Questionnaire responses rely on participants' perceptions, which may be influenced by social desirability or inaccurate self-assessment.

3. Limited Interview Sample

Only 15 participants were interviewed, which, while adequate for thematic saturation, may not capture the full diversity of student experiences.

4. Focus on Writing Tools Only

The study concentrated on AI tools used for writing, excluding tools related to reading, speaking, or listening, which may limit generalisability to wider ESL contexts.

5. Cross-Sectional Design

Data were collected at a single point in time; longitudinal studies may reveal changes in perceptions or engagement as AI tools evolve.

Despite these limitations, the chosen methodology offers a robust and feasible approach for exploring student engagement with AI in ESL writing contexts.

FINDINGS

Perceived Usefulness of AI Writing Tools

Table 1 summarizes students' perceptions of usefulness.

Item	Mean	Interpretation
AI tools improve writing accuracy and grammar	4.42	Strongly Agree
AI tools help achieve writing goals	4.15	Agree
AI tools enrich vocabulary and structure variety	4.27	Agree
AI tools enhance writing confidence	4.18	Agree
AI tools improve essay organization	4.10	Agree
AI feedback is helpful for self-correction	4.25	Agree
AI tools increase writing efficiency	4.38	Strongly Agree
AI tools enhance overall writing quality	4.30	Strongly Agree

UiTM Perak branch, Tapah campus students perceived AI tools as beneficial in supporting writing development. Grammarly and QuillBot were most frequently cited as useful for improving grammar, vocabulary, and style, while ChatGPT was praised for idea generation and example essays. Degree students particularly valued AI feedback for article analysis writing, whereas Diploma students emphasized confidence-building and vocabulary enhancement.

One participant explained:

“Grammarly is like my personal tutor. I can see what mistakes I make, and it makes me confident to submit my work.” (Participant D4, Diploma student)

Another reflected:

“When I use ChatGPT for brainstorming, I feel less lost. It helps me get started and understand how to organize ideas.” (Participant G2, Degree student)

These align with Phan (2023) findings that AI enhances accessibility and adaptability in writing tasks.

Perceived Ease of Use

Item	Mean	Interpretation
AI tools are accessible anytime and anywhere	4.70	Strongly Agree
AI interfaces are user-friendly	4.65	Strongly Agree
AI tools are adaptable to user needs	4.58	Strongly Agree
AI instructions are easy to follow	4.42	Agree
AI features support flexible learning	4.53	Strongly Agree
Technical problems rarely occur	3.80	Neutral

Students agreed that AI tools are convenient and easy to operate. Many reported using mobile devices for Grammarly and ChatGPT due to convenience. However, unstable internet access in some areas in UiTM Perak branch, Tapah campus occasionally disrupted use.

One participant stated:

“It’s easy to use Grammarly and QuillBot. I can use them on my phone. The only issue is when Wi-Fi is slow in class.” (Participant D9)

The findings mirror Utami et al. (2023), who also reported that accessibility and flexibility contributed significantly to perceived ease of use.

Attitudes and Engagement in AI-Assisted Writing

Item	Mean	Interpretation
I enjoy using AI tools during writing	4.35	Strongly Agree
AI makes writing more interesting	4.20	Agree
AI motivates me to write more frequently	4.05	Agree
AI tools reduce writing anxiety	4.12	Agree
I feel more engaged in class activities using AI	4.18	Agree
I rely too much on AI tools	4.25	Agree

Students showed high engagement and motivation, citing that AI tools made writing less stressful and more interactive. However, there was an acknowledgment of overreliance, particularly among lower proficiency Diploma students.

“Sometimes I depend too much on Grammarly. I don’t check why it’s wrong-I just change it.” (Participant D11)

“AI makes me write faster but sometimes I forget to think critically.” (Participant G7)

Despite this, students reported that classroom integration of AI (through guided peer-editing using Grammarly feedback or paraphrasing practice via QuillBot) increased participation and collaboration. Lecturers who demonstrated AI tool use during lessons were perceived as more engaging and supportive.

Challenges Identified

The study also documented recurring challenges:

1. **Overdependence:** Excessive reliance on AI corrections leads to reduced critical awareness.
2. **Contextual Inaccuracy:** ChatGPT occasionally produces irrelevant or culturally mismatched examples.
3. **Ethical Concerns:** Students expressed uncertainty about plagiarism when using AI-generated content.
4. **Digital Divide:** Some students lacked stable connectivity or personal devices, affecting equitable access.

These findings affirm the need for explicit digital literacy instruction and academic integrity guidance in UiTM writing courses.

DISCUSSION

This study examined UiTM Diploma and Degree students' engagement with, and perceptions of, AI-powered tools in ESL writing classrooms through the lens of the Technology Acceptance Model (TAM). The findings reveal strong acceptance across all three TAM constructs; Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Attitude Toward Use (ATU), indicating that AI writing tools have become an integral component of students' writing processes in higher education. The discussion below synthesizes the quantitative and qualitative results, connecting them to existing literature and highlighting their pedagogical implications.

Perceived Usefulness: AI as a Writing Support System

The findings demonstrate that students perceived AI tools as highly useful in enhancing writing accuracy, vocabulary development, text organization, and overall writing quality. The significant agreement across PU items suggests that learners view AI tools as *performance enhancers*, consistent with Davis (1989) prediction that perceived usefulness strongly influences user acceptance.

The results align with Phan (2023), who found that EFL learners benefitted from AI tools that offer real-time feedback, automated corrections, and adaptive suggestions. Similarly, Utami et al. (2023) reported that AI-assisted writing improved coherence and linguistic accuracy, especially among lower-proficiency learners.

In the UiTM context, the distinction between Diploma and Degree students is noteworthy:

- **Diploma students** valued confidence-building, vocabulary enrichment, and grammar correction, indicating reliance on AI for foundational linguistic support.
- **Degree students** drew on AI for more complex tasks such as generating outlines, analysing academic articles, and extending arguments.

These differing patterns reflect developmental stages in academic writing and support the argument that AI can be scaffolded to address learners' varying needs. The student testimonials underscore AI's role in reducing writing barriers, particularly during brainstorming and revision processes. Thus, AI tools do not merely correct surface-level errors—they function as cognitive aids that shape the overall writing process.

Perceived Ease of Use: Accessibility Driving Adoption

PEOU emerged as the highest-rated construct, with students highlighting the simplicity, accessibility, and user-friendly nature of AI tools. These findings closely mirror both Davis (1989) and Venkatesh & Bala (2008) assertions that ease of use significantly predicts behavioural intention.

Echoing Utami et al. (2023) results, UiTM students appreciated the multi-platform accessibility of tools like Grammarly, QuillBot, and ChatGPT. The convenience of mobile usage was particularly important, given that many students complete writing tasks outside the classroom or during transit. However, the neutral rating for technical reliability underscores infrastructural challenges, especially internet instability on campus: a common issue also observed in rural Indonesian institutions in past studies.

This suggests that although AI tools are inherently easy to use, *external technological infrastructure* significantly shapes learners' experiences. Future institutional planning should therefore include improving digital connectivity and campus Wi-Fi reliability.

Attitudes and Engagement: Motivation with Caution

Students demonstrated strong enjoyment and motivation when using AI tools, reporting reduced anxiety and increased willingness to write. This confirms prior research showing that digital tools create a more engaging learning environment (Aboagye, 2022). In UiTM writing classrooms, AI enhanced:

- willingness to revise drafts
- confidence during essay preparation
- participation in group editing activities
- engagement during lecturer-led demonstrations

These behavioural indicators reflect *actual engagement*, the desired outcome in TAM-based educational research.

However, a noteworthy finding is students' awareness of overdependence, with some admitting they apply corrections without understanding the rationale. This aligns with Mohideen's (2023) study, which cautioned that habitual reliance on AI-generated solutions could inhibit learners' metacognitive growth and critical reasoning.

Thus, while AI increases engagement, it also raises pedagogical concerns. Without guided strategies, students may prioritise speed and convenience over developing independent writing competency.

Challenges in Using AI Tools: Ethical, Cognitive, and Structural Constraints

Several challenges emerged that merit discussion:

Overreliance and Reduced Critical Thinking

Students' tendency to accept AI corrections unquestioningly may weaken their grammatical awareness and critical evaluation skills. This finding echoes broader debates in AI literacy research, where educators warn against "cognitive outsourcing" (Williamson & Piattoeva, 2022). UiTM educators must therefore integrate reflective writing strategies and error analysis tasks to strengthen learners' autonomy.

Contextual and Cultural Limitations

Instances of irrelevant or culturally misaligned content generated by ChatGPT highlight the limitations of global AI models when addressing local Malaysian contexts. This issue aligns with Dr. Suhailah's (2023) findings that

AI text may not reflect local linguistic or cultural norms. Students must therefore be taught critical evaluation skills to avoid blindly adopting AI-generated examples.

Ethical Ambiguities and Academic Integrity

Students expressed confusion about plagiarism, acceptable AI usage, and citation practices. This mirrors concerns raised in Afizal Aris' (2023) study, which emphasised the need for explicit academic integrity guidelines. UiTM's writing instructors must urgently address these gaps through structured training and clear policies on ethical AI use.

Inequitable Access

Technical issues and limited access to personal devices create disparities between students, potentially reinforcing digital divides. Although most students used smartphones, complex writing tasks (e.g., report writing, article analysis) are more efficiently handled on laptops or desktops, creating inequity in learning conditions.

Synthesis: Implications for ESL Writing Pedagogy at UiTM

Taken together, the findings indicate that AI-powered writing tools:

- enhance accuracy, fluency, and organisation
- offer accessible and intuitive interfaces
- increase motivation and engagement
- support differentiated learning needs

However, these benefits must be balanced with structured digital literacy, critical thinking, and ethical guidance to prevent misuse and overdependence.

To optimise AI integration in UiTM's writing curriculum, lecturers should adopt:

1. Guided AI Use

(e.g., instructor-led demonstrations, comparative analysis of AI suggestions, reflective journals)

2. AI Literacy Training

(e.g., understanding limitations, evaluating outputs, avoiding misinformation)

3. Ethical Use Protocols

(e.g., correct citation, avoiding plagiarism, responsible paraphrasing)

4. Blended Pedagogy

where human feedback complements AI feedback to ensure balanced development.

Overall, the results affirm that AI writing tools are positively received by UiTM Diploma and Degree students, significantly improving engagement and writing performance. However, AI's impact is maximised only when accompanied by informed pedagogical practices, adequate infrastructure, and explicit ethical guidelines. The findings strongly support the integration of AI-assisted writing instruction into Malaysian higher education, provided that responsible-use frameworks are in place.

CONCLUSION

This study provides empirical insight into UiTM Perak branch, Tapah campus students' engagement and perceptions of AI-powered tools in ESL writing classrooms. Findings confirm that students perceive AI applications - especially Grammarly, QuillBot, and ChatGPT as beneficial, easy to use, and motivating. These tools enhance engagement by making writing interactive and less intimidating. However, their use also introduces challenges, notably overdependence, reduced critical analysis, and ethical ambiguities.

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