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IMPACT OF AI TOOLS ON ACADEMIC WRITING AND THEIR INFLUENCE ON CRITICAL THINKING AND WRITING SKILLS AMONG MALAYSIAN UNIVERSITY LECTURERS

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Abstract— Artificial intelligence (AI) tools like Grammarly and ChatGPT are increasingly used in higher education, transforming academic writing and teaching practices. This study explores how Artificial Intelligence (AI) tools impact academic writing, critical thinking, and professional development among Malaysian university lecturers. By utilising a qualitative approach, data were gathered from ten lecturers through open-ended surveys and have been analysed using Braun and Clarke's six-step thematic analysis. Findings show that while these AI tools improve writing efficiency, grammar, and idea development, it also

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raises concerns about over-reliance, reduced critical engagement, and ethical issues like citation inaccuracy and plagiarism. Some lecturers valued AI for supporting brainstorming and reflection, while other lecturers felt it limited analytical depth. In teaching, AI tools were used for planning and assessments but remained supplementary. The study highlights the need for human oversight to ensure academic integrity and critical thinking. It recommends implementing ethical guidelines, promoting AI literacy, and supporting professional development to guide responsible AI integration. These findings provide timely insights into how Malaysian lecturers navigate the benefits and challenges of Artificial Intelligence (AI) tools in academic writing and pedagogy.

I. Introduction

Artificial Intelligence (AI) tools such as Grammarly, Turnitin, and ChatGPT are increasingly used and integrated into higher education, particularly to improve academic writing, teaching, and critical thinking. While these AI tools support grammar correction, idea development, and content organisation, their impact on Malaysian lecturers' cognitive engagement and professional growth remains underexplored.

Abu Zahri et al. [1] reported low awareness and limited use of AI tools among Malaysian academic staff, suggesting the need for structured training. Moreover, Selvanathan and Narayanan [2] cautioned that unchecked use of tools like ChatGPT could compromise academic integrity, calling for oversight from the Ministry of Higher Education. In contrast,

Arista et al. [3] found that AI tools can improve writing quality and assist in teaching preparation. Saman et al. [4] highlighted AI's potential to personalise learning but warned of over-reliance diminishing critical reflection.

To support ethical integration, Zainal and Matore [5] advocated for AI literacy programs to assist lecturers adopt and evaluate AI tools effectively. This study addresses the gap by examining Malaysian university lecturers' experiences with AI tools in academic writing. It explores how these AI tools influence writing quality, critical thinking, and professional development, offering insights for responsible AI integration in higher education.

II. Methodology

This study employed a descriptive qualitative research design to explore the impact of AI tools on academic writing, critical thinking, and teaching practices among Malaysian university lecturers. A qualitative approach was chosen to gain in-depth insights that are not captured through quantitative methods [6-7]. Data was collected via an online survey with open-ended questions, offering flexibility for academic professionals [8].

Ten lecturers were purposively selected from Malaysian institutions based on their experience with AI tools. Although small, the sample size aligns with qualitative standards prioritizing depth [9], with data saturation achieved [10]. Braun and Clarke's six-step thematic analysis framework guided the coding and theme development process [11]. While not generalizable, the findings provide transferable insights, with future research encouraged to widen scope for greater validity [12].

III. Instruments

The survey questionnaire served as the primary research instrument and was carefully aligned with the study's objectives on AI tools' impact on academic writing, critical thinking, and professional development among Malaysian university lecturers. It consisted

of open-ended questions across five sections: demographics, AI tool usage, writing and thinking impact, benefits and challenges, and teaching practices as shown in Table 1. Designed to elicit rich qualitative responses, the instrument was reviewed by two academic experts in instructional design and qualitative methods to ensure clarity and validity. Minor revisions were made before finalization. The resulting data supported thematic analysis using Braun and Clarke's six-phase framework, ensuring coherence between research questions and interpretation.

Table 1: Structure of Research Instrument

Section	Purpose	Number of Items
Section B: Experience with AI Tools	To explore lecturers' general experiences, specific tools used, perceived benefits, and encountered challenges in academic writing using AI tools	4
Section C: Impact on Critical Thinking and Writing Skills	To examine how AI tools affect lecturers' ability to analyze, reflect, and write effectively, including grammar, writing efficiency, and depth of critical analysis	4
Section D: Challenges and Benefits of AI Tools	To identify benefits, challenges, effort, outcome comparisons, and perceptions of AI usage in academic writing	10
Section E: Influence on Professional Development and Teaching Methodologies	To explore AI's role in teaching practices, lesson planning, educator development, and its future in higher education	4

IV. Data Analysis

The qualitative data were analyzed using Braun and Clarke's six-phase thematic analysis framework [11], involving familiarization, coding, theme development and refinement. This method allowed for the systematic identification of recurring patterns aligned with the study's objectives on AI's impact on

writing, critical thinking, and professional development. Manual coding was applied, with iterative adjustments to ensure coherence and consistency. To enhance credibility, the analysis incorporated peer debriefing and maintained transparency. Selected participant quotes were integrated in the results to enrich thematic interpretation and reflect authentic experiences.

A. Section A: Demographic Overview of Respondent

To provide context for the thematic analysis, the 10 respondents included university lecturers from various Malaysian institutions, holding roles from lecturer to associate professor. Their teaching experience ranged from under five to over 15 years, with varying familiarity with AI tools. This diversity offers valuable insights into how AI tools are perceived and utilized across different academic roles and experience levels.

B. Section B: Experience with AI Tools in Academic Writing

In Section B, respondents acknowledged that AI tools improve efficiency, productivity, and writing proficiency by aiding grammar checks, content organization and idea structuring as shown in Table 2. As Participant 3 stated, "AI helps streamline my writing, but I sometimes feel that I rely too much on it for structure instead of thinking critically about my argument development". They highlighted the role of AI in developing coherent arguments and improving writing skills through feedback. However, concerns were raised about over-reliance on AI, with respondents emphasizing the need for human supervision to maintain quality.

Table 2: Experience with AI

Question	Themes	Description of Code
General Experience with AI Tools	Efficiency, Productivity, Structuring, Skill Development, Human Supervision	AI boosts efficiency, helps structure writing, enhances skills, but requires human supervision

Specific AI Tools Used	Idea Generation, Grammar, Plagiarism Checking	AI generates ideas, improves grammar, ensures originality
Benefits of AI Tools	Efficiency, Idea Generation, Sentence Enhancement	AI saves time, improves productivity, enhances writing
Challenges of AI Tools	Generic Output, Cost, Access Limits, Citation Issues	Issues include generic content, fees, and citation errors

C. Section C: Impact on Critical Thinking and Writing Skills

Respondents shared mixed views on how these AI tools affect their critical thinking and writing performance as shown in Table 3. Some lecturers noted that AI tools helped enhance their grammar, structure, and clarity, but raised concerns about diminishing their analytical depth.

Table 3: Impact on Critical Thinking and Writing Skills

Question	Themes	Description of Code
Impact of AI Tools on Analytical Abilities	AI's Influence on Analytical Work, Human Oversight in AI Usage	Respondents discuss the influence of AI on their work and the necessity for human involvement
Enhancement or Inhibition of Critical Thinking	AI Enhances Critical Thinking, AI Provides New Perspectives	AI helps prompt deeper reflection and new viewpoints
Improvement in Writing Quality	Grammar and Style Enhancement, AI Impact on Rephrasing	AI helps improve grammar, sentence structure, and rephrasing content
Changes in Writing Speed and Efficiency	Increased Productivity and Efficiency, AI Helps with Elaboration	AI tools increase speed and efficiency in writing and help expand ideas
Engagement in Critical Analysis	AI Helps with Deeper Reflection, AI Encourages Critical Thinking	AI helps engage users in deeper analysis and enriches critical thinking

As Participant 7 shared, "AI tools give me quick suggestions for restructuring my paragraphs, but I find myself reviewing my own analysis less often than before." Others believed AI could stimulate reflection and offer alternative perspectives,

especially during brainstorming or early drafting stages. Participant 2 mentioned, "Sometimes ChatGPT helps me reframe a concept, which actually deepens my thinking." These diverse perspectives mirror findings from [2], who warned that while AI can support writing fluency, its convenience may reduce opportunities for deeper cognitive engagement and independent judgment. Participants agreed that while AI tools can enhance productivity and writing fluency, they should be used as support tools rather than replacements for critical reasoning and academic rigor.

D. Section D: Challenges and Benefits of AI Tools

Respondents noted that AI tools enhance productivity, idea generation and writing quality particularly grammar and structure as shown in Table 4.

Table 4: Challenges and Benefits of AI Tools

Question	Themes	Description of Code
Benefits of AI in Academic Writing	Timesaving, Idea Generation, New Perspectives, Productivity	AI improves speed, idea generation, adds perspectives, boosts productivity, and provides resources
Challenges in AI Integration	Productivity, Efficiency, Grammar, Database Access	AI aids productivity and resources but needs balanced integration
Improvement Over Time	Learning, Simplification, Efficiency, Adaptation	AI supports learning, simplifies content, improves efficiency, and adapts styles
Writing Quality with/without AI	Quality, Speed, Formatting, Mixed Impact	AI enhances quality, speed, and formatting; some users report minimal differences
Critical Thinking Engagement	Equally Engaged, More Engaged with AI, Mixed Impact	Critical thinking is either constant or enhanced, with varied depth of engagement
Effort & Time in Writing with AI	Timesaving, Reduced Effort, Speed	AI reduces time and effort, speeding up writing
Academic Outcomes Comparison	Improved, Similar Outcomes, Context-Dependent	Outcomes generally improve, but effectiveness varies by context

Transition Challenges from Non-AI to AI Writing	Learning Prompts, Plagiarism Concerns, Adapting to AI Tools	Challenges include prompt learning, plagiarism concerns, and adapting to AI.
Adoption of AI in Academia	Wider Adoption, Contextual Limitations	AI is useful across tasks but may need context-specific use.

Participant 5 remarked, "AI tools save time, but the content often sounds robotic. I still need to rewrite most of it." Despite these benefits, concerns emerged over plagiarism risks, inaccurate references, subscription costs, and over-reliance on AI. These issues reflect [1] findings, where lecturers warned that unchecked AI use may reduce authorship and critical thinking. Overall, participants emphasized the need for human oversight to maintain academic integrity.

E. Section E: Professional Development and Teaching Methodologies

AI tools were seen as helpful in lesson planning, assessment design, and content creation as shown in Table 5. Participant 9 shared, "I use AI to brainstorm quiz questions and outline lesson flows, it saves time." However, some lecturers reported limited integration due to lack of support or training. Use of AI was largely viewed as a supplementary aid rather than a transformative shift. These insights align with [4], who cautioned that without proper guidance, AI could undermine pedagogical control and ethical practice. Respondents emphasized the importance of balancing AI tools with human centered teaching approaches.

Table 5: Professional Development and Teaching Methodologies

Question	Themes	Description of Code
Influence of AI Tools on Professional Development as an Educator	Improved Efficiency, Enhanced Teaching Approaches, Minimal Impact	AI tools save time, streamline tasks, and improve engagement, though impact on development varies

Impact of AI Tools on Teaching Methodologies	AI Enhances Classroom Activities, AI as a Teaching Resource, Little to No Impact	AI tools enable interactive lessons and assessments, with some focus on AI knowledge, but impact varies
Incorporation of AI Tools in Teaching Practices	Material Preparation, Building Digital Literacy, Minimal AI	AI assists in creating materials, enhances digital literacy, though integration is limited for some
The Future Role of AI Tools in Academic Teaching and Research	AI as Teaching Assistant, Ethical Use, AI as Supplementary Tool	AI expected to support teaching, raise ethical issues, and act as a complementary tool

V. Results

Thematic analysis identified five key findings. First, AI tools like Grammarly and ChatGPT improved writing clarity and efficiency, "I can complete drafts faster and with fewer grammar errors," said Participant 4. Second, while aiding idea generation, some expressed concern over reduced critical thinking. Participant 7 admitted, "I follow AI suggestions blindly," aligning with [2] caution on passive use.

Third, ethical concerns were raised, including plagiarism and fake citations, "Some AI-generated references look real but don't exist," noted Participant 5. Fourth, AI was used for lesson planning but remained a support tool rather than transformative. Lastly, while some saw gains in digital skills, limited institutional support hindered a broader impact. Overall, lecturers were cautiously optimistic, stressing the need for human judgment in AI assisted work.

VI. Conclusion

This study finds that AI tools like Grammarly and ChatGPT benefit Malaysian university lecturers by improving writing productivity, grammar and idea development. However, concerns persist over over-reliance, reduced critical thinking and ethical issues like citation errors and plagiarism. While AI supports academic work, it cannot replace human judgment and creativity.

To promote responsible AI use, institutions should establish ethical guidelines, offer AI literacy training, and encourage reflective integration of AI in teaching. Future studies should involve larger, more diverse samples and examine long-term effects on academic practice in Malaysia.

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