THE IMPACT OF ARTIFICIAL INTELLIGENCE TOOLS ON TEACHING AND LEARNING: A CASE STUDY OF A POSTGRADUATE PROGRAMME

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In the new normal, Artificial Intelligence (AI) has proven to be a tool with immense potential to transform the teaching and learning process. As a result, teachers and students use AI in the teaching and learning process in higher education institutes in Sri Lanka, too. The study aims to explore the impact of using Artificial Intelligence for teaching and learning in higher education. The specific objectives of the study were to identify the AI tools used for teaching and learning in the university, examine how AI tools are applied in the classroom, explore the students' and lecturers' views of using AI tools for teaching and learning, and suggest implications for policy and practice in the university. A case study approach was adopted, focusing on postgraduate students who study Information Technology at a state university. A sample of 100 students who follow this programme and 10 lecturers was selected using the purposive sampling method. Data were gathered through questionnaires, document analysis of 20 assignments, and semi-structured interviews with 20 students and 10 lecturers. Moreover, quantitative data were analyzed using descriptive methods, while qualitative data were analyzed using thematic analysis. The findings revealed that postgraduate students frequently used AI-assisted tools, primarily ChatGPT, as well as others such as Microsoft Copilot, Perplexity AI, Xmind AI, Canva, Grammarly, and QuillBot. These tools were employed in the preparation of various class activities, including written assignments, coding tasks, mind maps, PowerPoint presentations, and videos. When analyzing qualitative data, 6 themes emerged, such as efficiency in language fluency, efficiency in obtaining information and content development, redefinition of academic work and saving time, impact on academic integrity, poor acquisition of learning outcomes and skills, ethical and regulatory challenges. Therefore, while AI tools can significantly enhance teaching and learning efficiency, their improper use may hinder students' intellectual development. As a result, when designing classroom activities and assessments, lecturers should focus on evaluating higher-order thinking skills. It is recommended that the university make both students and lecturers aware of the proper use of AI-assisted tools in teaching and implement clear policies to regulate the use of AI-assisted tools in learning.

Keywords: Artificial Intelligence, AI-assisted tools, teaching and learning

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INTRODUCTION

In the new normal, Artificial Intelligence (AI) has proven to be a tool with immense potential to transform the teaching and learning process. As a result, teachers and students use AI in the teaching and learning process in higher education institutes in Sri Lanka, too. With the emergence of AI, university students use AI assisted tools in class activities and writing assignments. When students use AI-assisted tools in class activities and writing assignments, lecturers encounter difficulties in assessing their answers. On one hand, there is a critical issue in assessing whether the students have actually achieved the predefined learning outcomes. Hence, lectures cannot award a real mark. This leads to weaknesses in the reliability of assignment scores. The adoption of AI in education, particularly in higher education, is not merely a technological shift but a paradigmatic one, influencing pedagogical practices, assessment methods, and the overall learning experience. The study aims to explore the impact of using Artificial Intelligence for teaching and learning in higher education. The specific objectives of the study were to identify the AI tools used by the postgraduate students for teaching and learning in the university, examine how far postgraduate students use AI tools in the classroom, explore the students' and teachers' views of using AI tools for teaching and learning, and suggest implications for policy and practice of postgraduate students in the university.

Research questions

- What AI tools do postgraduate students use for teaching and learning in the university?
- How far do postgraduate students apply AI tools in the classroom?
- What are the students' and lecturers' views of using AI tools in teaching and learning?
- What are the implications for policy and practice of postgraduate programmes in the university?

METHODOLOGY

A qualitative research design was employed, and in order to have an in depth study, a case study approach was adopted, focusing on postgraduate students who study Information Technology at a state university in Sri Lanka. A sample of 100 students who followed this programme in two consecutive years and 10 lecturers was selected using the purposive sampling method. Data were gathered through questionnaires, document analysis of 20 assignments, and semi-structured interviews with 20 students and 10 lecturers. Moreover, quantitative data were analyzed using descriptive methods, while qualitative data were analyzed using thematic analysis informed by Braun and Clark.

RESULTS AND DISCUSSION

The results were analyzed based on research questions.

Identifying the AI-assisted tools in teaching and learning.

It was found that postgraduate students had employed AI tools in the preparation of various class activities, including written assignments, coding tasks, mind maps, PowerPoint presentations, and videos. The students used mainly ChatGPT and other AI-assisted tools such as Microsoft Copilot, Xmind AI, Gemini, Perplexity AI, Jenny AI, Canva, Grammarly, and QuillBot.

How far students use AI assisted tools in class activities and assignments

In order to understand how far students use AI-assisted tools in class activities, 10 factual assignments, 10 creative assignments, and 10 presentations were analyzed using an AI detector.

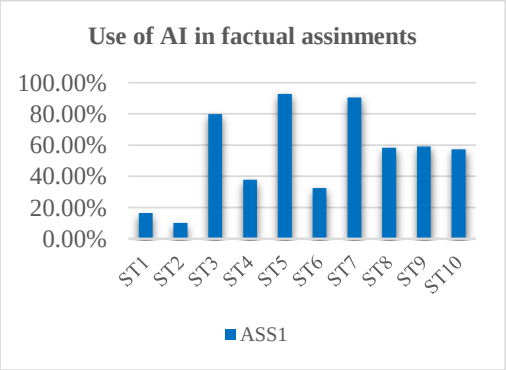

Figure 1. AI usage in writing factual assignments

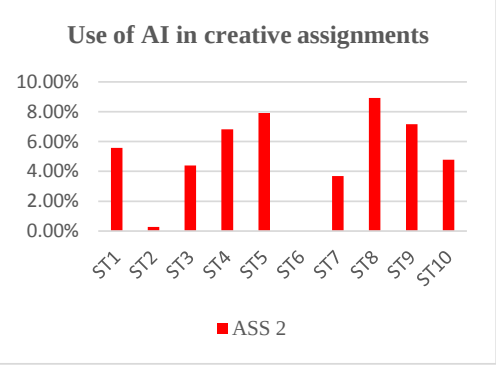

Figure 2. Ai Usage of creative assignment

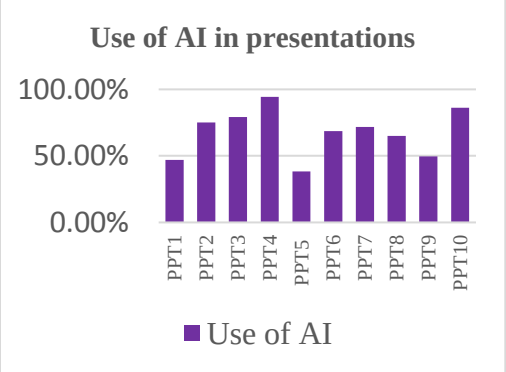

Figure 3. AI usage in preparing a presentation

The above charts indicate that students use high percentages of AI in writing factual assignments and PowerPoint presentations. Figure 1 indicates that among the 10

students, 6 had used AI for more than 50% of their work in writing factual assignments. Figure 2 demonstrates that students used AI for less than 10% of their work in creative assignments. Figure 3 reveals that, in the preparation of PowerPoint presentations, 7 out of 10 students used AI for more than 50% of the content.

Students' and lecturers' views on AI usage

When analyzing interview data, 6 themes emerged, such as efficiency in language fluency, efficiency in obtaining information and content development, redefinition of academic work and saving time, impact on academic integrity, learning outcomes and skill acquisition, and ethical and regulatory challenges.

Efficiency in language fluency

The sample for this study consisted of postgraduate students pursuing their degree in the medium of English. Many of these students reported that they were not fluent in English and, as a result, relied on AI-assisted language editing tools such as Grammarly and QuillBot. The students expressed that these tools enabled them to produce assignments that reflected a higher level of English language competence, thereby increasing their confidence in their submissions.

When asked why they used such tools, students highlighted the role of AI in increasing their confidence and saving time.

For instance, one student stated,

> "I use Grammarly to check the grammar in my assignment. I am not confident about the English proficiency of my writing, so I use Grammarly."
>
> (Interview data, Student 9).

Another student stated,

> "I am not fluent in English, but I need to write assignments in English. So I use QuillBot. It saves time, so I can write a better answer."
>
> (Interview data: Student 5).

The insights revealed that students frequently used AI tools to overcome language barriers and meet academic standards in English. These tools enabled them to produce grammatically accurate and well-structured assignments, showcasing perceived proficiency. While AI-assisted editing had a positive impact by helping students present clear and accurate work, it also raised concerns about masking their true language ability and limiting the development of independent English skills, highlighting both benefits and challenges of reliance on AI in academic writing.

Efficiency in obtaining information and content development

Postgraduate students reported extensive use of AI-assisted tools for assignments, particularly for information gathering. About 72% relied on such tools, with 42% specifically using ChatGPT solely for collecting relevant details before rewriting content in their own words. While many used AI responsibly to support learning, some admitted to directly copying AI-generated text without modifications. This raises concerns about critical thinking, independent research, and academic integrity, as overreliance on AI may hinder students' ability to engage deeply with material and develop essential academic skills.

Redefinition of academic work and saving time

The students were of the view that ChatGPT helped to find information in relation to a certain topic in less time.

> *"I use ChatGPT when doing class activities. Our lecturers give tasks to create presentations within the class hours. At that time, we used ChatGPT to find information. Sometimes our lecturers asked us to create presentations, mind maps, reports, and discussion panels within a given time. To make PowerPoint presentations I use ChatGPT. It is easy to generate a PowerPoint presentation using AI."*
>
> (Interview data: Student 15)

> *"I prefer getting information from ChatGPT. For class activities we cut and paste information if we haven't finish it within a short period of time."*
>
> (Interview data: Student 4)

I asked whether it is easy to find information using ChatGPT.

> *"I use ChatGPT for preparing presentations. We copy facts extracted from ChatGPT to create presentations. I give the correct prompt".*
>
> (Interview data: Student 14)

Most of the students used Canva for preparing videos and presentations. They reported that Canva can be easily used to generate presentations and it saves their valuable time.

> *"It is easy to handle Canva. It is easy to manipulate. Most of the time when we were asked to create presentations in the classroom, I used AI"*
>
> (Interview data: Student 9)

Interestingly, the findings of this study revealed that students were generally over-optimistic about using AI tools, which contrasts with the findings of Wang et al. (2024). The researcher noted that students in their study were cautious about over-relying on AI, viewing it primarily as a tool for generating structured templates or professional language to begin their work. In contrast, the students in this study showed a greater reliance on AI tools, perceiving them as capable of not only supporting but also enhancing their assignments to a higher standard. This over-optimism underscores the need for educating students about the limitations of AI, such as its tendency to generate vague or generic content, and the importance of balancing AI usage with critical thinking and independent skill development.

Impact on Academic Integrity

A key theme identified in the study was academic integrity, which includes originality, honesty, and avoidance of plagiarism. Lecturers stressed its importance in higher education and expressed concerns about AI use compromising these principles. They emphasized that including AI-generated content in assignments without acknowledgment is academic dishonesty. This was confirmed by following statement.

> *"Some students use GenAI in writing assignments. They just cut and paste. It is some sort of dishonesty… I mean,"*
>
> (Interview data: Lecturer 7)

The above statement of lecturer 7 confirmed that students violate academic integrity.

Further, the lecturers stressed the importance of educating students on the responsible use of AI tools and implementing clear guidelines to distinguish between legitimate assistance and unethical practices. They suggested that fostering awareness about proper citation, acknowledgment of AI-generated content, and the value of originality could help maintain academic integrity in an AI-driven academic environment. This finding highlights the need for universities to address the challenges posed by AI tools while upholding the principles of academic honesty and intellectual independence.

Transformation of lecturer's roles and assessment strategies

The introduction of AI-assisted tools has reshaped lecturers' roles, prompting a shift in teaching methods and assignment design. Lecturers stressed the need to create tasks that assess creativity, originality, and critical engagement. While AI supports idea generation and writing improvement, it also challenges academic rigour and authenticity. To address this, lecturers emphasized designing assignments that foster independent thinking and problem-solving, ensuring students engage meaningfully with content rather than depending solely on AI-generated material.

One of the lecturers said,

> *"We should focus on creative assignments when planning assignments."*
>
> (Interview data: Lecturer 08)

The discussion highlighted a growing consensus among lecturers on the necessity of adapting innovative assessment methods to align with the evolving academic sphere. By incorporating AI tools in a balanced manner, lecturers aim to get the maximum use of their benefits while upholding the values of academic integrity. This shift underscores the need for professional development initiatives to equip lecturers with strategies for effectively integrating AI into their teaching practices while maintaining high standards of education.

Learning Outcomes and Skill Acquisition

Lecturers expressed concerns about how AI tools influence students' ability to develop critical thinking, research, and writing skills. While they acknowledged that AI can support independent learning and enhance understanding, they emphasized the importance of guiding students to use these tools ethically and effectively. Lecturers pointed out that the misuse of AI could hinder skill development, creating a gap in learning outcomes between students who use AI responsibly and those who rely excessively on it.

One lecturer remarked,

> *"We give assignments, but I have a doubt … do we actually check whether students achieve learning outcomes? We give tasks to solve problems, but they use generative AI and solve problems … especially when writing algorithms."*
>
> (Interview data: Lecturer 6)

This highlights the difficulty in evaluating whether students are genuinely mastering the intended skills or simply using AI to bypass critical learning processes.

This underscores the need for educators to promote ethical AI use and establish clear boundaries to ensure that learning outcomes are achieved effectively.

Ethical and Regulatory Challenges

Lecturers highlighted significant ethical dilemmas surrounding the extent of AI usage in academic work, emphasizing the urgent need for institutional measures to uphold academic integrity. They stressed the importance of implementing AI detection tools and updating policies to address the ethical challenges posed by AI-assisted tools. Given that lecturers cannot entirely control students' use of AI, they reported facing difficulties in defining and enforcing appropriate boundaries for its use within the university.

One lecturer remarked,

> "The university should take measures to use AI detectors … On the other hand, measures should be taken to make students aware of ethics in using AI."
>
> (Interview data: Lecturer 04).

This underscores the dual responsibility of institutions to both regulate AI usage and educate students about its ethical implications. These findings align with Afzal's (2023) study, which also highlighted ethical concerns such as academic integrity, lack of regulation, and cognitive bias as significant factors influencing the use of ChatGPT and other AI tools for academic purposes.

CONCLUSION AND RECOMMENDATION

AI tools present both opportunities and challenges in postgraduate programme. While they enhance efficiency, improper use can hinder learning outcomes and compromise academic integrity. Their integration has cognitive and ethical implications, affecting the quality and authenticity of students' work. This highlights the importance of lecturers designing activities that promote Higher Order Thinking skills (HOTs), encouraging critical analysis and problem-solving beyond tasks easily handled by AI. Equipping students with the skills to use AI responsibly and ethically is therefore essential.

However, regulating AI use in assignments remains challenging, as students may bypass genuine engagement. Clear guidelines on ethical practices are necessary to maintain integrity. The university should implement regulations governing AI-assisted tools while also embracing their potential benefits. AI detectors can help identify inappropriate use, ensuring fairness in assessments. Yet, the rise of tools that disguise AI-generated content complicates this effort, demanding stronger institutional countermeasures.

Ultimately, balancing innovation with accountability is vital. By setting clear policies, providing ethical guidance, and adopting effective safeguards, the university can uphold academic standards while preparing students to responsibly navigate an AI-driven academic and professional landscape. This approach ensures that technological advancements support, rather than undermine, authentic learning and intellectual development.

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