

THE ROLE OF AI IN ENHANCING LEARNING: PERCEPTIONS OF POLYTECHNIC STUDENTS

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ABSTRACT

This study explores the perceptions of polytechnic students regarding the implementation and influence of Artificial Intelligence (AI) tools in enhancing their learning experiences. A survey was distributed via Google Forms to 220 students enrolled in the Diploma in Information Technology (DIT) program at the Department of Information Technology and Communication, Polytechnic Ungku Omar. The research aims to understand students' perceptions of AI in learning, their awareness and usage patterns, as well as the challenges they face related to AI tools in their academic journey. The study also explores students' expectations for future enhancements and support needed for the successful integration of AI tools in their learning process. The results provide valuable insights into the role of AI in shaping modern education at the polytechnic level and offer recommendations for improved integration and usage of AI in educational practices. By surveying the current state of AI tool usage among polytechnic students, this research contributes to the understanding of how AI can be harnessed to support and enhance student learning outcomes in the field of information technology. The results show AI can support students in improving their learning, while also pointing out the difficulties that might prevent AI from being fully used in education. This highlights the need for proper guidance, training, and resources to overcome these challenges so that AI can be better integrated into the learning process.

1. Introduction

The Artificial Intelligence (AI) integration in academic settings has quickly transformed traditional teaching and learning methods across the world. Higher education institutions make efforts to improve student engagement and efficiency; they are motivated to adapt to a new era learning environment. AI technologies such as ChatGPT, AI chatbots, and gamified learning platform technologies have grown considerable attention (Khairuddin, Z. et al., 2024). These

tools help students to improve their knowledge and carry it with an interactive learning experience, moreover making learning more reachable and easier.

In Malaysia, the use of AI in teaching is just starting but is growing quickly, mostly in Technical and Vocational Education and Training (TVET) institutes. The Ministry of Higher Education has urged the use of digital tools to help develop 21st-century skills, critical thinking, and lifelong learning (Ministry of Higher Education Malaysia, 2021). TVET have a big job in making skilled graduates; they are looking into AI-based tools for teaching to make the learning better in fields like information technology, engineering, and business.

AI transforms how teaching is achieved and personalized in its broad conception related to education. The leading edge of AI technology delivers adaptive, customized educational interactions, shifting the face of the human-machine educational interface (Dawat et al., 2023). It includes identifying individual student needs and optimizing pedagogical methods as well as automating feedback processes for both students and teachers. Applications of AI within the educational sector cover intelligent tutoring systems, personalizing learning experiences on platforms, and learning analytics capable of evolving educational quality while supporting students during their learning process. Potentially it can revolutionize education with greater engagement, customization, and efficiency in learning for both students and teachers.

In the current era with the progression of technology, the growing interest in artificial intelligence has led many to incorporate machine learning into teaching and learning processes. It proves effective for learners, instructors, and content developers alike, supporting and strengthening current educational infrastructures Artificial Intelligence (AI), a branch of computer science, enables machines to simulate human intelligence, learn from experience, and perform tasks that typically require human cognitive abilities (Wei, 2023). For example, ChatGPT is able to help learners improve various skills, such as language proficiency, due to its practical functionality. According to (Hemachandran et al., 2022), AI allows learners to customize lectures by adjusting the pace or language to better suit their individual needs. Therefore, the ease of learning with AI-assisted tools contributes to increased satisfaction, which may lead to higher motivation and better performance.

This study focuses on students enrolled in the Diploma in Information Technology (DIT) program at the Department of Information Technology and Communication, Polytechnic Ungku Omar. A total of 200 students participated in a survey aimed at capturing their perceptions, experiences, and attitudes toward AI-enhanced learning tools. The main objective is to assess the perceived role and impact of AI technologies on their learning processes, motivation, and academic performance.

By exploring student perspectives, this survey helps expand what we know about using AI in education at polytechnic Ungku Omar context. The findings are expected to inform educators, policymakers, and system developers about the effectiveness and challenges of deploying AI tools in learning environments. This study aims to offer useful insights for creating educational strategies that integrate AI and meet the needs and expectations of TVET learners.

2. Materials and Methods

The objective of this study was guided by the Goal-Question-Metric (GQM) approach as outlined by Yahya et al. (2017). This method involves three key levels: firstly, defining a research goal at the conceptual level; secondly, formulating a set of research questions at the operational level; and finally, identifying specific metrics at the quantitative level to answer the defined research questions.

2.1 Research Design

This study applied a quantitative research design using a descriptive survey method to explore students' perceptions, awareness, usage patterns, and challenges related to Artificial Intelligence (AI) in learning. The survey method was chosen for its effectiveness in collecting standardized data from a large sample, enabling statistical analysis and generalization of findings.

2.2 Population and Sample

The target population comprised students enrolled in the Diploma in Information Technology (DIT) program at the Department of Information Technology and Communication, Polytechnic Ungku Omar. A total of 220 students were selected through convenience sampling. The selection was based on their active enrolment in the program and willingness to participate in the study.

2.3 Data Collection Instrument

Data were collected using a structured questionnaire developed through Google Forms. The questionnaire consisted of Likert-scale items and was divided into five main sections:

1. **Perceptions of AI in Learning:** Items designed to measure students' attitudes toward AI-enhanced learning, including perceived usefulness, ease of use, and engagement.
2. **Awareness and Usage Patterns:** Questions regarding students' familiarity with AI tools and frequency of use in academic settings.
3. **Challenges and Concerns:** Questions related to potential barriers in adopting AI tools, such as lack of knowledge, technical issues, or concerns over data privacy.
4. **Usage Patterns of AI Tools:** Questions regarding use of AI tools in student's daily routine.
5. **Expectations and Support Needs:** Item created to identify student's awareness of the ethical and academic integrity expectations during using AI-generated outputs.

2.4 Data Collection Procedure

The survey link was distributed electronically via institutional communication channels, including class WhatsApp groups and email. Students were informed about the purpose of the study and assured that participation was voluntary and responses would remain confidential.

2.5 Data Analysis

Survey was conducted thru online using Google Forms. Data are automatically generating in the Google Forms.

3. Results

This section presents the results of the questionnaire aimed at exploring the perceptions of polytechnic students regarding the use of Artificial Intelligence (AI) tools in their learning process. The purpose is to understand how AI contributes to or challenges their academic enhancement. The analysis focuses on several key areas: students' perceptions of AI in learning, their awareness and usage patterns, the challenges and concerns they face, specific usage patterns of AI tools, and their expectations and support needs.

3.1 Perceptions of AI in Learning

Table 1: Result on Perception of AI Learning

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. AI tools helps to enhance my learning process.	60.5%	38.2%	0.5%	0.9%
2. AI makes my learning extra engaging and interactive.	53.2%	43.2%	2.7%	0.9%
3. AI supports me to understand hard topics better.	58.6%	39.1%	1.4%	0.9%
4. AI tools inspired me to learn.	50.9%	43.2%	4.5%	1.4%
5. AI gives a good effect on my academic performance.	51.4%	44.1%	3.6%	0.9%

The results in Table 1 show that most students have a very positive view of using AI in learning. About 98.7% agreed that AI tools help improve their learning, and 96.4% said AI makes learning more interesting and interactive. Around 97.7% said AI helps them understand difficult topics better, while 94.1% felt AI tools inspired them to learn. Lastly, 95.5% believed that AI gives a good effect on their academic performance. These results show that students find AI very helpful in supporting their studies, keeping them engaged, and improving their results.

3.2 Awareness and Usage Patterns

Table 2: Result on Awareness and Usage Patterns

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I, very aware of AI tools like QuillBot, ChatGPT or Grammarly.	49.5%	48.6%	1.4%	0.5%
2. I understand the basics of how AI is supposed to work.	48.6%	49.5%	1.4%	0.5%
3. I learned that AI tools can be applied to education.	53.2%	44.5%	1.4%	0.9%
4. I able to differentiate between acceptable use of AI tools and academic misconduct.	49.5%	49.1%	0.9%	0.5%

The results in Table 2 show that most students are well aware of AI tools and how to use them. About 98.1% said they know tools like QuillBot, ChatGPT, or Grammarly. Around 98.1% also said they understand the basic idea of how AI works. A total of 97.7% learned that AI can be used in education, and 98.6% said they can tell the difference between using AI tools correctly and doing something wrong like academic cheating. These results show that students are not only familiar with AI tools but also understand how to use them in the right way for learning.

3.3 Challenges and Concerns

Table 3: Result on Challenges and Concerns

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I face difficulty to figuring out which AI tools are good for learning.	23.2%	47.3%	25.9%	3.6%
2. I felt doubts on data accuracy that AI tools provide.	24.5%	58.6%	14.5%	2.3%
3. I'm not sure how to use AI tools for my studies in an efficient manner.	17.3%	36.8%	38.6%	7.3%

4. I'm concerned that using AI tools could cause problems with academic integrity.	24.5%	50.9%	20.9%	3.6%
5. When I use or access AI tools, I run into technical difficulties.	16.4%	42.3%	35.5%	5.9%

The results in Table 3 show that while students see the benefits of AI, they also face some challenges and concerns. About 70.5% of students said they find it hard to choose the right AI tools for learning, and 83.1% have doubts about whether the information from AI tools is always accurate. Around 54.1% admitted they are not sure how to use AI tools effectively for their studies. Also, 75.4% were worried that using AI might lead to problems with academic integrity, like cheating. Lastly, 58.7% said they experience technical problems when using AI tools. These findings suggest that students need more guidance, training, and support to use AI tools properly and confidently.

3.4 Usage Patterns of AI Tools

Table 4: Result on Usage Patterns of AI Tools

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I use AI tools to assist my assignments.	38.6%	56.4%	3.6%	1.4%
2. I use AI tools to get further explanations of topics.	52.3%	44.5%	2.3%	0.9%
3. I use AI tools frequently as part of my learning routine.	40.5%	53.2%	5.0%	1.4%
4. I explore new AI tools as a guide in my learning.	43.6%	20.5%	4.5%	1.4%
5. Most of the time, I turn on AI tools when I face difficulty understanding a topic.	51.8%	44.1%	3.2%	0.9%

The results in Table 4 show that most students are actively using AI tools to support their learning. About 95% said they use AI tools to help with assignments, and 96.8% use them to get further explanations of topics. A total of 93.7% use AI tools regularly as part of their learning routine. While 64.1% said they explore new AI tools as a guide in learning, a higher percentage (95.9%) shared that they turn to AI tools when they find a topic difficult to understand. These results show that students rely on AI tools not just for completing tasks but also for improving understanding and learning independently.

3.5 Expectations and Support Needs

Table 5: Result on Expectations and Support Needs

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I would like additional training on how to use AI tools effectively in learning.	32.3%	54.1%	12.7%	0.9%
2. I need instructor to advise on how to use of AI tools in an ethical manner.	30.0%	54.1%	15.0%	0.9%
3. I believe that AI tools will be combined more formally into my courses.	38.2%	55.9%	5.0%	0.9%
4. I hope that institutions should provide access to approved AI tools.	36.8%	56.8%	5.0%	1.4%
5. I need precise instructions on when and how to use AI tools in my academic work.	33.2%	57.7%	7.3%	1.8%

The results in Table 5 show that many students are hoping for more support and clear guidance in using AI tools. About 86.4% said they want more training to use AI effectively in their learning, and 84.1% said they need advice from instructors on using AI in an ethical way. A large number (94.1%) believe that AI will be more formally included in their courses in the future. Around 93.6% hope that institutions will provide access to trusted AI tools, and 90.9% said they need clear instructions on when and how to use AI tools in their studies. These results show that students are open to using AI but need proper training, guidance, and institutional support to use it well and responsibly.

Discussion

The findings from this study provide valuable insights into how Diploma in Information Technology (DIT) students at Polytechnic Ungku Omar perceive the role of Artificial Intelligence (AI) in their academic learning. Overall, the data suggest a generally positive outlook toward AI tools, particularly in terms of their potential to personalize learning experiences, improve access to information, and increase learning efficiency.

Conclusion

This study looked at how DIT students at Polytechnic Ungku Omar feel about using AI in their learning. Most students had a positive view, saying AI helps them learn better by making things faster and more interesting. However, the study also found that students need to improve their digital skills and understanding of AI, especially when it comes to issues like privacy, fake information, and depending too much on technology. The study says that while AI can really

improve teaching and learning in TVET, it will only work well if students and teachers have the right tools and are ready to use it properly. In the future, schools should include AI in their lessons and give proper training so everyone can use it in a smart and responsible way.

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