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# STUDENTS' PERCEPTION TOWARDS THE USAGE OF ARTIFICIAL INTELLIGENCE IN TERTIARY EDUCATION

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## Abstract

This study investigates the perceptions of tertiary education students on using Artificial Intelligence (AI) to enhance academic performance. With AI's growing presence across various sectors, including education, it is imperative to understand the student perspective on its integration into their learning environment. Utilising a quantitative approach, the research encompasses a cross-sectional survey of one hundred (100) students from diverse colleges and universities across Malaysia. The findings reveal a notable familiarity among students with AI tools and a significant proportion leveraging these technologies for academic improvement. However, the study also uncovers prevalent concerns about privacy risks associated with AI usage. These insights reflect the current trends in AI adoption in educational settings and highlight critical areas of consideration for educators and policy-makers in balancing technological advancement with student privacy and well-being. The implications of these findings are substantial, offering a nuanced understanding of student attitudes towards AI in education and guiding future strategies for its ethical and effective implementation.

*Keywords: Students, Perception, Artificial Intelligence (AI), Academic performance, Tertiary education*

## INTRODUCTION

Technology integration into educational settings has become ubiquitous, with Artificial Intelligence (AI) emerging as a particularly influential force (Keleş & Aydın, 2021). AI's popularity is rising in education, with tools such as Snapchat and ChatGPT exemplifying the trend. These AI applications offer personalised recommendations, answer queries, and engage in dialogue, significantly advancing how students interact with technology (Kelly, 2023).

However, research into student attitudes towards AI in tertiary education presents a dichotomy. Some scholars, like Adalı (2017), argue for AI's significantly positive impact, while findings by Li et al. (2021) and Wang et al. (2020) indicate generally positive student perceptions. This disparity suggests the necessity for further investigation, particularly regarding AI's real-world educational impact and how it shapes the learning experience at the tertiary level. The study by Hsu et al. (2020) calls for understanding students' perceptions towards using AI in tertiary education for its effective implementation and adoption.

Jeffrey (2020) found there appears to be a widespread need for more awareness regarding the overall presence of AI in various aspects of society. Therefore, this study seeks students' views on using ChatGPT within tertiary education at a university, scrutinising its advantages and potential downsides, as well as its broader implications for pedagogy. The goal is to determine how students perceive and react to AI's integration, which could enhance their academic outcomes. Moreover, this research aims to reveal students' expectations and preferences for AI learning tools, which could drive improvements in educational performance. The results of this study will be instrumental in crafting strategies for AI application in higher education that genuinely resonate with student needs and viewpoints.

This study offers valuable findings and counsel for educators, policy-makers, and all involved in tertiary education, ensuring AI's incorporation meets student expectations and furthers their educational goals. The following research questions are posited: RQ1: How do students perceive AI's role and recognition in bolstering academic performance in tertiary education? RQ2: What apprehensions do students hold regarding the employment of AI to enhance their academic achievements? The two research questions are answered using a survey research design.

## LITERATURE REVIEW

Artificial intelligence (AI) use in tertiary education has recently increased. Several studies have examined students' perceptions of AI in educational contexts, revealing predominantly positive attitudes. For instance, Li et al. (2020) surveyed students' acceptance and perceptions of AI-based learning systems in higher education and found that students generally hold positive perceptions towards AI. The findings indicated that students generally have positive perceptions towards AI, recognising its potential to enhance their learning experiences and provide personalised support. Similarly, Hsu et al. (2020) assessed students' perceptions and acceptance of AI-based learning in higher education. They found that students highly valued the benefits of AI, such as adaptive learning and personalised feedback. These

studies highlight students' positive attitudes towards AI in tertiary education, emphasising the potential for improved educational outcomes.

While students generally express positive perceptions towards AI, concerns and ethical considerations also emerge. Mishra and Arora (2020) examined students' perceptions of AI integration in education and identified concerns related to privacy and ethical considerations. These concerns underscore the importance of transparent communication, ethical guidelines, and addressing the potential socio-economic implications of AI in education. Cultural factors can also influence students' perceptions of AI. Guo et al. (2019) found that cultural beliefs, values, and expectations must be considered when implementing AI technologies in education.

Students' prior exposure and familiarity with AI significantly influence their perceptions. Popenici and Kerr's (2017) research indicated that students with greater exposure to AI technologies generally hold more positive attitudes towards its integration. This suggests the significance of providing educational opportunities to enhance students' AI literacy and awareness, fostering a more informed and positive view of AI in tertiary education.

While existing studies provide valuable insights into students' perceptions towards the usage of AI in tertiary education, further research is needed to address several gaps. Firstly, more studies should examine students' perceptions in diverse cultural and international contexts to comprehensively understand the cultural influences on AI acceptance. Secondly, it is crucial to investigate the long-term impact of AI integration on students' learning outcomes, skill development, and employability. Addressing ethical considerations, such as data privacy, algorithmic biases, and responsible AI usage, is vital to implementing comprehensive guidelines and policies.

Nevertheless, it is important to note that students' perceptions are not universally positive. Mishra and Arora (2020) researched students' views of AI integration in education and identified concerns related to privacy and ethical considerations. These concerns emphasise the need for transparent communication and ethical guidelines when implementing AI technologies in educational settings. Additionally, students' familiarity and previous exposure to AI can influence their perceptions. Studies indicate that students with greater exposure to AI technologies tend to have more favourable opinions (Popenici & Kerr, 2017). This highlights the significance of providing educational opportunities to enhance students' understanding and awareness of AI. Future research endeavours should persistently explore these aspects and address existing gaps in the literature to ensure the successful integration and widespread acceptance of AI in tertiary education.

### *Theoretical Framework*

Our study employs multiple theoretical frameworks to analyse student attitudes and acceptance of Artificial Intelligence (AI) in tertiary education. Collectively, these frameworks provide a thorough understanding of student engagement with AI, considering their beliefs, attitudes, and the contextual factors that drive their acceptance of AI technologies.

First, we apply the Technology Acceptance Model (TAM) introduced by Davis in 1989. This model suggests that the acceptance of technology by users is primarily influenced by its

perceived usefulness and ease of use. Within the context of AI in education, TAM is instrumental in evaluating students' perceptions regarding the benefits of AI for enhancing learning and the level of effort required to utilise AI tools effectively.

Next, we incorporate Rogers' Innovation Diffusion Theory (IDT) to investigate the adoption and dissemination of AI among students. IDT concentrates on the perceived attributes of AI, the characteristics of its adopters, and the methods through which AI information is disseminated. This theory offers valuable insights into students' perceptions and how their attitudes towards AI are affected by social networks.

Finally, the Expectancy-Value Theory (EVT), formulated by Eccles et al. in 1983 and further developed by Eccles and Wigfield (2002), is utilised to examine the influence of students' beliefs, values, and expectations of success on their motivation and engagement with AI in education. EVT provides a lens to understand students' decision-making processes in AI adoption, focusing on their aspirations for success and the importance they place on AI in their academic endeavours.

## METHODOLOGY

A quantitative research approach was employed for this study. The approach involves gathering and evaluating numerical data to identify patterns, correlations, and statistical connections. A cross-sectional survey research design was employed to examine students' perceptions of AI usage in tertiary education. The cross-sectional design entails gathering data from a sample of individuals at a certain period to explore relationships and variations within the population. The study adhered to ethical guidelines, ensuring informed consent and participant confidentiality. Through the implementation of a cross-sectional survey design, valuable insights were gained into students' attitudes and beliefs concerning the incorporation of AI in tertiary education. This approach aimed to provide objective and generalisable findings using statistical techniques to analyse the data systematically.

Data was collected through the administration of standardised questionnaires or surveys. These instruments were designed to gather information about the students' perceptions regarding using Artificial Intelligence in tertiary education. The questionnaire items were carefully developed, considering the research objectives and pertinent literature. It comprised diverse question types, including Likert-scale items, questions with options, and open-ended questions tailored to suit research objectives and the nature of the studied variables. Standard deviations, means, frequencies, and percentages are examples of descriptive statistics utilised to give an overview of the questionnaire respondents' answers. In addition, to investigate associations between variables and test hypotheses, inferential statistical methods, including regression analysis and correlation analysis, were used.

This study involved students in their tertiary education in government and private colleges and universities in Malaysia. We added the questions we needed for our research in the Google form before distributing the link to the respondents via several applications such as WhatsApp, Instagram, Telegram and Facebook. The questionnaire was distributed to 100 students pursuing their tertiary education. All of the survey respondents are Malaysians aged between 18 and 30 years. Participants were selected based on specific criteria, such as their

level of education and academic programme. A sample size was determined, considering statistical considerations to ensure adequate statistical power.

The primary instrument utilised in this study was a self-administered questionnaire, which was thoughtfully designed to gather quantitative data essential for addressing the research questions and objectives. It consisted of validated scales or items utilised in previous studies to measure constructs such as students' perceptions, attitudes, and concerns regarding using Artificial Intelligence in tertiary education. The questionnaire used a Likert scale format, where participants indicated their responses on a scale from 1 to 5, with 1 indicating 'Strongly Disagree,' 2 indicating 'Disagree,' 3 indicating 'Neutral,' 4 indicating 'Agree,' and five indicating 'Strongly Agree.' To ensure the questionnaire's reliability and validity, a pilot test was conducted with a small group of individuals to evaluate its clarity and comprehensibility. Additionally, measures were taken to guarantee the confidentiality and anonymity of the participants' responses, encouraging honest and unbiased feedback.

## RESULTS

### *Demographic of respondents*

There were 100 respondents, with 55 per cent (n=55) female and 45 per cent (n=45) male respondents. The results indicate that the respondents' demographic profile consisted of individuals from various ethnic backgrounds. Specifically, the ethnic distribution was as follows: Malay (27%), Chinese (6%), Indian (66%), and Melanau (1%). The respondents are aged between 18 to 30 and above. There were 16 per cent (n=16) respondents aged between 18 to 20, 66 per cent (n=66) respondents aged between 21 to 24, 7 per cent (n=7%) aged between 25 to 29 and 11 per cent (n=11) respondents aged 30 and above.

There are 3% (n=3) respondents currently pursuing STPM (Sijil Tinggi Pelajaran Malaysia), 1% (n=1) pursuing Foundation, 18% (n=18) pursuing Diploma, 70% (n=70) respondents pursuing Degree, 7% (n=7) seeking master's and 1% (n=1) respondent pursuing PhD.

**Table 1** Demographic statistics

| **Individual-level variables** | **Percentage (%)** |
|---|---|
| **Gender** | |
| Male | 45 |
| Female | 55 |
| **Age** | |
| 18 – 20 | 16 |

| | |
|---|---|
| 21 – 24 | 66 |
| 25 – 29 | 7 |
| 30 and above | 11 |
| **Level of Education** | |
| STPM | 3 |
| Foundation | 1 |
| Diploma | 18 |
| Degree | 70 |
| Masters | 7 |
| PhD | 1 |
| **Ethnic** | |
| Malay | 27 |
| Chinese | 6 |
| Indian | 66 |
| Others (Melanau) | 1 |

### *Knowledge of Artificial Intelligence*

Descriptive statistics were computed to summarise the participants' perceptions of using Artificial Intelligence (AI) in tertiary education. The results are categorised under "knowledge of artificial intelligence". Figure 1 revealed that 80% (n=80) of students have encountered or used AI-based educational tools or applications during their tertiary education.

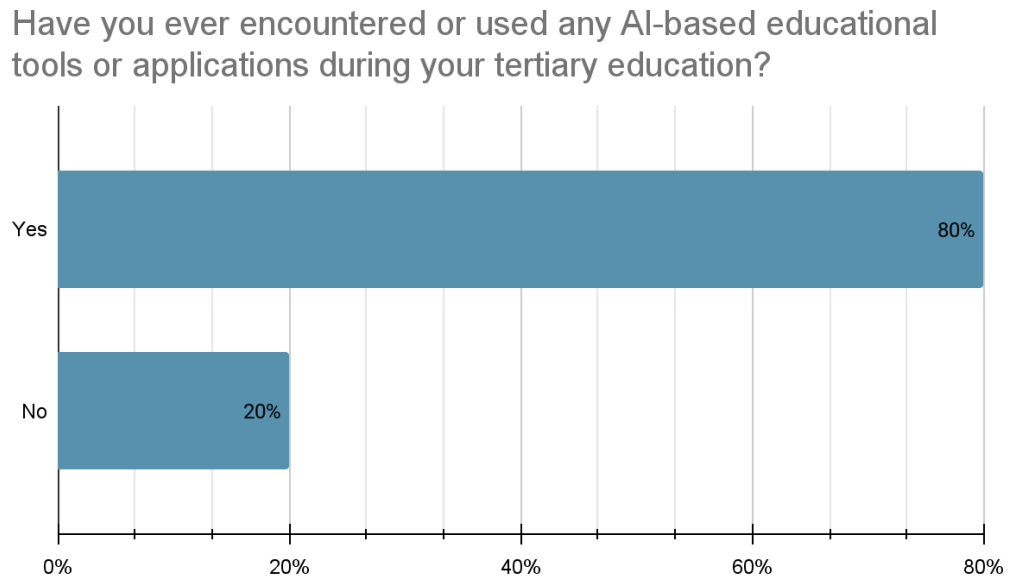


**Figure 1.** Knowledge of Artificial Intelligence (AI)

Figure 2 shows that 39% are very aware, 57% are somewhat familiar, and 4% are unaware of artificial intelligence (AI) and its potential applications in improving academic performance in tertiary education.

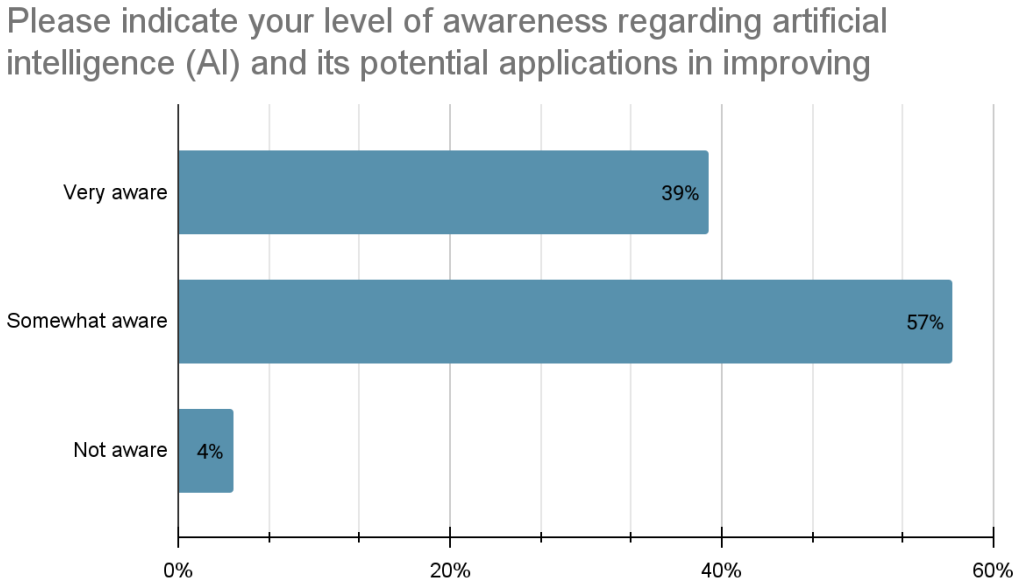


**Figure 2.** Awareness of Artificial Intelligence

***Willingness to use Generative AI Technologies***

This section contained ten questions. This section is categorised under "willingness to use generative AI technologies.

Two main results from the section related to the second question have been chosen. In Figure 3, 41% of students strongly agreed that "Artificial intelligence helps me to improve my academic performance".

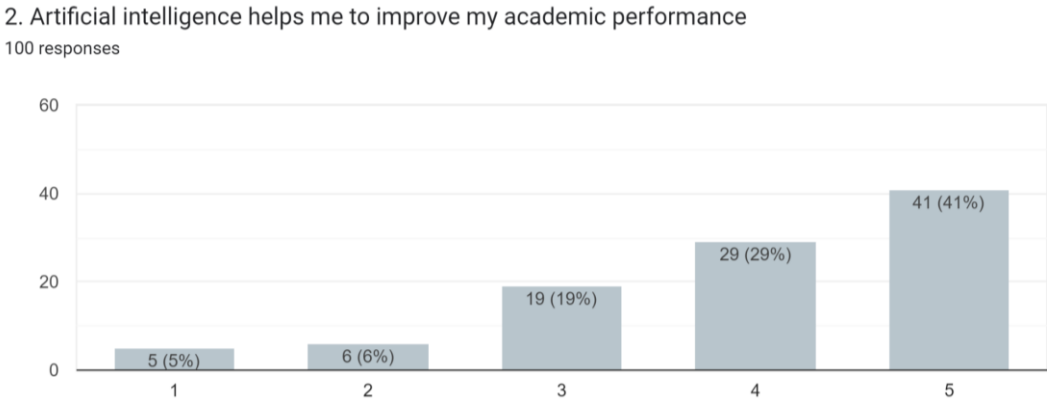


***Figure 3:*** *Artificial Intelligence for Academic Performance*

The third question states, "I think AI technologies such as ChatGPT are great tools that are available 24/7," and 41% of students strongly agreed. The fourth question in Figure 4 says, "I believe generative AI technologies such as ChatGPT can help me save time." 38% of students strongly agreed.

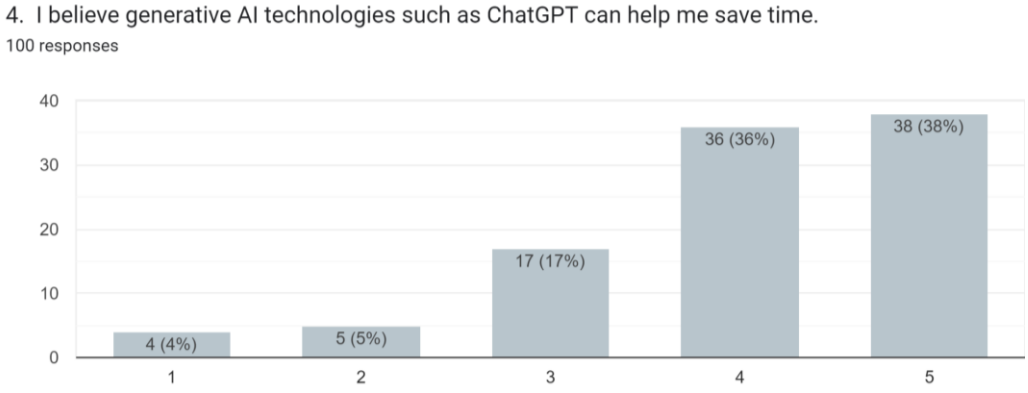


***Figure 4:*** *Artificial Intelligence for Time Management*

*Concerns about Generative AI Technologies*

This section also contains ten (10) questions focusing on the concerns about generative AI technologies. Two main results from Section 4 have been chosen with the research questions.

Figure 5 asked, "There are high chances of detecting plagiarism using AI technologies such as ChatGPT." the results show that 31% of students strongly agreed.

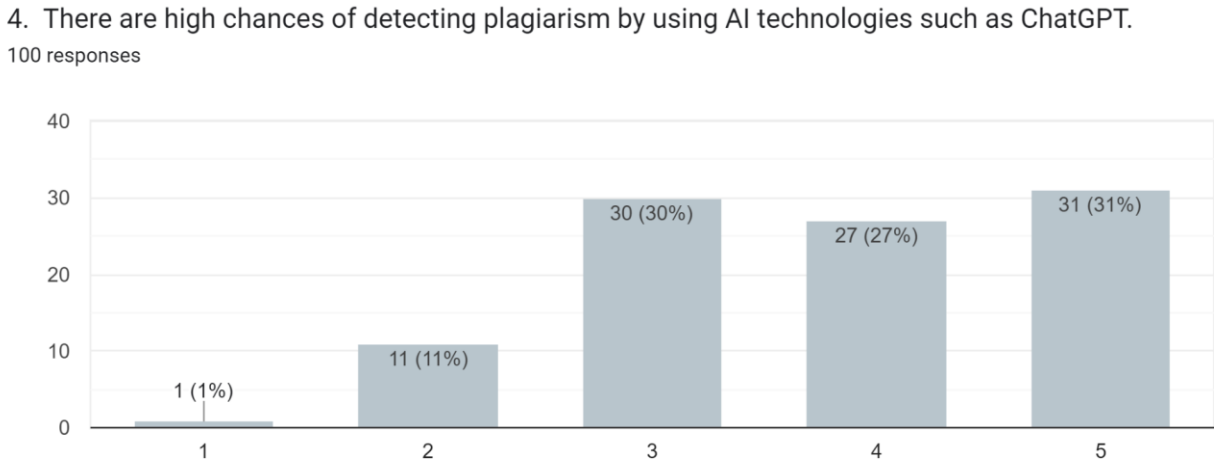


***Figure 5:*** *Concerns towards Plagiarism for Artificial Intelligence*

The eighth question in Figure 6 says, "I am worried that the data privacy and security in AI-based tools are not very trustable." 39% of students feel neutral about the statement.

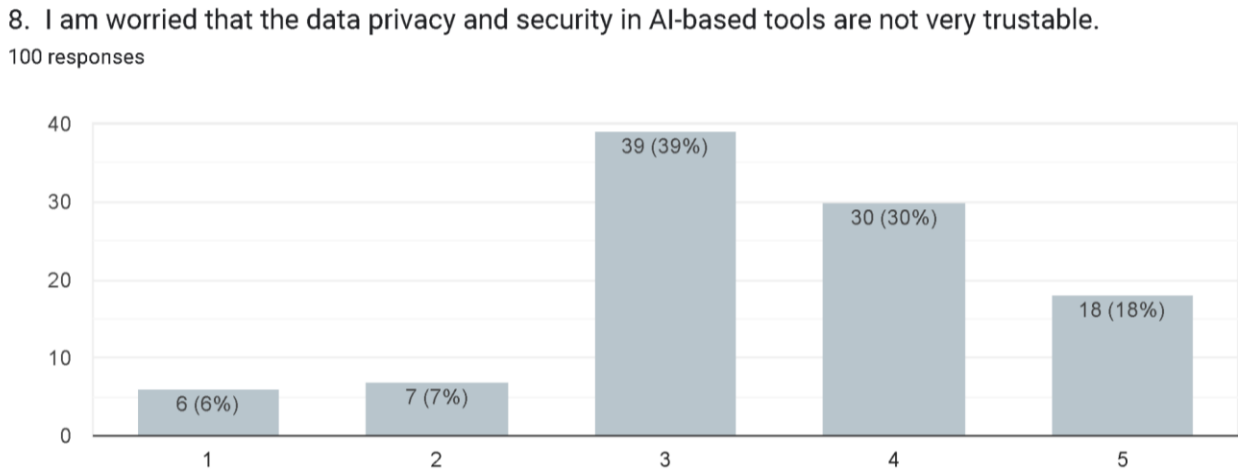


**Figure 6:** *Concerns towards Data Security for Artificial Intelligence*

## DISCUSSION

The current study's findings, which indicate a generally positive attitude of students towards AI in educational contexts, align with the research conducted by Li et al. (2020) and Hsu et al. (2020). These studies also reported favourable perceptions among students, particularly recognising AI's capacity to enhance learning experiences and provide personalised support. The current research supports these findings, with most students acknowledging the benefits of AI, including improved access to educational resources, enhanced time management, and tailored learning experiences. This agreement among studies highlights the increasing acceptance of AI as a valuable asset in tertiary education.

Mirroring the concerns presented in Mishra and Arora's (2020) research, the current study also brings apprehensions about privacy and ethical issues related to AI implementation. This ongoing concern within the academic community underscores the critical need for establishing ethical guidelines and ensuring transparent communication regarding the use of AI in educational environments.

Regarding the impact of prior exposure and familiarity, the current study's findings resonate with Popenici and Kerr's (2017) research. It was observed that students with more significant experience and exposure to AI tools tend to have more favourable attitudes, reinforcing the notion that enhancing AI literacy and familiarity can positively influence attitudes towards AI integration in education.

Supporting Liu et al.'s (2021) findings, the current study also identifies the benefits of AI-based chatbots in students' learning journeys. Students viewed these tools as effective for quickly accessing information and receiving prompt feedback, illustrating AI's positive role in enhancing educational experiences.

Established theoretical frameworks like the Technology Acceptance Model (TAM) and Innovation Diffusion Theory further strengthen the study's conclusions. In line with Davis's (1989) TAM, the perceptions of AI's utility and user-friendliness significantly influence student attitudes. Similarly, Rogers's (2003) Innovation Diffusion Theory is evident in the factors affecting students' acceptance of AI technologies, such as perceived relative advantage and compatibility.

Overall, the current study's findings are consistent with existing literature, reaffirming positive student perceptions of AI in tertiary education while recognising the importance of addressing ethical concerns and challenges. The significant role of prior exposure and familiarity in shaping positive perceptions of AI technologies is a key takeaway, emphasising the need for responsible implementation and usage of AI in educational settings.

## CONCLUSION AND RECOMMENDATION

This study investigated students' perceptions of Artificial Intelligence (AI) in tertiary education. It found that while there is a generally positive view of AI's potential benefits, addressing concerns for its responsible integration in educational settings is critical. The results suggest

that future research should engage in longitudinal studies to track the evolution of students' perceptions of AI over time. Comparative studies across different cultural and educational backgrounds are essential to understanding diverse viewpoints and experiences. Investigating AI's ethical implications and tangible impact on learning outcomes will provide vital insights into its responsible usage.

Additionally, exploring how AI influences teacher-student dynamics and assessing the effectiveness of AI literacy programs are crucial areas for further study. Expanding research to include the perspectives of educators and administrators and examining the application of specific AI tools in various educational contexts will significantly enrich our understanding of how AI can be integrated effectively and ethically in tertiary education. Emphasising a comprehensive approach that considers cultural, ethical, and long-term impacts is essential for AI's successful and responsible adoption in education.

## REFERENCES


Abdullah, Raja Nazim & Muait, J. & Ganefri,. (2019). Students' perception towards modern Technology as teaching aids. *Asian Journal of Assessment in Teaching and Learning. 9*. 37-42. DOI:10.37134/ajatel.vol9.no2.5.2019

Ahmad, T. (2020). Student perceptions on using cell phones as learning tools. *PSU Research Review*, *4*(1), 25–43. http://doi.org/10.1108/PRR-03-2018-0007

Azlan, N.A.binti and Yunus, M.M. (2020) Undergraduates student perceptions of social networking sites to improve English writing skills in Malaysia. *International Journal of Learning, Teaching and Educational Research, 19*(3). https://doi.org/10.26803/ijlter.19.3.18

Buabbas, A.J.; Miskin, B.; Alnaqi, A.A.; Ayed, A.K.; Shehab, A.A.; Syed-Abdul, S.; Uddin, M. (2023) Investigating students' perceptions towards artificial intelligence in medical education. *Healthcare (Basel, 11*(9), 1298. http://doi.org/10.3390/healthcare11091298

Cakrawati, L. M. (2017, December 31). Students' perceptions on the use of online learning platforms in EFL classroom. *Semantic Scholar*. http://doi.org/10.17509/ELT

Chan, C. K. Y., & Zhou, W. (2023, May 2). Deconstructing student perceptions of generative AI (GenAI) through an expectancy value theory (EVT)-based instrument. *ArXiv.org*. https://doi.org/10.48550/arXiv.2305.01186

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology, 53*, 109-132.

Ghufron, M. A., & Ermawati, S. (2018). Facilitating students' verbal creativity in EFL writing course. *English Language and Literature International Conference (ELLiC) Proceedings* (pp. 27–34). https://jurnal.unimus.ac.id/index.php/ELLIC/article/view/3466

Guo, R., Dobson, T., & Petrina, S. (2018). Students' perceptions of artificial intelligence integration in higher education: A cross-cultural study. *British Journal of Educational Technology, 49*(5), 964-978.

GeeksforGeeks. (2023, April 18). *10 best AI tools to boost productivity in 2023.* https://www.geeksforgeeks.org/10-best-ai-tools-to-boost-productivity/

Hafez, O., & Salah El-Din, Y. (2021). Egyptian educators' online teaching challenges and coping strategies during COVID-19. *Arab World English Journal, 12*(4), 279–301. http://dx.doi.org/10.24093/awej/vol12no.419

Hsu, C. Y., et al. (2020). Assessing students' perceptions and acceptance of AI-based learning in higher education. *Interactive Learning Environments, 28*(3), 348-364. http://doi.org/10.1080/10494820.2019.1641705

IBM. (n.d.). *What is Artificial Intelligence (AI)?* https://www.ibm.com/topics/artificial-intelligence

Jeffrey, T. R. (2021). Understanding Generation Z perceptions of artificial intelligence in marketing and advertising. *Advertising & Society Quarterly, 22*(4). https://doi.org/10.1353/asr.2021.0052

Ka, C., Chan, Y., & Hu, W. (2023.). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Education Technology in Higher Education, 20*(43). https://doi.org/10.1186/s41239-023-004118

Khanh, N. T. V., & Gim, G. (2014). Factors influencing mobile-learning adoption intention: An empirical investigation in high education. *Journal of Social Sciences, 10*(2), 51-62. https://doi.org/10.3844/jssp.2014.51.62

Keleş, P. U., & Aydın, S. (2021). University students' perceptions about artificial intelligence.

*Shanlax International Journal of Education, 9*(S1-May), 212–220. https://doi.org/10.34293/education.v9is1-may.4014

Kuleto, V., Ilić, M., Dumangiu, M., Ranković, M., Martins, O. M. D., Păun, D., & Mihoreanu, L. (2021). Exploring opportunities and challenges of artificial intelligence and machine learning in higher education institutions. *Sustainability, 13*(18), 10424. https://doi.org/10.3390/su131810424

Leaper, Campbell. Expectancy-Value Theory. *Sciencedirect.com,* 2014. www.sciencedirect.com/topics/psychology/expectancy-value-theory

Li, J., Zhang, S., Shang, F., Liu, C., & Shao, X. (2020). University students' perception and acceptance of artificial intelligence in education: An empirical study in China. *Computers & Education,* 156, 103947.

Li, N., et al. (2020). Investigating students' perceptions and acceptance of AI-based learning systems in higher education. *IEEE Access, 8,* 20182-20191. http://doi.org/10.119/ACCESS.2020.2960279

Mishra, A., & Arora, R. (2017). A study of students' perception of AI integration in education. *International Journal of Emerging Technologies in Learning, 12*(10), 125-138.

Mishra, P., & Arora, M. (2020). Investigating students' perception of artificial intelligence integration in education. *Journal of Educational Technology Systems, 49*(3), 374-392. https://doi.org/10.1177/004723920906003

Peralta, Johnedel & Lambenicio, Gregerlin. (2022). Students' perception and challenges on technology use in language distance learning. *ResearchGate,* 1-8. https://doi.org/10.5281/zenodo.7031026

Popenici, S., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning, 12*(1), 22-41.

Whorton, S. (2009). *Academic self-efficiency, academic integration, social integration, and persistence among first-semester community college transfer students at a four-year institution.* [Doctoral dissertation, Clemson University] TigerPrints.

Worthington, A. K. (2021, May 30). *Persuasion theory in action: an open educational resource.* University of Alaska Anchorage. https://ua.pressbooks.pub/persuasiontheoryinaction/

Yuan, Y.F. (2012). *Pragmatics, perceptions and strategies in Chinese College English Learning.* [Doctoral dissertation, Queensland University of Technology] https://eprints.qut.edu.au/52860/1/Yifeng_Yuan_Thesis.pdf