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RESEARCH ARTICLE

Students' Perceptions on The Artificial Intelligence (AI) Tools as Academic Support

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ABSTRACT

In today's world, technology is considered a necessity as many can benefit from using it. Education sector also cannot run from integrating and incorporating technology in the teaching and learning process. Therefore, this study would like to investigate students' perceptions on the use of artificial intelligence (AI) as a tool in the classroom. This study employed a quantitative approach in obtaining the data. There were 284 respondents who participated in this study. The instrument used to obtain the data was a set of questionnaires where there were 20 items in it. Other than that, there were 6 sections in the questionnaire representing the constructs of the perceptions. The results showed that students perceived AI as a tool that could help them in their learning process. This implies that educators need to be more ready in using technology in the classroom and they should equip themselves with 21st century skills that are relevant in today's education system. Therefore, integrating technology in teaching and learning processes may assist the educators and students to be more engaged in the classroom and two-way communication may occur.

Contribution/Originality: This research offers a valuable contribution by illuminating on the evolving role of AI in fostering collaboration, engagement, and satisfaction among students. The findings have the potential to influence educators and AI developers to design tools that align more closely with students' learning preferences and goals, contributing to a more rewarding educational journey.

1. Introduction

The current learning preferences focus on the learner's own pace, space, and time when learning in order to facilitate their learning and to achieve a meaningful learning

experience. With asynchronous learning mode, it allows learners to study at their own pace and time (Ahmed & Opoku, 2022). Hence, it is significant to seek out any suitable academic support system that could assist the learners. Educators should understand between the learners' preferences during the learning process and the learning tools used that can ease and enhance their learning activities. Previous years' learning experiences have seen that the learning became more convenient and enjoyable to learners when the learning then was equipped with the basic technology-based learning tools, which consisted of personalisation and interactive features (Wei, 2023). Second language (L2) learners, studying English syntax for instance, were found more motivated than usual and improved in their performance when the learning was incorporated with computer technology and its media material as this mode of learning is one of their preferences that helped elevate their interest (Shahabani et al., 2022). The most exciting part in learning is when learners are able to grasp the learning input and will continue learning when they feel the joy (Cronqvist, 2021), and when they manage to get along with the materials they use.

In recent years with more technological advancement, many are into machine learning resulting from "Artificial Intelligence" (AI) to assist the teaching-learning activities. It works best not only for the learners but also for the instructors and content developers which acts to support the existing learning facilities. "*AI, as a branch of computer science, enables machines to simulate human intelligence, learn from experiences, and perform tasks that typically require human cognitive abilities*" (Wei, 2023). Baidoo-anu and Owusu (2023) mentioned that ChatGPT for instance is able to help learners improve their ability in several skills such as language proficiency as it is functional. Hemachandran et al. (2022) mentioned that with AI, learners can customise lectures in terms of the pace or the language of the lectures to cater for their needs. Hence, the convenience of learning with AI supporting tools does provide learning satisfaction which has the possibility to boost motivation and heighten their achievement (Wei, 2023).

With the good intentions of AI, the frequent monitoring and supervision on every learning activity is still required and can be a great continuous effort to ensure the learning success. Though technology has so much to offer, learning obstacles and frustration amongst the learners can still arise. High achievers normally improve their performance with AI, but not the low achievers as most of them are found to have fear upon the AI creation (Marrone et al., 2022). Therefore, close observation on the usage of AI and how it affects education can be the next wise action to take to determine the success of AI support in the scholarly world.

1.1. Problem Statement

As Artificial Intelligence (AI) has proven its continuous support for education in general, that enhances the existing education practices and has become part of our life which has impacted society (Marques et al., 2020), learners, educators, and the administrators have gained meaningful benefits that ease the learning activities. It is a great assistance and a relief to many when AI can provide interesting and motivating learning devices (González-González et al., 2023), assist in the making of more contemporary and innovative teaching approaches and strategies, support the advancement of systematic administrative work, and so forth. Chatbots interactive features and gamification learning platforms, for instance, boost motivation and engage learners to the learning when they can offer decision-making skills, get learners plan actions, and allow learners to carry out experiments (González-González et al., 2023). Moreover, voice editing and audio recording

to add extra fun for the learners, animated videos for more exciting teaching delivery, software robotics and its automation system to enhance learners' learning engagement, discussion board and so forth are applied impressively. AI too with its automated administrative abilities help in the administrative work which positively affects the efficiency of school administration. For instance, teachers or educators will have ample time to focus on the teaching when not only AI can assist in the examination grading system faster (Chen et al., 2020), class timetabling, lesson plans, and students' data extracting but also it can provide real time feedback to learners (Porter & Grippa, 2020). AI technology too enables teachers to adjust their teaching methods to cater for their learners' level and achievement (Chen et al., 2020).

However, without extra inspection regularly, AI can ruin the creation. It may harm the harmony of the learning activities which potentially spoil and demotivate the learners and other related users who may have relied on the applications and have shown their acceptance to the technology advancement. Hence, educators need to be motivated and well-trained in the AI paradigm; and always be on the lookout so that they are well-versed in all AI concepts which enable them to rectify drawbacks if need be (Marques et al., 2020). Issues may come into sight if the practices of adapting and incorporating machine learning into the teaching and learning are not controlled, regulated, and supervised. If not consistently monitored, AI may do more harm than good. The overuse or over-reliance on AI and its possibility to exploit the educational system become the fear of most educators. This is because AI has the potential to weaken learners' thinking skills and social skills, to destroy learners' awareness of their own talent and advantage, and to spoil learners' unique creativity.

Marrone et al. (2022), in their study with the students in Australia found that "the students believed that AI would negatively impact their social skills". It was claimed that AI lacks human touch and perhaps, AI could be better viewed to assist humans. As in the learning setting when learners are supposed to use their own creativity and thinking skills, learners may have the possibility to plagiarise or to cheat since AI can suggest ways to duplicate work of others. Nurhaliza (2024) mentioned in the study that AI applications can act as a "Copilot to search information, translate text, capture questions to find the answer, record, and smart writing tools" which in her study, it was found that the Apps enable learners to use them for assignments and during examinations. It becomes a distressful situation when AI too can evade plagiarism detector tools. Hence, learners' learning behaviours and their work routines have to be monitored very closely.

In addition, with AI tools, the worries continue when learners are observed to have the probability to duplicate other's artwork naively. They are also prone to limiting their knowledge exploration when AI can do the job easily. These practices might lessen learners' competence to use their own unique creativity, talent and skills. The over-reliance on AI tools can negatively affect learners' natural competence and it can "*impede the cultivation of their creative and critical thinking*" (Deng & Yu, 2022). Al-Zahrani (2024) has found in the study that *"many participants expressed concerns about the potential limitations of overreliance on AI suggestions and its potential role in limiting creativity*".

Another harmful effect with AI tools (machine learning) affects one's language proficiency and habit. Translation machine learning will be the prompt solution to understand difficult content. Learners may have an attempt to use an AI translator tool for any subjects when language is concerned. However, it may potentially provide inaccurate results. Misinterpretation may occur as AI tools hardly understand the relationship between

language and culture; as it lacks emotions and human touch. The words or phrases used in idioms, for example, can be wrongly translated and interpreted. Deng and Yu (2022) have found out that "*students felt machine outputs to be unreliable and inaccurate in terms of idioms and phrases, sentence structures, grammar, certain writing styles, and contexts*". As a result, based on this finding, the students have little trust in this machine translation (MT) because of its technical defects (Deng & Yu, 2022).

Those mentioned drawbacks can negatively affect the focal idea of AI tools in education even though it is indeed implemented to improve the teaching and learning and other related work. Hence, this study would like to investigate the learners' perceptions/acceptance on the use of AI tools in their learning routines and for their academic pursuance based on their affective, behavioural and cognitive engagement. Necessary measures might be needed in order to improve the educational system with AI tools are still in the picture.

2. Literature Review

2.1. Artificial Intelligence Tools

Artificial intelligence (AI) is no longer strange in today's world. AI can be defined as the knowledge where machines and softwares are incorporated into human's daily life which is also part of the computer science industry (Patil et al., 2023). This shows that integrating technology in human's daily activities can be considered a necessity. This technology or AI specifically in the education sector has become popular where the institutions and educators are trying to consolidate in their teaching and learning process as technology works as teaching tools in the classroom (Ahada et al. 2024). This suggests that AI helps and assists educators in making the classroom and teaching process become more relevant as students nowadays can be categorised as digital native. This is because students who are in the category of digital native would trigger the educators to develop and expand their teaching approaches (Rakhmawati & Kusuma, 2015) and it is assumed that the students possess the digital skills (Janschitz & Penker, 2022) which indirectly, the use of AI in the teaching and learning process could enhance students' engagement and satisfaction in learning process (Maini et al., 2021). This indicates that educators were expected to have digital skills and use AI tools in the classroom where the students could perform better in their academics. Therefore, knowing and understanding students' perceptions on the use of digital materials or AI tools could help the educational institutions to be more prepared in receiving more digital native students in the future.

2.2. Perceptions on the Artificial Intelligence Tools in Learning

Technology in education is quite common nowadays especially after COVID-19 pandemic hit the world. The use of technology in education has accelerated as it becomes the future of education (Zhang & Wasie, 2023). This shows that incorporating technology in education is necessary today including artificial intelligence (AI). Studies show that by using AI, students' engagement in the class during the lessons has increased (Nguyen et al., 2024; Prestoza & Banatao, 2024; Zhang & Wasie, 2023). This means students may become more captivated by the approach used by the educators which could lead to more new teaching approaches. In addition, students could be exposed to the real world by travelling to different parts of the world without having to move or go outside of the classroom (Sharma & Singh, 2024). This could help students to be more open-minded and critical when they learn something new because the exposure could make them see things

differently and from different perspectives. Other than that, incorporating AI as learning tools in the classroom could also familiarise students with recent technologies which could cater to students' needs and preferences (Ezeoguine & Eteng-Uket, 2024). Hence, it can be said that AI could assist educators in enhancing students' engagement in the classroom.

Other than that, using technology in classrooms could encourage students to have better interaction in the classroom. Educators could utilise AI or chatbot to assist students to communicate about the topic covered and discussed in the classroom (Marrone et al., 2024). This interaction may happen as the students build their trust to communicate using technology. For example, to search for information, students could ask Siri or Alexa and they could get immediate answers and responses from the digital assistance (Brill et al., 2022). Educators could employ this method in the classroom which could lead to classroom discussion where students could share their thoughts, ideas and opinions. This classroom interaction among the AI applications and peers could help students to build their confidence level and be more critical when discussing recent topics (Darwin et al., 2024; Habib et al., 2024). Moreover, by using AI in the classroom, students could be facilitated to be autonomous learners. Milicevic et al. (2024) discovered that AI could assist educators in teaching process and students in learning process as AI works on its own as long as the users have the internet connection. This suggests that by using AI, educators and students can search for any related information that can be used in classroom discussions on their own which indirectly promotes a learner-centred classroom. In addition, Wang et al. (2023) mentioned that AI could provide support to students who have the intention to use it and students could strengthen their self-efficacy as they become more comfortable to use AI. Thus, AI could be a supportive assistance for students in familiarising themselves with technology.

Artificial Intelligence (AI) sometimes can be seen as destructive where it can make the students lazy to think. However, students perceived that AI can be trusted in terms of the content provided, credibility shown and emotional support presented as students perceived that Ai could enhance their learning, be helpful and the information provided can be valuable (Almufarreh, 2024). This is maybe due to the accessibility of AI and the practicality to use it. Students could benefit from the use of AI in learning as it can personalise the learning and teaching approach used by educators and at the same time it could reduce the risk of cheating among students (Ayala-Pazmiño, 2023). Furthermore, AI could assist students in many ways in their learning process. Almulla (2024) stated that the use of AI in teaching and learning processes could emphasise on the user-friendly element, students could work collaboratively with their peers which could lead to increasing students' motivation level. Besides, AI can be one of the factors to improve students' academic performance. Chaudhary et al. (2024) revealed that since using AI could be adjusted according to students' preferences and experiences, AI could also personalise the assessments which can measure students' comprehension better which enhance students' performance in their academics. Other than that, Ouyang et al. (2023) determined that students who wrote their literature review using AI performed better compared to those students who used traditional methods to write their literature. This shows that AI could assist students to improve their writing skills. On top of that, AI could facilitate students' comprehension as it could accommodate students' learning skills and ability which could improve students' learning experience (Mallillin, 2024). Therefore, it could be summarised that AI can be treated as digital assistance in students' learning process.

3. Research Methods

This section discusses the study's methodology, which includes research design, participants, instrument, data collection and data analysis. This study adopted a quantitative approach as this approach is able to reach a larger scale of respondents and has high representation of the data which may be generalised which still depends on the responses obtained (Queirós et al., 2017). The population of this study consisted of bachelor's degree students randomly selected from UiTM Shah Alam campus in Malaysia, totalling more than 1,000 students. Based on Krejcie and Morgan's (1970) table of sample size, with more than 1000 population, the sample size that should be obtained is between 278 - 384 responses. The respondents were selected using simple random sampling technique where everyone will get the same and equal opportunity to be selected (Noor et al., 2022). Those who participated in this study were 284 respondents. This shows that the responses obtained can represent the population of the study. This study utilised a set of questionnaires to obtain the data. The questionnaire was adapted from Dahri et al. (2024). There were six (6) sections and 20 items in the questionnaire. The sections are (a) demographic information, (b) students' engagement, (c) students' interaction, (d) behavioural intentions, (e) students' satisfaction and (f) improve students' academic performance.

In order to get the data, the researchers contacted the class lecturers and class representatives to distribute the questionnaire. The questionnaire was transferred to Google Forms and distributed using the WhatsApp application for two (2) weeks. When responding to the survey items, respondents were asked to rate their responses using a 5-Likert scale. The data was then analysed using the Statistical Package for the Social Sciences version 29 (SPSS v29) and the results were reported in a form of tables presenting the mean and standard deviation. All procedures involving human participants in this study were carried out in compliance with ethical standards. Informed consent was obtained from all respondents, who were informed that their participation was voluntary and that they could withdraw from the study at any time without facing any consequences.

4. Results

Table 1 shows findings on the participants' perception on their engagement in utilising AI tools as academic support. The highest mean of M=3.99 indicated that most of the participants had the strongest perception that *using AI tools-infused learning practices enhances their engagement in their classroom,* and that *using AI tools increases their active involvement in the learning process.* This is followed by a mean of M=3.95 reflecting those who had a strong feeling towards AI helping them to *create learning experiences in collaboration with their peers.* The lowest mean of M=3.81, indicated the least strength in their perception in increasing their participation and interaction in their classes.

In aspects of AI tools in creating student engagement, the findings portray their strongest perception, showing their most positive opinion on how AI assists in improving their learning experiences. These findings also suggest participants' positive insight into AI turning them into more active learners through collaboration and participation.

Table 2 illustrates data on the participants' perception in terms of their interaction with AI tools. The highest mean of M= 4.13 relates to the participants' freedom in asking questions while using AI tools. This could indicate their most positive perception in terms of a sense of flexibility that the participants feel when using an artificial method of seeking

answers. The next highest mean of M= 4.07 reflects a substantially positive perception in their willingness to *interact with AI tools in the future to keep themselves up to date on the latest era of technology or courses.* The next mean was M=3.97 involving their agreement that *AI tools interaction can seamlessly handle questions related to their academic administration.* The other mean was M= 3.91 in how they felt about being comfortable when getting information using AI tools. This shows that many enjoyed the comfort of using artificial tools for information. The mean of M= 3.84 on their willingness to *devote their time and efforts to explore the benefits of AI tool interaction* could mean that the participants were fairly positive spending a lot of time learning more about how much AI can assist them.

Table 1: Students' Engagement

Items	Mean	Std. Deviation
Using AI tools-infused learning practices enhances my engagement in my classroom.	3.99	.905
AI tools help me create learning experiences in collaboration with my peers.	3.95	.870
Using AI tools increases my active involvement in the learning process.	3.99	.899
Using AI tools increases my participation and interaction in my classes.	3.81	.954
Students' Engagement	3.93	.804

Table 2: Students' Interaction

	Mean	Std. Deviation
I agree that AI tools interaction can seamlessly handle questions related to my academic administration.	3.97	.913
I am willing to interact with AI tools in the future to keep myself up to date on the latest era of technology/Courses.	4.07	.857
I am willing to devote my time and efforts to exploring the benefits of AI tool interaction.	3.84	.924
I feel comfortable getting information using AI tools.	3.91	.938
I feel free to ask questions while using AI tools.	4.13	.843
Students' Interaction	3.99	.736

Table 3 demonstrates the findings on the participants' perceptions on their behavioural intentions when employing AI tools. The highest mean was M= 3.83 on the perception of their willingness to *recommend others to use AI tools for academic matters.* This possibly means that they have their most positive perception in sharing their knowledge of AI tools with other people. The following mean of M= 3.82 on their willingness to *use AI tools to solve problems related to their academic query* suggests their substantially positive perception in viewing AI tools as a solution to satisfy their curiosity / inquisition. Their lowest perception was in planning to *use the AI tools frequently*, possibly suggesting their least interest in depending too much on AI tools.

Table 4 displays findings on the participants' perception in their satisfaction when utilising AI tools. The highest mean of M= 3.95 suggests their most positive view in terms of the effectiveness of AI for gathering and constructing knowledge. This could indicate their positive belief that AI tools assist them in creating new knowledge. The following mean of M= 3.92 reflects the participants' strong belief that *using AI positively influences*

their satisfaction with their study interactions and engagement. Following very closely is the mean of M= 3.91 on their satisfaction with *using AI tools as a learning tool* that indicates their high level of happiness when using AI to help them learn. The lowest (M= 3.72) satisfaction level with *the outcomes of using AI tools in their research*. This implies that they might be feeling least happy in how impactful AI tools are for research work.

Table 3: Behavioural Intentions

	Mean	Std. Deviation
I will use AI tools to solve problems related to my academic query.	3.82	.896
I plan to use the AI tools frequently.	3.54	1.003
I will recommend others to use AI tools for academic matters.	3.83	.977
Behavioural Intentions	3.73	.854

Table 4: Students' Satisfaction

	Mean	Std. Deviation
Using AI tools positively influences my satisfaction with my study interactions and engagement.	3.92	.909
I am satisfied with the outcomes of using AI tools in my research.	3.72	.904
The AI tool is effective for gathering and constructing knowledge.	3.95	.870
I am satisfied with using the AI tools as a learning tool.	3.91	.885
Students' Satisfaction	3.87	.776

Table 5 depicts the participants' perception on AI in improving academic performance. The highest mean (M= 4.00) was their perception in the AI tools helping them improve their knowledge and information. This suggests that many of them had positive belief in AI tools as a source of knowledge and information. The following mean of M= 3.87 refers to their fairly strong belief in *AI tools having a positive influence in their overall learning effectiveness.* The other mean was M= 3.85, indicating many fairly believed that AI helps them improve their experience and performance, and that *the use of AI tools contributes to an improvement in their creativity and academic performance.*

Table 5: Improve Students' Academic Performance

	Mean	Std. Deviation
The use of AI tools contributes to an improvement in my creativity and academic performance.	3.85	.900
I feel the AI tools help me improve my knowledge and information.	4.00	.843
I feel the AI tool helps me improve my experience and performance.	3.85	.899
AI tools have a positive influence on my overall learning effectiveness.	3.87	.899
Improve Students' Academic Performance	3.89	.796

5. Discussion

In aspects of AI tools in creating student engagement, the findings portray their strongest perception, showing their most positive opinion on how AI assists in improving their learning experiences. These findings also suggest participants' positive insight into AI turning them into more active learners through collaboration and participation. This study's positive results indicating many who enjoyed learning engagement were in sync with findings by Nguyen et al. (2024), Prestoza and Banatao (2024) and Zhang and Wasie (2023) on increased engagement during lessons when using AI. Favourable views on the use of AI tools in creating collaboration and participation in the classroom could encourage instructors to incorporate AI in teaching. This supports Marrone et al.'s (2024) paper on how educators could employ AI or chatbot to aid students to communicate and discuss covered topics. Findings on participants' positive perception on active involvement in the learning process echo a discovery by Milicevic et al. (2024) on students who were utilising AI as their assistant in their learning process. In student interaction via AI tools, it indicates that the positive attitude demonstrated by students suggests the ease of users when interacting with AI tools when seeking for answers. Findings on participants' intentions in using AI tools, positive thinking can be seen involving AI's ability in providing solutions and sharing their experiences utilising AI with others. The result shows students' satisfaction in the use of AI, a point that many felt the most positive when employing AI in making them more connected to learning, to assist learning and searching for new knowledge. The participants' high satisfaction in the use of AI tools in creating active learning experience resonates with Maini et al.'s (2021) discovery that utilisation of AI in teaching and learning process could improve engagement and satisfaction in students' learning process. On the other hand, findings of this study on a lower satisfaction in employing AI tools for their research clashes with Ouyang et al.'s (2023) determination that students who used AI to write their literature review showed better performance compared to those who use traditional methods.

It can be seen that most of the respondents had positive perceptions of AI tool's ability in improving their academic performance. Helping to improve their knowledge and information takes precedence. A substantial number of participants also had fairly agreed on creating effective learning, followed by many who also felt positive when AI tools could improve their creativity, experience and performance. In terms of building confidence, this study's shows that participants' perception in AI contributing to improvement in creativity and academic performance echoes Darwin et al. (2024) and Habib et al. (2024)'s that AI applications could assist students to develop their confidence level and discuss more critically when discussing the latest topic. This also echoes Wang et al.'s (2023) view that AI could enhance self-efficacy as students feel more comfortable using AI. In assisting to improve academic performance, findings of this study showed repeated positive outlooks on the use of AI to improve students' level of knowledge, experience and performance. This finding mirrors the findings by Mallillin (2024) who mentioned that AI could aid students' comprehension by accommodating students' learning skills and ability that could enhance students' learning experience. Almulla (2024) also discussed the factors influencing satisfaction in AI ChatGPT for research, and generally discovered that the use of AI in learning allowed students to collaborate with their peers. This mirrors this study's participants' positive point of view on how utilising AI can create collaborations with their contemporaries. Thus, this suggests that students perceived that AI tools could assist their learning process academically.

6. Conclusion

This study reveals that the AI tools are perceived as beneficial and useful for the students in their academic journey, enhancing engagement, collaboration, and academic performance. This shows that the students are engaged during the learning process when AI tools are incorporated which are reflecting considerable consensus that AI facilitates dynamic engagement in learning. AI seems to inspire students to exercise more autonomy of their education, fostering deeper involvement and a more dynamic learning environment.

Students also indicated elevated comfort levels in interacting with AI, admiring the versatility and responsiveness these tools provide which is indirectly showcasing AI's role in nurturing curiosity and offering a safe and unbiased forum for inquiry. Furthermore, participants' behavioural intentions pointed out an inclination to commend AI for academic purpose, although they were not as eager about incorporating it into daily routines. This suggests that while AI is esteemed as a supplementary tool, students may still depend more heavily on traditional ways for regular chores, as mentioned by Mallillin (2024).

In terms of satisfaction, participants found AI impactful for knowledge development which implied its usefulness for synthesising and processing information. Finally, AI is perceived positively in improving academic performance, especially in knowledge development that highlights AI's capacity to improve self-efficacy, creativity, and critical thinking. In summary, students demonstrate acceptance to adopt AI as an educational support tool. It suggests that incorporating AI in classrooms could boost student engagement, satisfaction, and academic performance, providing promising implications for AI's role in the future of education.

Ethics Approval and Consent to Participate

All procedures performed in this study involving human participants were conducted in accordance with the ethical standards. Informed consent was obtained from all respondents as they were informed that their participation in the study was voluntary, and they were allowed to withdraw from the study without having any consequences

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Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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