Exploring Students' Perceptions of ChatGPT: A Study of Public University in Malaysia.

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ABSTRACT

ChatGPT has sparked both excitement and skepticism in education. The release and rapid diffusion of ChatGPT has forced teachers and researchers around the world to grapple with the consequences of artificial intelligence (AI) for education. To analyze its impact on teaching and learning it is crucial to understand how students perceive ChatGPT and assess its potential and challenges. This study investigated students' perception of ChatGPT in higher education. About 360 students responded to a questionnaire which gauged their perceptions regarding use of ChatGPT in teaching and learning at their university. Most of the students rated their level of awareness as very aware and extremely aware. For ability to use ChatGPT they rated themselves as medium or High. The results show that the students admire the capabilities of ChatGPT and find it interesting, motivating, and helpful for study and work. The results show that the students admire the capabilities of ChatGPT and find it interesting, motivating, and helpful for writing assignments However, many students feel that ChatGPT's answers are not always accurate and most of them are knowledgeable about potential benefits and limitations of ChatGPT. So, most students think that ChatGPT needs to be improved but are optimistic that this will happen soon. Most students also mentioned that ChatGPT can provide to students' instant feedback and enhance the learning process and experience. When it comes to the negative impact of ChatGPT on learning academic cheating is the issue they highlighted. We conclude that ChatGPT can and should be used for learning. However, students should be aware of its limitations. The study a found positive relationship between awareness and attitudes to ChatGPT and perceptions towards ChatGPT. The main determinant of perception towards ChatGPT is attitudes toward ChatGPT. Educators should try using ChatGPT and guide students on effective prompting techniques and how to assess generated responses. The developers should improve their models to enhance the accuracy of given answers. The study provides insights into the capabilities and limitations of ChatGPT in education and informs future research and development.

Keywords: ChatGPT, students' perceptions, Higher education, Artificial intelligence.

INTRODUCTION

As technology progresses, education is continually reshaped and transformed. Advances in technology have driven changes in education, while educational needs have also influenced technological development (Potasheva et al., 2019; Mhlanga, 2023; Baidoo & Owusu, 2023). A common trend among educators and learners is the growing adoption of technology within the learning process (Baidoo & Owusu, 2023). Educators leverage tools such as software, applications, online platforms, and various digital devices to enhance both the effectiveness and efficiency of learning.

With the release and rapid spread of ChatGPT, educators and researchers are now confronting the complex challenges AI brings to education. Reactions have varied widely, from optimism about its potential (Greene,

2022; Roose, 2023) to deep concerns for the future of education, particularly in writing instruction (Herman, 2022; Weissman, 2023). Although banning ChatGPT and similar AI tools from educational settings might seem like a straightforward solution, doing so is increasingly impractical. AI-based tools like ChatGPT are now widespread and will likely remain accessible both inside and outside classrooms. The integration of generative AI into products such as Microsoft's Bing, the recent release of GPT-4, and the development of similar tools by major companies like Apple and Google underscore that AI-generated content is here to stay and will remain widely available to the public.

It's essential to recognize how the evolving educational landscape mirrors the skills and competencies expected in today's workplaces. Banning AI-based tools in the classroom could deprive students of valuable opportunities to learn how to effectively incorporate these tools into their future professional workflows. In a world where AI proficiency is increasingly valued, students without hands-on experience in using AI to enhance productivity may lag behind those who are adept at leveraging these tools. The potential of AI to shape education's future is undeniable. As educators and researchers, we have a responsibility to equip students with the skills and knowledge they need to thrive in this changing environment.

LITERATURE REVIEW

ChatGPT in Higher Education

University professors continue to grapple with the fact that students now have access to ChatGPT, a tool capable of producing everything from cookie recipes and computer code to relationship advice (Gordon, 2023; Stokel-Walker, 2022). Educational institutions are concerned about potential cheating and the misattribution of AI-assisted work by students, especially as there is currently no reliable tool to detect AI-generated content or plagiarism (Ventayen & Ventayen, 2023). This situation has sparked discussions about the validity of current performance evaluation models in higher education used to assess student learning and the quality of education.

Academic integrity concerns are longstanding in education, yet the rise of AI-powered chatbots has left academics worldwide questioning their ethical implications (Flores-Vivar & García-Palava, 2023; Gelman, 2023). These tools can generate answers in seconds with human-like language, challenging traditional standards of academic honesty. In academia, data from student evaluations traditionally inform strategies to enhance learning across educational levels. Teachers use this feedback to adapt their methods to better align with students' needs (CERI, 2008). Jeff Maggioncalda, CEO of Coursera, cautions that relying on ChatGPT risks not only outsourcing writing but also critical thinking, which could lead to societal harm through manipulation and misinformation (HR Observer, 2023).

Post-ChatGPT launch, educational institutions, being custodians of knowledge creation and knowledge sharing, have no clue on how to respond to this new tool: on the one hand, we promote the use of technology for learning new information; on the other hand, we must be ethical, responsible, and cautious (Gelman, 2023).

The use of artificial intelligence by students to enhance learning and performance has been a part of education for some time (Du Boulay, 2016). Numerous AI-assisted tools, such as learning management systems, online discussion forums, exam integrity software, lecture transcription services, and chatbots, are commonly used both inside and outside classrooms to make learning more effective and engaging (Chai et al., 2021; Chassignol et al., 2018; Ciolacu et al., 2018). Recently, ChatGPT (Generative Pretrained Transformer), developed by OpenAI, has joined this list. As a language model, ChatGPT can understand natural language and generate human-like responses (Lund & Wang, 2023; Brown et al., 2020). This conversational tool can process complex inputs and provide detailed, original answers (Van Dis et al., 2023), simultaneously supporting and potentially hindering students' learning by reducing the time and effort needed to independently solve assignment questions—skills essential for their future careers.

While many people use ChatGPT as an alternative to search engines or for creative writing, it also has the capability to write academic papers, generate computer code, critically evaluate research, solve case studies,

and compose emails, letters, or poetry, with or without specific instructions (Atlas, 2023). ChatGPT can support various educational contexts, offering students immediate feedback on assignments, aiding in research projects, and personalizing learning by delivering tailored responses that suit individual needs and abilities. It can sustain conversations and provide comprehensive answers that build on the dialogue through follow-up questions (Bhattacharya et al., 2023). This conversational interface enhances user understanding, allowing for a broader perspective on the topic being discussed (Gilson et al., 2023).

Artificial intelligence (AI) holds substantial potential for transforming teaching and learning, offering new ways to create personalized and effective educational experiences (Zawacki-Richter et al., 2019). AI plays a particularly important role in the digital transformation of higher education, with applications like intelligent tutoring systems, teaching robots, learning analytics dashboards, adaptive and personalized learning systems, assessment and feedback tools, human-computer interaction, and intelligent virtual reality becoming well-established over time (Bearman et al., 2022; Ouyang et al., 2022; Hinojo-Lucena et al., 2019; Zawacki-Richter et al., 2019; Ma & Siua, 2018). However, concerns about AI in higher education persist, including risks like reinforcing inequalities, increasing plagiarism, and possibly replacing educators (Cotton et al., 2023). In this context, ChatGPT (Generative Pre-trained Transformer), a language model designed for conversational responses, is gaining significant attention for its potential in tasks like text analysis and automating writing processes in higher education (Zhai, 2022).

RESEARCH DESIGN

In this study, a sample of 360 full-time diploma and degree students at University Tektology MARA (UiTM) Sarawak Campus enrolled in the Oct 2023 – Feb 2024 semester answered the google form questionnaire posted in Telegram groups. The data collection was carried out from 15 to 22 November 2023. In this study, convenience sampling was employed as the sampling design. The term "Student's Perception of ChatGPT" relates to student's opinions and assessments on awareness and attitudes of ChatGPT. The scale measurement of a person's self-reported level of awareness, attitudes and perception of ChatGPT is done through their responses to 18 items in the questionnaire.

A pre-testing was conducted to verify that the questions to be used as the questionnaire are free from vagueness, and bias, and the respondents can understand the questions. Pre-testing is also essential to avoid poor data quality and prevent or reduce items' deletion during the measurement model evaluation. For this study, two (2) experts who were knowledgeable about AI in higher education were invited for the pre-testing phase to provide feedback regarding the questionnaire items. A modification based on the pre-testing was used to generate the final version of the instrument for this study.

The Cronbach's Alpha reliability of the scale was .90 indicating high internal consistency. Each item required students to indicate their level of agreement with a given statement using a 5-point Likert scale, 1 (Strongly disagree) and 5 (strongly agree) Samples of items include, "*ChatGPT can summarize and paraphrase lengthy articles.*" and "*ChatGPT is good as complementary learning resources*". This study uses both descriptive and inferential analysis to study this ChatGPT perceptions amongst university students. The inferential analysis was used to test 3 hypotheses namely:

H1. There is a significant positive relationship between awareness and perceptions of ChatGPT among students in UiTM Sarawak.

H2. There is a significant positive relationship between attitudes and perceptions of ChatGPT among students in UiTM Sarawak.

H3. Attitudes is the main determinant that positively influence perceptions towards ChatGPT among students in UiTM Sarawak.

To test the above three hypotheses the survey data uses awareness and attitudes as the independent variables and perception of ChatGPT as the dependent variable. The sample of items for awareness is "*I am very familiar*

with the ChatGPT and have already used it extensively" and "*I am knowledgeable about the potential benefits of ChatGPT*". The sample items for attitudes is "*I think ChatGPT can enhance the learning experience*" and "*I believe ChatGPT can improve students' academic performance*". The sample items for perceptions of ChatGPT is "*ChatGPT can summarize and paraphrase lengthy articles*" and "*ChatGPT will make academic cheating easier*"

DATA ANALYSIS

Out of the 360 participants, 41.9% were male, and 58.1% were female. The majority of respondents fell within the age range of 21-23 years old (48.3%), followed by those in the 18-22 years old category (35.0%). The largest proportion of participants belonged to the Faculty of Administrative Science and Policy Studies (36.1%), followed by Faculty of Accounting (16.2%). Regarding academic status, 52.2% of respondents were diploma students, while 47.8% were degree students. As for semester the highest number of respondents were in semester 1 (22.5%), while semester 2 had the lowest (6.9%). Majority of students had a GPA in the range of 3.00-3.49 (63.1%). In terms of awareness of ChatGPT, the majority of respondents rated extremely aware or very aware (86.1%). Regarding the ability to use ChatGPT, a large portion of respondents rated either high or medium (83.9 %) This is summarized in Table 1 below.

Table 1: Demographic Profile

Demographic	Frequency	Percentage %
Gender:		
Male	151	41.9
Female	209	58.1
Age:		
18-20 years old	126	35.0
21-23 years old	174	48.3
24 years old and above	60	16.7
Faculty:		
Faculty of Administrative Science and Policy Studies	130	36.1
Faculty of Computer and Mathematical Sciences	60	16.7
Faculty of Business and Management	32	8.8
Faculty of Sports Science & Recreation	30	8.3
Faculty of Applied Sciences	27	7.5
Faculty of Accountancy	23	6.3
Faculty of Hotel and Tourism Management	18	5.0
College of Engineering	6	1.6
College of Contemporary Islamic Studies	4	1.1
College of Creative Arts	3	0.8
Others	27	7.5
Current Academic Undertaking:		
Diploma	188	52.2
Degree	172	47.8
Semester:		
Sem 1	81	22.5
Sem 2	25	6.9
Sem 3	72	20.0
Sem 4	35	9.7
Sem 5	75	20.8
Sem 6	68	18.9
Other (extend)	4	1.1

Cumulative Grade Point Average:		
Below 3.00	42	11.7
3.00-3.49	227	63.1
3.50-4.00	91	25.3
Level of Awareness with ChatGPT:		
Not Aware at all	16	4.4
Somewhat Aware	6	1.7
Moderately Aware	28	7.8
Very Aware	179	49.7
Extremely Aware	131	36.4
Ability to use ChatGPT:		
High	155	43.1
Medium	147	40.8
Low	28	7.8
Never use	40	8.3

Descriptive Analysis

When it comes to the actual interaction with the system, the students have a general understanding of ChatGPT and what it can do (M=3.73) and majority of the students have used ChatGPT before and have a good understanding of its capabilities (M = 4.02). This is confirmed by the observation that most students have already used it extensively (M= 4.02). Interestingly, however, fewer students reported having attended workshops or seminars on ChatGPT (M = 3.20).

As for the impact on learning, most students find that ChatGPT can enhance the learning experience (M = 4.30) and can be used as a complementary resource for learning (M = 3.96). Interestingly, however, fewer students feel that ChatGPT would enhance the learning process (M = 3.68). The students perceive the negative impact of ChatGPT on academic integrity and learning as many students think ChatGPT will make academic cheating easier (M= 4.06). With respect to generated answers, the accuracy of ChatGPT was rated moderately as most students think that ChatGPT sometimes provides inaccurate information. (M=4.21).

With regard to benefits of ChatGPT most students agree that ChatGPT can help writing assignments (M=3.92), summarize and paraphrase lengthy articles (M=3.51), improve the understanding of complex topics (M=4.07) and improve various courses (M=4.19). This is confirmed by the observation that students are knowledgeable about the potential benefits of ChatGPT (M= 3.68). On the other hand, students are aslo knowledgeable about the potential limitations of ChatGPT (M= 3.85). On the other hand, there are modest perceptions of ChatGPT will be able to perform certain tasks better than humans (M = 3.61). As for impact on academic performance, students believe ChatGPT can improve student's academic performance (M = 3.96) This is confirmed by the observation that most students think ChatGPT can provide instant feedback (M= 4.13). This is summarized in Table 2 below.

Table 2: Mean and SD of Survey results of Questionnaire items

ITEMS	MEAN	SD
ChatGPT can enhance the learning experience.	4.30	1.02
ChatGPT sometimes provides inaccurate information.	4.21	.91
ChatGPT has the potential to improve various courses	4.19	1.00
ChatGPT can provide instant feedback to students	4.13	.87
ChatGPT can improve the understanding of complex topics	4.07	1.00
ChatGPT will make academic cheating easier	4.06	1.08
Have used ChatGPT before and have a good understanding of its capabilities.	4.02	.99

Familiar with ChatGPT and have already used it extensively.	4.02	1.16
ChatGPT can improve students' academic performance	3.96	1.08
ChatGPT is good as complementary learning resources	3.96	.82
ChatGPT can help in writing assignment in the university	3.92	.99
Knowledgeable about the potential limitations of ChatGPT.	3.85	1.03
Have general understanding of what ChatGPT is and what it can do	3.73	.90
ChatGPT can enhance the learning process	3.68	.89
Knowledgeable about the potential benefits of ChatGPT	3.68	1.00
ChatGPT will be able to perform certain tasks better than humans	3.61	1.08
ChatGPT can summarize and paraphrase lengthy articles.	3.51	.94
Have attended workshops or seminars on ChatGPT	3.20	1.65

Inferential Analysis

Correlation Analysis

A Pearson correlation was calculated examining the relationship between awareness (IV1) and student's perceptions of ChatGPT (DV). A medium positive correlation was found, $r = 0.641$, $P < 0.01$ indicating a significant relationship between the two variables. If respondents have higher awareness, they tend to have positive perceptions of ChatGPT. Thus, H1 is supported. A Pearson correlation was calculated examining the relationship between attitudes (IV2) and student's perceptions of ChatGPT (DV). A moderate positive correlation was found, $r = 0.766$, $P < 0.01$ indicating a significant relationship between the two variables. If respondents had positive attitudes, they tend to have positive perceptions of ChatGPT. Thus H 2 is supported. The correlations table is shown in Table 3 below:

Table 3: Correlation Table

	IV1	IV2	DV
IV1: Awareness	1		1
IV2: Attitudes	.650**	1	
DV: Student's Perceptions	.641**	.766**	1

**Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

The regression analysis was used to determine which of independent factors was ultimately connected to the dependent variable as shown in Table 4. Thus, the results of regression analysis for this study were shown in the Table 4 below, which refers to the association of independent factors with dependent variable. Based on the result, the R2 value for this model was 0.623 which means that all the independent variables (predictors) explained 62.3 percent of the variance in student's perception of ChatGPT. The results showed that attitude is the main determinant of student's perception of ChatGPT (β=0.606), followed by awareness (β= 0.247). Thus, H3 is supported.

Table 4: Multiple Regression

Independent Variables	Dependent Variable	
	Student's Perceptions of ChatGPT	
	t-value	Std. β
Awareness	5.766	0.247**

Attitudes	14.162	0.606**
R^2	0.623	
R^2 Change	0.620	
F-Change	294.46	

DISCUSSIONS

With the emergence of large language models, a principal question arises for education: Will these models be a chance or a challenge to today's teaching and learning systems? Students are core players in this context. Understanding their perceptions is indispensable for addressing this question. In this study, the students have provided comprehensive and insightful thoughts about ChatGPT that helped to assess the relevance of various aspects of using ChatGPT in education.

The majority of students have previously engaged with ChatGPT and possess a solid understanding of its functions. This aligns with findings in educational technology, which indicate that technology can enhance students' interactive and engaging learning experiences, fostering exploration and experimentation (Makwa, 2019). In accordance with the constructivist approach, technology in education empowers students to take charge of their own skills and knowledge, enabling them to identify what they need to fill their knowledge gaps (Adar & Kandemir, 2008). Consequently, it is evident that ChatGPT, as an AI-driven tool, can support a constructivist learning experience by allowing students to explore ideas, pose questions, and receive immediate feedback, which helps them develop their own understanding of knowledge.

Most students acknowledge that ChatGPT provide instant feedback. Additionally, ChatGPT's individualized feedback can support this process by building on their prior knowledge and experiences and providing personalised suggestions for further learning (Ippolito et al., 2022; Vygotsky, 1962). This feedback can help students detect errors and guide them towards successful improvement, making ChatGPT an effective "More Knowledgeable Other" (MKO) in the learning process (Geng & Razali, 2020).

Students reported that ChatGPT can help in writing assignments as a potential benefit. In higher education, large language models like ChatGPT have the potential to greatly assist researchers and students with various tasks, such as efficiently and effectively completing research and writing tasks, including text generation, language translation, and responding to academic queries (Dwivedi et al., 2023; Kasneci et al., 2023; Lund et al., 2023).

Many students believe that ChatGPT could facilitate academic dishonesty. Upholding academic integrity presents a considerable challenge when utilizing ChatGPT as an AI tool for writing academic assessments, dissertations, and papers (Cotton et al., 2023; Sullivan et al., 2023). To ensure academic integrity while using ChatGPT, it is essential to engage in responsible and ethical use of the information produced by the model (Keith, 2022; Sullivan et al., 2023). ChatGPT generates responses based on data inputs and learned patterns, so users must critically assess the accuracy and validity of the information it provides. To uphold academic integrity, users should acknowledge and cite ChatGPT as a source in their research and data analysis (Cradle, 2023).

Students have noted that ChatGPT occasionally provides inaccurate information. Additionally, the text generated by ChatGPT may reflect factual biases stemming from biased training data, which can reinforce existing misconceptions among learners (Karim, 2023). If students primarily interact with ChatGPT, they may miss out on collaborative learning and discussions, which are vital in constructivist theory for critically evaluating information and building knowledge (Mushaira, 2020; Zajda, 2021; Hein, 1991). The inaccurate information and citations produced by ChatGPT could potentially mislead students (Hsu & Thompson, 2023). Therefore, it is essential for students to fact-check all outputs from ChatGPT during their interactions with the system to identify any biases or inaccuracies and to develop a correct understanding of the subject matter.

The study found positive correlation between awareness, attitudes and students' perceptions of ChatGPT. This finding is consistent with findings by the previous researcher which states that awareness of ChatGPT is significantly influenced by user perception, trust, and stereotype perception (Salah et al., 2023). Besides that, according to Social Cognitive Theory (SCT), it asserts that students with greater awareness about ChatGPT are more likely to have higher perceptions on ChatGPT. Furthermore, according to Kamoun et al. (2023), there is a slight positive correlation between their knowledge and perception, as well as between their attitude and perception. Attitudes is the main determinant of student's perception of ChatGPT. This finding is similar with the findings by Yilmaz et al. (2023), where the results have indicated that the participants had positive perceptions about integrating Chat GPT into their educational activities, with positive attitudes being widely acknowledged as a significant factor influencing technology acceptance and adoption.

IMPLICATIONS

This study has several implications for education and research:

- Although ChatGPT's answering accuracy is moderate, it remains an appealing tool for students, who find it engaging, inspiring, and promising. Educators ought to explore how to leverage this interest effectively. They should assess ChatGPT's strengths and weaknesses in their subject areas and guide students on its beneficial use.
- ChatGPT performs well on specific tasks, like essay writing, and is anticipated to improve shortly. Educators need to prepare for the time when ChatGPT and other large language models become more proficient and less reliant on the quality of prompts. This evolution will change how students learn and could disrupt existing assessment practices. It's not too early to consider innovative assessment strategies for the AI-driven future.
- Further research in educational psychology is necessary to grasp why ChatGPT is perceived as an appealing learning tool. This study has emphasized the importance of a constructivist learning experience for students, enabling them to explore ideas, ask questions, and receive prompt feedback that helps them build their understanding of knowledge and the learning process.
- ChatGPT has been utilized for tasks like essay writing and is expected to enhance its performance soon. Educators should prepare for a future when ChatGPT and similar large language models become more advanced and less reliant on prompt quality. This shift will not only change how students learn but also challenge current assessment approaches. It is timely to begin contemplating innovative assessment methods for the AI era.

CONCLUSION

This research seeks to enhance the understanding of ChatGPT's role in higher education and to assist educators in making informed decisions regarding the use of AI in this context. The integration of ChatGPT and other large language models (LLMs) in higher education offers a range of benefits and challenges. On one hand, ChatGPT can help students generate ideas for their assessments, research, analyses, and writing tasks, potentially enhancing their learning experiences. On the other hand, concerns about academic dishonesty, bias, inaccurate information, and poorly designed assessments may hinder the development of essential graduate skills and encourage superficial learning. Therefore, it is important for both higher education educators and students to be cautious when utilizing this technology for academic purposes to ensure its ethical, reliable, and effective application.

To accomplish this, higher education institutions should prioritize teaching students about the responsible and ethical use of ChatGPT and other generative AI tools. Academics can also create new assessment methods that are difficult for ChatGPT to replicate, focusing on evaluating learning processes instead of just outcomes. Additionally, educators in higher education need to tackle issues related to bias and misinformation in ChatGPT to ensure that students develop accurate knowledge and participate in collaborative learning and discussions. Incorporating AI literacy into the graduate skills curriculum could improve students'

employability and prepare them for the fast-changing job market. Ultimately, the use of ChatGPT in higher education must strike a balance between curbing academic misconduct and fostering academic freedom and innovation while emphasizing the development of essential graduate skills. By doing so, ChatGPT can serve as a valuable tool that enhances students' learning experiences rather than detracts from them.

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