

Acceptance Towards A.I. Use among KPTM Bangi Students in an ESL Classroom

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ABSTRACT

This research investigated the factors influencing students' acceptance of AI technology in an ESL classroom, using the Unified Theory of Acceptance and Use of Technology (UTAUT) as its framework. The study was conducted with a sample of students from Kolej Poly-Tech MARA (KPTM), Bangi campus, who have been exposed to AI technology daily. The research examined the impact of five constructs on students' acceptance of AI technology, as informed by the UTAUT model, namely use experience, performance expectancy, effort expectancy, social influence, and facilitating conditions. The data were collected via a Google Forms questionnaire and analysed using descriptive statistics and correlation analysis. The findings of this study are expected to provide insights into how educators can effectively implement AI technology in ESL classrooms and improve students' ESL learning outcomes.

Keywords: *UTAUT, AI Technology, ESL Classroom, acceptance*

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INTRODUCTION

Learning English as a Second Language (ESL) has become increasingly important in today's globalised world, especially in countries where demand for English proficiency has risen for communication, education, and employment opportunities. According to Smith and Eckroth (2017), the use of Artificial Intelligence (AI) in various fields, including education, has increased. As noted by D'Mello and Graesser (2012) and Hwang and Tu (2021), AI can potentially improve the learning process in ESL classrooms. Numerous studies have explored this topic and have shown promising results. However, it should be noted that the successful implementation of AI technology depends on students' acceptance of and attitudes toward it, so caution is warranted.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a widely accepted framework used in technology adoption studies to explain and predict users' acceptance and adoption of technology in various contexts (Khechine, Lakhal, & Ndjambou, 2016). According to Keerthiwansha (2018), the integration of artificial intelligence (AI) technology in English as a second language (ESL) classrooms has recently become increasingly prevalent. With this latest development in mind, the UTAUT framework, specifically designed to measure technology acceptance, is the best model for identifying the factors influencing students' acceptance of AI in ESL classrooms.

The UTAUT model proposes four key factors influencing users' acceptance and usage of technology: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh, Morris, & Davis, 2003). These factors can explain, with an acceptable degree of confidence, the adoption and use of technology in different settings. Therefore, applying the UTAUT framework to ESL classrooms can help the researcher understand students' attitudes towards AI technology and identify the factors that influence their acceptance and use. Therefore, this research applied the UTAUT framework to investigate the acceptance of AI technology in ESL classrooms and to identify the factors influencing students' willingness to use it in their language learning.

Like many other educational institutions, Kolej Poly-Tech MARA (KPTM) Bangi faces a challenge in incorporating the latest technology in its teaching and learning processes. Despite technological advancements, KPTM Bangi uses traditional methods such as chalkboards and textbooks. In contrast, only the latest computer technology is the Learning Management System (LMS). While these methods may have been effective in the past, they are becoming outdated and inadequate for modern-day students who have been normalised to using the latest technologies on the market (Prensky, 2001). Furthermore, using Artificial Intelligence (AI) in the classroom can revolutionise how students learn, enhancing student engagement and interactivity. By incorporating AI, personalised learning experiences can be provided, improving the quality of education. Therefore, KPTM Bangi needs to upgrade its teaching and learning process with the latest technology to provide the best possible education to its students.

LITERATURE REVIEW

Artificial Intelligence and Its Applications in Education

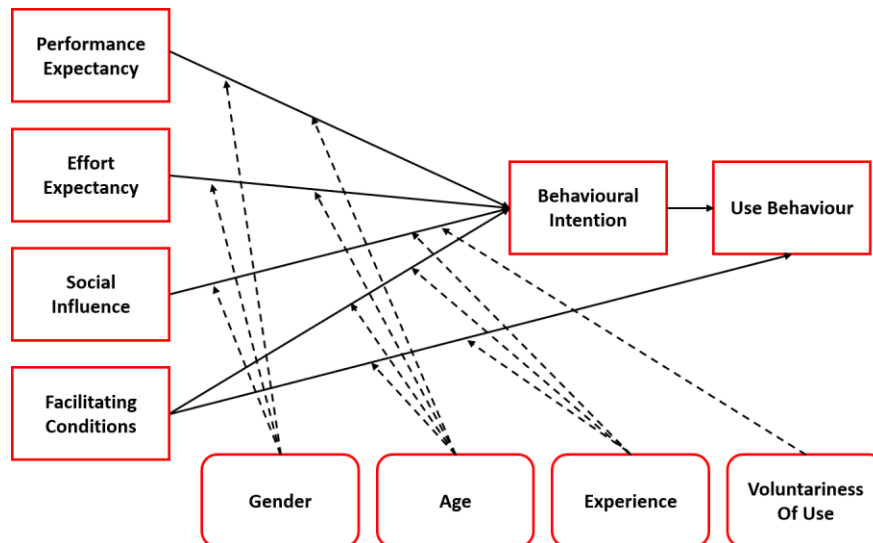
Artificial Intelligence (AI) can revolutionise education by providing new and innovative ways to facilitate teaching and learning. AI technologies, such as machine learning, natural language processing (NLP), and computer vision, can be utilised across a variety of educational applications, including the design of curricula, teaching methods, and assessment methods, to make the learning experience more effective (Eltabakh, 2019). These technologies are believed to help personalise the learning experience for individual students. Maghsudi, Lan, Xu, and Van Der Schaar (2021) noted that this can be achieved through autonomous network formation, as it encourages learners to shift. AI can also automate a teacher's administrative tasks, such as grading, assessment, and feedback, freeing up more time for them to better focus on delivering high-quality instruction and, incidentally, spending more time on each student (Sharma, Tomar, Bhardwaj, & Sakalle, 2021). With the increasing amount of data available in education, AI can also be used for predictive analytics, helping educators identify at-risk students and provide targeted interventions (Latif, Alghazo, Pilotti, & Brahim, 2021; Adnan, Habib, Ashraf, Mussadiq, Raza, Abid, & Khan, 2021). Overall, the potential applications of AI in education are vast, and its integration could transform how students learn and how educators teach.

Technology Acceptance Models

The Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology Acceptance Model (TAM), and the Diffusion of Innovations Theory (DOI) are the three popular technology acceptance models that have been used to understand users' attitudes and behaviours towards the adoption of technology (Taherdoost, 2018; Radhakrishnan & Chattopadhyay, 2020). UTAUT proposed that four key factors influence technology acceptance: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). On the other hand, TAM focused on two key factors, perceived ease of use and perceived usefulness, as predictors of user behaviour (Davis, 1987). On the other hand, DOI emphasised the role of communication channels and social networks in the adoption and diffusion of new technologies (Rogers, 2003). While these models differ in their focus and approach, they all recognise that user attitudes, beliefs, and perceptions towards technology are critical factors in determining their acceptance and use. Understanding these models and their applications

can help researchers identify factors influencing the acceptance and use of AI technology in education, such as in an ESL classroom.

Figure 1:
UTAUT Model



ESL Learning and Teaching

ESL learning and teaching practices have evolved significantly over the years, shifting towards communicative and task-based approaches that prioritise the development of practical language skills (Sanchez, 2004; Rahman, 2010). The traditional grammar-translation method has largely been replaced by more student-centred methods, such as the communicative language teaching approach, which focuses on meaningful communication and interaction among learners (Phung, 2010; Du, 2021). The use of technology in ESL teaching and learning has also become increasingly prevalent, with the availability of online resources, digital textbooks, and language learning applications (O'Brien & Hegelheimer, 2007). However, challenges remain in ensuring equitable access to technology, especially for students from disadvantaged backgrounds (Oyedemi & Mogano, 2018). The COVID-19 pandemic has also accelerated the adoption of online and blended learning models, with many ESL classrooms moving online (Dhawan, 2020; Maphosa, 2021). While these developments offer new opportunities for ESL learning and teaching, they also present challenges in ensuring quality and maintaining student engagement in the virtual classroom (Hu & Li, 2017).

Attitudes and Perceptions of Students Towards Technology

Students' attitudes and perceptions towards technology play a crucial role in determining their acceptance and usage of technology in the classroom (Botero, Questier, Cincinato, He, & Zhu, 2018). While some students are enthusiastic about using technology and see it as a valuable tool for learning, others may be more hesitant or even resistant to its use (Ugur, 2020). Factors influencing students' attitudes towards technology include their prior experience and exposure to technology, their level of digital literacy, and their personal beliefs and values (Metallo & Agrifoglio, 2015; Mou, Shin, & Cohen, 2017). Students' perceptions of technology can also be influenced by their peers and social networks, as well as by the quality of the technology itself and the support provided by their teachers (Zacharis, 2015). Understanding students' attitudes and perceptions towards technology is important for educators, as it can help them design technology-enhanced learning experiences that are engaging, effective, and inclusive for all learners.

Challenges and Benefits of Using AI in ESL Classrooms

The potential benefits of using AI in an ESL classroom, evidenced by previous studies, are numerous and certainly cannot be ignored. According to Xie, Chu, Hwang, and Wang (2019), AI technologies can provide personalised learning experiences tailored to individual students' needs and preferences, enabling more effective and efficient learning. Vinay (2023) further added that AI-powered tutoring systems can also provide immediate feedback to students, helping them identify areas for improvement and guiding them on how to do so. AI can also help teachers track student progress and identify areas where additional support may be needed (Devi, Sreedhar, Arulprakash, Kazi, & Radhakrishnan, 2022). Alam (2021) further added that AI could also help automate teachers' administrative tasks, such as grading, saving them time and allowing them to focus on delivering high-quality instruction.

However, it must be acknowledged that several challenges exist in using AI in an ESL classroom. One major challenge, as highlighted by Oyedemi et al. (2018) is ensuring that the technology is accessible and equitable for all students, especially for those from disadvantaged backgrounds who may not have access to the necessary devices or even an internet connection. Another challenge, as noted by Chu, Nyrup, Leslie, Shi, Bianchi, Lyn, and Grenier (2022), and Fosch-Villaronga, Drukarch, Khanna, Verhoef, and Custers (2022), is the potential for AI to reinforce biases or stereotypes, particularly in language processing and translation applications. Additionally, there are concerns about privacy and data security, as AI technologies often collect and analyse large amounts of potentially sensitive data (Carmody, Shringarpure, & Van de Venter, 2021). To an extent, this concern can also be expanded towards both the teachers and the students. Therefore, educators must carefully consider these potential challenges and address them to ensure that AI is used ethically and effectively in the ESL classroom.

Pedagogical Implications of Using AI Technology in ESL Classrooms

The impact of AI on ESL pedagogy is significant, as it can transform traditional teaching practices and enhance student learning outcomes. For example, Chounta, Bardone, Raudsep, and Pedaste (2022) have indicated that AI that provides personalised and adaptive learning experiences can help teachers deliver more effective instruction and tailor their teaching to individual students' needs. Additionally, Kim, Cha, and Kim (2019) have noted that AI-powered tools such as chatbots can provide immediate feedback to students, helping them identify areas for improvement and enabling far more efficient learning. Carayannopoulos (2018) has also stated that employing chatbots in the classroom can benefit students by being convenient and easy and creating a greater connection with their instructor. Aside from chatbots as an extension of AI technology, Kumar, Sakthivel, Prabhavathy, Rani, Subhashini, and Rekha (2023) have also noted that other ways in which AI technology can be employed to enrich an ESL classroom is through improving the whole learning experience because the AI will be able to adapt to individual learners' specific requirements and interests. All in all, technology has the potential to revolutionise ESL pedagogy and improve students' learning outcomes.

METHODOLOGY

Participants and Procedure

A total of 113 students took part in the study, where the sample characteristics are exhibited in Table 1 below. The students involved came from 5 different study programs offered at KPTM Bangi, and the online questionnaire was completed in August 2023. The link to the survey was shared with them through WhatsApp. The students' participation in the survey was voluntary, and they were initially asked to consent to participate. The participants were also informed about anonymity issues, with an explanation that the data would be utilised only for research purposes.

Table 1: Demographic Characteristics of Participants (N = 113)

Program of Studies					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AA001	2	1.8	1.8	1.8
	AA101	27	23.9	23.9	25.7
	AA231	22	19.5	19.5	45.1
	AB101	41	36.3	36.3	81.4
	BS101	21	18.6	18.6	100.0
	Total	113	100.0	100.0	

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	71	62.8	62.8	62.8
	Male	42	37.2	37.2	100.0
	Total	113	100.0	100.0	

Research Instrument

For this research, an instrument adapted from Almaleki (2020) was employed; it was based on Venkatesh et al. (2003) and the same theory, UTAUT. For her research, four independent variables were identified: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC), and three items were developed and used for each variable. All of these variables are said to have a direct relationship with Behavioral Intention (BI). The instrument developed and used for the current research employed the same 12 items for the four variables. However, the context has changed since, in Almaleki's (2020) case, her research focused on perceptions among Saudi international students.

One additional variable was added to this research's instrument, namely Use Experience (UE), to form the fifth variable directly related to BI. The variable UE, first proposed by Venkatesh, Thong, and Xu (2012) as an expansion on the original theory to form UTAUT 2, has been found to have a direct effect on BI, as stated by Xie (2023), and thus was added to the instrument as well. All of the items used in this instrument obtained a very high Cronbach's Alpha coefficient of 0.911 for PE, 0.887 for EE, 0.881 for SI, 0.842 for FC, and 0.902 for UE. All of these scores indicated that the items used in this instrument have an outstanding level of reliability.

Data Analysis

SPSS version 24.0 was first used to test the instrument's validity and reliability, as well as the items used in the instrument.

Then, a simple descriptive analysis, followed by a correlation analysis, was conducted. The Pearson Product-Moment Correlation analysis was chosen to demonstrate the relationship between the five independent variables and the single dependent variable, BI, as proposed in UTAUT. This research, however, did not include demographics in its analysis due to the relatively homogeneous nature of the respondents, and the researcher believed that they may not have any significant relationship with the variables mentioned above.

FINDINGS AND DISCUSSION

The correlation analysis conducted in this research included five independent variables: Use Experience (UE), Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). The theory used in the research, UTAUT, posited that all five variables should have a significant relationship with the dependent variable, Behavioral Intention (BI), which, in effect, should explain the respondents' acceptance of the use of the technology being researched.

Table 2:
Correlation Coefficient of Variables

		Correlations					
		Use Experience	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions	Behavioral Intention
Use Experience	Pearson Correlation	1	.640**	.686**	.496**	.667**	.607**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	113	113	113	113	113	113
Performance Expectancy	Pearson Correlation	.640**	1	.837**	.580**	.738**	.756**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	113	113	113	113	113	113
Effort Expectancy	Pearson Correlation	.686**	.837**	1	.598**	.815**	.692**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	113	113	113	113	113	113
Social Influence	Pearson Correlation	.496**	.580**	.598**	1	.611**	.600**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	113	113	113	113	113	113
Facilitating Conditions	Pearson Correlation	.667**	.738**	.815**	.611**	1	.758**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	113	113	113	113	113	113
Behavioral Intention	Pearson Correlation	.607**	.756**	.692**	.600**	.758**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	113	113	113	113	113	113

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

From Table 2 above, it can be seen that, in general, all of the five independent variables show a positive relationship with the dependent variable BI. Where UE was theorised to have a positive relationship with BI, the analysis shows a coefficient of 0.607, indicating a moderate positive relationship. PE had a coefficient of 0.756 with BI, indicating a strong positive relationship. The relationship between EE and BI yielded a coefficient of 0.692, indicating a moderate-to-strong positive relationship. The variable SI, of all the five variables, gained the lowest coefficient of all, only 0.600, for its relationship with BI, though it is still moderately positive. The last variable, FC, on the other hand, had the largest coefficient, 0.758, in its relationship with BI, indicating a strong positive association.

Among the factors under consideration of FC include “*having the resources necessary to use AI*” and “*having the knowledge regarding AI*”. Thus, it can be surmised that for KPTM Bangi to enforce the use of AI for their students to learn English, the availability of resources for use and background knowledge regarding the use of AI technology is important to ensure its’ successful implementation. The SI variable, on the other hand, examined factors such as the perception of other people around them who are either “important to them,” “close to them,” or “*influence their behaviour*” towards the use of AI. This can be understood as

simply ensuring that if enough people surrounding these KPTM Bangi students, who matter to them, think highly of using AI, there is a high possibility that the student will also end up using the technology in question.

CONCLUSION

Overall, the analysis conducted here indicates that all 5 identified variables help the researcher determine the level of acceptance of KPTM Bangi students towards the use of AI technologies in an ESL classroom. Of the 5, Facilitating Conditions and Performance Expectancy have shown the strongest relationship with Behavioral Intention, denoting the respondent's intention to use. At the same time, experience and social influence may play only a minor role in helping students become receptive to using AI.

Generally, UTAUT, as a theory, has helped this research better understand the intention to use AI to learn English among KPTM Bangi students, alongside thousands of other researchers who have examined a similar topic: acceptance of adopting and using technology. Admittedly, this paper is limited in scope, as it focuses only on students' perceptions at KPTM Bangi. It could be expanded further to include students from other branches or even other institutions of higher learning in Malaysia.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest, financial or non-financial, that could have influenced the research, authorship, or publication of this manuscript.

AUTHOR CONTRIBUTION STATEMENT

Author 1: Conceptualization, methodology, investigation, formal analysis, writing—original draft preparation, project administration, supervision, validation, writing, review and editing, visualization, and final approval of the manuscript. This author has read and agreed to the published version of the manuscript

ETHICS STATEMENT

This research was conducted in accordance with the ethical standards of KPTM Bangi and the principles of academic integrity and responsible research practices. As this study is a conceptual and qualitative paper based on documentary analysis, comparative ethical analysis, and secondary literature, it did not involve human participants, personal data collection, interviews, surveys, or experimental procedures. Therefore, formal ethical approval and informed consent were not required. All sources used in this study were properly cited, and the analysis was conducted solely for academic purposes.

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