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Exploring Cambodian Students' Attitudes Toward AI Use in Education: The Roles of Perceived Academic Benefits, Accessibility of AI, and School Context

RESEARCH ARTICLES

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ABSTRACT

Considering how artificial intelligence (AI) has significantly transformed education worldwide and the limited research on high school students' perceptions of AI use, especially in developing countries like Cambodia, this study aims to explore how perceived academic benefits, accessibility of AI, and school location collectively predict Cambodian upper-secondary school students' attitudes toward AI use in education. A quantitative research design was employed to investigate the relationship between students' attitudes toward AI use and academic benefits, accessibility of AI, and school location. The sample consisted of 306 upper-secondary school students selected using a combination of convenience and simple random sampling from respondents residing in the capital city and various provinces of Cambodia. Data were analyzed using descriptive and inferential statistics, particularly correlation and multiple regression. The results have shown that perceived academic benefits of AI, accessibility of AI, and school location were significant positive predictors of students' attitudes toward AI use, collectively explaining 57.1% of the variance. It is noteworthy that the perceived academic benefits presented the strongest influence, followed by accessibility of AI. Meanwhile, the school location that represented significant contextual disparities also played an important role in predicting students' attitudes toward AI use. The research provides empirical evidence about the key factors that predict upper-secondary school students' attitudes toward the use of AI-enabled tools in education in Cambodia. It also offers invaluable and context-specific insights for concerned stakeholders to navigate AI adoption in low-resource educational settings. In addition, it suggests avenues for further research into students' attitudes toward AI use in education.

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INTRODUCTION

The recent, fast-paced developments of artificial intelligence (AI) technologies have significantly revolutionized education globally, fostering the use of advanced AI-powered tools, including natural language processing, machine learning and robotics, in pedagogical practices, learning assessment, learning design and content creation, and administrative tasks (Akgun & Greenhow, 2022; Chan & Hu, 2023; Sol et al., 2025b). This rapid revolution has suggested a need for a nuanced understanding of how students perceive and engage with these advanced technologies as primary beneficiaries and direct users. Their attitudes are of benefit to integrate AI-powered tools into the educational system sustainably and equitably.

The growing integration of AI technologies into the educational landscape has become integral for 21st-century teaching and learning, which introduces both opportunities and concerns (Sok & Heng, 2024a; Özer, 2024). As shown in previous studies, the integration of intelligent tutoring systems, adaptive learning platforms, and large language models like ChatGPT has transformed pedagogical methodologies and student learning experiences in various contexts (Adiguzel et al., 2023; Bagheri, 2015; Gligorea et al., 2023; Nikolopoulou, 2024).

Recent studies on students' perceptions of AI have underscored a multifaceted landscape, encompassing perceived academic benefits, adoption attitudes, concerns related to risks, trust in AI, and accessibility challenges (Adiguzel et al., 2023; Baidoo-Anu et al., 2024; Kozak & Fel, 2024). While AI-powered tools have revolutionized teaching and learning, ranging from personalized learning to automated learning assessment, it is widely acknowledged that students' embrace of these groundbreaking tools is significantly shaped by their ease of use and perceived value of AI tools (Rahman et al., 2025; Sova et al., 2024). Moreover, concerns related to academic integrity, privacy, and the potential risk of decline in higher-order thinking skills have also shaped attitudes toward using AI technologies (Özer, 2024). Furthermore, the equitable use of AI in education is inextricably linked to accessibility, particularly in developing nations where digital divides and infrastructure constraints remain major challenges (Aderibigbe et al., 2023).

Notwithstanding increasing research on AI-powered tools in education, the specific focus on students' perceptions in secondary schools in developing nations has been largely overlooked. Most existing research primarily focused on higher education and English language education settings or developed nations (e.g., Arslan et al., 2025; Chan & Hu, 2023; Özer, 2024). Thus, this study aims to address this significant gap by exploring key factors that predict Cambodian upper-secondary school students' attitudes toward AI use in education. Its specific focus is on the roles of perceived academic benefits of AI, accessibility of AI, and school location. One central research question is proposed to guide the study:

> To what extent do perceived academic benefits, accessibility of AI, and school location predict upper-secondary school students' attitudes toward the use of AI in Cambodian education?

It is worth noting that the case of Cambodia is interesting given the rising technological adoption that intersects with varying, generally limited, levels of infrastructure development and educational resources (Keo et al., 2024; Sol et al., 2025a; UNESCO, 2023a; 2023b). These disparities in infrastructure, internet connectivity, and device availability may shape students' engagement with emerging technologies (UNESCO, 2023b), while school location (urban vs. rural) reflects broader structural inequalities in educational resources and digital access in Cambodia and other developing nations (Bhatta et al., 2022; Royal Government of Cambodia, 2021; UNESCO, 2023b). The examination of these three predictors (e.g., perceived academic benefits of AI, accessibility of AI, and school location) is worth considering, as its findings offer a contextual framework for understanding Cambodian upper-secondary students' attitudes toward AI use in education. Additionally, the findings provide valuable insights for developing educational policies, innovative learning assessments, and pedagogical strategies to integrate AI-powered tools into education effectively and inclusively by understanding the factors influencing Cambodian students' attitudes toward AI. The findings can also add to the growing body of literature on students' attitudes toward AI and address the knowledge gap about this topic in the Cambodian context.

LITERATURE REVIEW

ACADEMIC BENEFITS OF USING AI IN EDUCATION

One of the most discussed aspects of AI in education is its capacity to enhance academic outcomes and learning processes (Hanshaw et al., 2024; Srinivasa et al., 2022; Vieriu & Petrea, 2025; Xu, 2024). Previous research has found that students perceived AI-powered tools as valuable for offering instant access to information and enhancing learning efficiency, which helped students with their assignments and problem-solving tasks (Sol et al., 2025a). Moreover, AI-powered tools, like ChatGPT, have been widely used to enhance scientific writing. This tool's capability provides unlimited access in research planning, execution, and presentation while expediting the writing process, refining writing styles, and supporting proofreading (Huang & Tan, 2023; Lingard, 2023; Sol & Heng, 2024). Indeed, some AI-enabled tools have the potential to provide virtual tutors, personalized support that assists students in understanding complex concepts and fostering their overall study performance (Baidoo-Anu & Ansah, 2023; Belawati & Prasetyo, 2025). Research has also found that these AI-enabled technologies foster creativity and promote more interactive and engaging learning, especially in language learning (Baidoo-Anu & Ansah, 2023; Ngo, 2023). These intelligent technologies are also utilized to support inquiry-based learning due to their capability for automated support and community building, further enhancing students' academic achievements (Goel, 2020). These perceived academic benefits are usually a major driver of student interest and initial acceptance of AI-powered tools (Adiguzel et al., 2023; Jo, 2024).

STUDENTS' ATTITUDES AND WILLINGNESS TO UTILIZE AI IN EDUCATION

Students' attitudes toward the use of AI-powered applications and their willingness to use them are considerably influenced by their perceptions of the utility and relevance of AI tools to their learning needs (Abdaljaleel et al., 2024; Almogren et al., 2024; Fošner, 2024). Their attitudes usually reflect their readiness and inclination to use these advanced tools in their learning activities (Chan & Hu, 2023; Kim et al., 2020). Prior studies have demonstrated that a positive attitude is often closely linked to the perceived usefulness and applicability of AI-powered applications in achieving academic goals (Kim et al., 2020). A study by Pande et al. (2023) has shown that high school students generally presented a high and positive attitude toward AI technologies; they appreciated the essential role of these technologies to enhance learning experiences and tailor to varying levels of intelligence. The study, nonetheless, noted that practical applications and awareness to optimize the use of AI tools in educational settings remain critical (Pande et al., 2023). Some studies have found that younger people, aged 26 to 34, were likely to show the most openness toward utilizing AI-powered technologies, and their attitudes were significantly influenced by social group perceptions (Maier et al., 2025). Negative attitudes, nevertheless, may stem from difficulties in use, limited perceived value, or concerns related to the consequences of the use of AI technologies, such as privacy, which potentially serve as barriers to AI use in academic activities (Jo, 2024).

RISKS AND CONCERNS ASSOCIATED WITH AI USE IN EDUCATION

Despite many positive impacts, students were also likely to demonstrate significant concerns regarding the potential risks of using AI in education (Arslan et al., 2025; Baidoo-Anu & Ansah, 2023; Hung & Chen, 2023). Critical concerns are related to the breaches of academic honesty due to misuse or improper use of AI technologies (Sok & Heng, 2024a). Moreover, students have raised their concerns regarding the fear of overdependence or misuse of AI technologies, which results in reduced higher-order thinking skills (i.e., critical thinking, problem-solving, and creativity skills) (Arslan et al., 2025; Pum, 2025; Sok & Heng, 2023). The rise of AI-enabled tools has also amplified the risk of academic plagiarism, blurring the lines between original students' works and AI-generated outcomes (Adiguzel et al., 2023; Bozkurt et al., 2024; Pum & Sok, 2024). Studies have also shown that students unconsciously violate academic principles, a concern particularly relevant in K-12 settings where clear guidelines tend to be lacking (Akgun & Greenhow, 2022; Marrone et al., 2024). Furthermore, the collection and use of student data by AI systems have raised growing worries about privacy and security, especially among adolescents (Holmes & Miao, 2023; Owoc et al., 2021; Özer, 2024).

TRUST AND DISTRUST IN AI USE IN EDUCATION

Students' willingness to utilize AI-powered tools and their concerns about the risks associated with the use of these technologies in education are both important aspects of their trust or distrust in using AI. Previous studies highlighted that trust captures students' confidence in the reliability, fairness, and accuracy of using AI technologies (Kozak & Fel, 2024; Marrone et al., 2024). It also noted that distrust can stem from concerns about misleading information produced by AI or worries about biases embedded in algorithms that have the potential to negatively influence either content delivery or fairness in learning assessments (Adiguzel et al., 2023; Sol et al., 2025a). It has been commonly warned that unchecked biases can undermine trust, which is a critical factor in educational contexts (Lockey et al., 2021). Moreover, trust in AI is of vital importance for its successful utilization; however, many challenges, such as explainability, accuracy, transparency, reliability, and large-scale data extraction, considerably influence students' trust in AI technologies (Lockey et al., 2021). In this sense, it is imperative to develop students' AI literacy to build informed trust and assist them in critically evaluating AI outputs (Özer, 2024). While previous research highlighted that perceived risks and trust in AI can influence technology adoption (Choung et al., 2023; Gefen et al., 2003), these factors are often secondary to perceived usefulness and access in shaping attitudes toward adoption of AI tools (Chiu & Chai, 2020; Ladeira et al., 2025; Venkatesh et al., 2003; Zhang et al., 2025).

ACCESSIBILITY AND USABILITY OF AI IN EDUCATION

Accessibility and usability of AI-powered tools are crucial determinants of adopting AI in education. This includes various factors such as availability of tools and devices, ease of use, and reliable internet connectivity (Almaiah et al., 2022). As prior studies have shown, AI technologies perceived as convenient and available are more likely to be adopted and integrated into learning processes (Choung et al., 2023; Sok et al., 2025). In addition, students' motivation and engagement to use varying AI systems are directly influenced by the user-friendliness of AI interfaces and their wide accessibility (Pyae et al., 2023). However, there have been great disparities in technological access, with an emphasis on developing nations, raising major challenges to utilize AI technologies equitably (Baidoo-Anu et al., 2024; Goel, 2020).

In the Cambodian context, these challenges are pronounced due to the country's status as a developing nation (World Bank, 2024) with over 70% of the population living in rural areas and limited infrastructure (Kepios, 2025). The digital divide is a critical barrier, with rural areas experiencing unstable internet connections (Loma Technology, 2025; Sok & Bennett, 2025). This aligns with global concerns highlighted in recent reviews by Mariyono and Alif Hd (2025), who stated that the digital divide and access to technologies remain critical concerns in rural areas, and therefore, the adoption of AI in education should be focused on equity and accessibility. While AI-driven adaptive systems can adapt content to diverse student needs, the infrastructural limitations and ethical concerns like algorithmic bias prevent these tools from fully adapting (Mariyono & Alif Hd, 2025; Pum & Sok, 2024). Rural Cambodian schools often lack sufficient devices and trained educators (Kepios, 2025; Loma Technology, 2025). Similarly, López Costa's (2025) study in rural Catalan schools found that due to the digital divide and ethical concerns such as plagiarism and reduced critical thinking, practical implementation remains limited, even if teachers reported moderate to high AI knowledge.

The potential of AI as personalized learning platforms can accommodate diverse learning styles and paces of the learner in their learning (Bozkurt et al., 2024; Mariyono & Alif Hd, 2025; Pum & Sok, 2024). However, it is essential to address the divide barriers and unstable internet connectivity issues to integrate the AI tools effectively and inclusively. To promote equity, López Costa (2025) has recommended some strategies, such as optimizing resource allocation and enhancing training mechanisms. In this regard, these strategies could be adapted in Cambodia through partnerships with universities or government initiatives like the Cambodian Education Strategic Plan (Ministry of Education, Youth and Sport, 2024). Moreover, the usability of AI interfaces plays a significant role in shaping students' attitudes. User-friendly designs can enhance engagement, yet in rural Cambodian schools, where exposure to technology is limited, this requires not only accessible tools but also culturally relevant training programs. In this sense, AI should be seen as a support tool for teaching and learning rather than replacing

the teachers (Mariyono & Alif Hd, 2025), implying that Cambodian educators need support to leverage AI effectively.

THE INFLUENCE OF CONTEXTUAL FACTORS ON AI USE IN EDUCATION

Previous research has found that students' perceptions were significantly shaped by the learning context (Darwin et al., 2023; Han et al., 2025; Monib et al., 2025). Research has found that socioeconomic conditions, geographical locations, and school environment play a significant role in influencing how students use AI tools for their education (Kim & Lee, 2024; Pellas, 2023; Santos et al., 2024). In addition, regarding the digital divide, accessibility, reliable infrastructure, and stable internet connection were also consistently found to be critical barriers for equitable and accessible AI use (Ahmed, 2024; Baidoo-Anu et al., 2024; Ngo, 2023; Kim et al., 2011; Raihan et al., 2024), which directly impacted students' ability to leverage AI for learning purposes, advocating for AI training programs and infrastructural improvements to ensure inclusive AI adoption in education (Sol et al., 2025a; Özer, 2024).

School locations can also serve as a critical contextual factor that shapes students' attitudes toward the use of AI-enabled tools in academic activities. As a recent study has shown, students in urban schools, where technological resources and AI-integrated curricula are usually more prevalent, tend to present more positive attitudes toward the use of AI technologies compared to those in remote schools (Sok et al., 2025). This discrepancy significantly stems from the varying levels of exposure to these innovative technologies, the availability of teacher training in AI-supported pedagogy, and institutional support for educational technology (Baidoo-Anu et al., 2024; Ngo, 2023). Studies in the Global South have confirmed that remote teachers and students frequently encounter greater challenges in accessing these advanced technologies, thus resulting in lowering their familiarity and confidence in AI use (Kim & Wargo, 2025; Li, 2025). The shortage of sufficient preparedness and infrastructure among teachers in rural settings further exacerbates these critical challenges, limiting students' opportunities to benefit from AI-driven learning (Kamaghe, 2026; Ngo, 2023). To bridge this technological gap, there is a need for policy initiatives to provide equitable access to AI-based education in all geographical locations (Sol et al., 2025a).

Risks and trust are typically acknowledged as key drivers influencing students' adoption of AI technologies; however, the primary focus of this study is on the three aforementioned predictors. Drawing on prior studies, it is expected that higher perceived academic benefits, greater accessibility, and more advantaged school locations will be positively associated with students' attitudes toward AI in education, providing a clear theoretical basis for the study's research hypotheses.

METHODS

RESEARCH DESIGN

This quantitative research utilizes a survey design to investigate the relationship between students' attitudes toward AI use and perceived academic benefits, accessibility of AI, and school location. The design emphasizes objectivity and replicability, with clearly defined variables and standardized research instruments to ensure reliability and validity of the research (Harwell, 2011; Lim, 2024). This design enables a rigorous examination of causal relationships between variables, contributing to a deeper understanding of the phenomenon under study.

SAMPLE AND SAMPLING STRATEGIES

This study utilized convenient and simple random sampling strategies (Emerson, 2015; Stratton, 2021). First, the convenience sampling was used to select schools and classes in which the target students were enrolled. Second, the simple random sampling was utilized to select the students for the study. Based on these sampling strategies, a total of 315 students completed the online survey. These students were enrolled in high schools in the capital city and provinces in Cambodia. After checking and cleaning the data, nine responses were excluded from the analysis because of their incompleteness and the presence of an unstable or inconsistent pattern. Thus, 306 responses were included in the analysis in this study. Among

these participants, 62.1% were female, and 67% aged from 16 to 18 years. Almost two-thirds of them (61%) studied in Grade 10, while the rest studied in Grade 11 (21.56%) and Grade 12 (16.66%). In terms of school locations, roughly three-quarters of the students (73.52%) were from the capital city (Phnom Penh), while only 26.47% were from various provinces across Cambodia. A vast majority of the respondents (82.50%) were from families with middle-income socioeconomic statuses, whereas only 0.60% of them were of very high socioeconomic statuses. A detailed summary of the demographic information of the respondent was previously reported in (Sok et al., 2025).

RESEARCH INSTRUMENT

The primary research instrument utilized in this study was an online questionnaire. It was structured into two main components: the first section collects participants' demographic information, while the second section is designed to assess students' perceptions of AI use in education. The first section gathered essential demographic details such as gender, age, grade level, English proficiency, the type and location of their schools, and their family socioeconomic status. The second section, comprising 32 items, measured students' perceptions of AI use in education, specifically regarding the attitudes toward AI, accessibility of AI, perceived academic benefits of AI, risks and concerns of AI, and distrust in AI. Responses were recorded on a 5-point Likert-type scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). The development of this questionnaire was initially led by the third author, drawing upon insights from relevant existing literature (Baidoo-Anu et al., 2024; Ngo, 2023; Pum & Sok, 2024). Subsequently, the co-authors reviewed and refined the instrument. This collaborative process aimed to ensure its validity, relevance, clarity of language for both Khmer and English versions, and appropriate alignment with the study's central research question. The authors' extensive backgrounds in teaching provided valuable expertise in crafting a questionnaire suitable for the participants' knowledge and understanding level.

The primary aim of the questionnaire was to examine the participants' perceptions regarding their attitudes toward AI, which consisted of seven items such as 'I think that using AI tools, like ChatGPT, is a wise choice in the future.' The accessibility of AI had four items such as 'I think that the use of AI tools, like ChatGPT, is typical among my classmates and school friends.' For the academic benefits of AI, there were 10 items, for example, 'AI tools help to simplify by explaining in detail about difficult terms, concepts, and topics.' For risks and concerns of AI, there were seven items such as 'I have fear of reducing my critical thinking and creativity skills.' Finally, there were three items concerning distrust in AI, for example, 'I receive falsifying or incorrect responses produced by AI tools, like ChatGPT (Sok et al., 2025).

DATA COLLECTION PROCEDURES

Data for this study were collected using an online survey administered through Google Forms. Before the actual data collection began, a pilot test was conducted with 10 upper-secondary school students. Based on the results of the pilot test, a few questionnaire items were revised to match the participants' language abilities. The revised questionnaire was then administered via Google Forms. The survey link was disseminated via various social networking sites, commonly used in Cambodia, including Telegram (groups and channels), Messenger, and Facebook pages. To facilitate data collection, the researchers solicited assistance from contacts working in upper-secondary schools, particularly teachers, to further distribute the survey link to potential student participants. The target upper-secondary school students voluntarily and anonymously responded to the questionnaire. Ethical data collection was prioritized in this study. The cover page of the questionnaire clearly stated that participation was entirely voluntary, with the right to withdraw at any time without the need to provide a reason. By submitting their responses, the participants consented to the use of their responses for research and publishing purposes. The average time required to complete the survey was 15 minutes. In addition, to ensure ethical standards, approval to conduct the study was sought and granted by the schools involved in this research. Approval from classroom teachers was also sought and received prior to the administration of the questionnaire.

DATA ANALYSIS

Four types of data analysis were involved in this study: (a) confirmatory factor analysis (CFA) to examine the construct validity of the adapted and developed scales in the sample under study; (b) scales' reliabilities, using Cronbach's alpha coefficient; (c) bivariate correlations between study variables; and (d) hierarchical multiple regression to examine how demographic factors (i.e., gender, grade level, age, level of English proficiency, type of institution, school location, and socioeconomic background), perceived benefits of AI (i.e., academic benefits of AI and accessibility of AI), and challenges regarding AI use (i.e., risk and concern, distrust), are associated with students' attitudes toward AI use in education. Construct validity was evaluated through convergent and discriminant validity. Convergent validity is acceptable when the factor loading exceeds 0.50; construct reliability (CR) is 0.70 or higher; and average variance extracted (AVE) is 0.50 or higher (Hair et al., 2019). Discriminant validity is ensured when the inter-construct correlations are smaller than the corresponding square root values of AVE (Fornell & Larcker, 1981).

CFA was estimated by maximum likelihood robust (MLR), which is robust to handle non-normal data (Lei & Wu, 2012). Model fit was evaluated based on the following indices: the chi-square (χ^2)/degree of freedom (*df*) (acceptable when not exceeding 3), the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) (acceptable when exceeding 0.92), the Standardized Root Mean Residual (SRMR) (acceptable when not exceeding 0.08, ideally with CFI above 0.92), and the Root Mean Squared Error of Approximation (RMSEA) (acceptable when not exceeding 0.07, ideally with CFI of 0.92 or higher) (Hair et al., 2019; Hu & Bentler, 1999; Kline, 2016). For the estimation of CFA, Jeffreys's Amazing Statistics Program (JASP) version 0.19.3 was used, while multiple regression analysis was conducted using SPSS version 27.

RESULTS

CONFIRMATORY FACTOR ANALYSIS

Table 1 presents the statistical values of the whole measurement model. The standardized factor loadings ranged between 0.52 and 0.85. The CRs for the academic benefits of AI and accessibility of AI were 0.93 and 0.74, with the AVEs of 0.55 and 0.42, respectively; the CRs for risks and concerns of AI, distrust in AI were 0.88 and 0.75, with the AVEs of 0.51 and 0.50, respectively; the CRs for attitudes toward AI was 0.87, with the AVEs of 0.50. These statistical values indicated acceptable convergent validity (Hair et al., 2019). Moreover, the square root of the AVE of each latent construct was greater than 0.50 and was also higher than the correlation between that latent construct and other latent constructs in the analysis. These statistical values demonstrated acceptable discriminant validity (Fornell & Larcker, 1981; Hair et al., 2019). The CFA results also revealed that the whole measurement model fits the empirical data well, $\chi 2$ (395) = 767.193, $p < 0.001$, CFI = 0.97, TLI = 0.97, SRMR = 0.051, and RMSEA = 0.056 (90% CI = 0.050–0.061), indicating that all the adapted scales could match the Cambodian upper secondary school context.

Table 1 Factor loadings, construct reliability, average variance extracted, and square roots.

VARIABLE	FACTOR LOADING	CR	AVE/SQUARE ROOT
Attitudes toward AI	0.75–0.75	0.873	0.50/0.71
Accessibility of AI	0.56–0.67	0.741	0.42/0.65
Academic benefits of AI	0.62–0.82	0.925	0.55/0.74
Risks and concerns of AI	0.64–0.81	0.878	0.51/0.71
Distrust in AI	0.63–0.78	0.751	0.50/0.71

DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

Table 2 presents means, standard deviations, skewness, kurtosis, and bivariate correlations. The correlation analysis revealed that almost all variables had small to strong correlations (from 0.13 to 0.68), indicating a lack of concern regarding multicollinearity problems (Kline, 2016). Attitudes toward AI, accessibility of AI, and academic benefits of AI were positively correlated

with one another, while risks and concerns of AI and distrust in AI were strongly positively correlated with each other. The positive constructs showed weak or no significant correlations with the negative constructs.

Table 2 Descriptive statistics and bivariate correlations between variables (n = 306).

*p < .05, **p < .01, ***p < .001.

VARIABLE	ATTITUDES TOWARD AI	ACCESSIBILITY OF AI	ACADEMIC BENEFITS OF AI	RISKS AND CONCERNS OF AI	DISTRUST IN AI
Attitudes toward AI	**0.71**				
Accessibility of AI	0.60***	**0.65**			
Academic benefits of AI	0.68***	0.47***	**0.74**		
Risks and concerns of AI	0.14*	0.23***	0.21***	**0.71**	
Distrust in AI	0.04	0.13*	0.05	0.68***	**0.71**
Mean	3.54	3.29	3.71	3.26	3.18
SD	0.70	0.70	0.67	0.75	0.83
Skewness	–0.42	–0.16	–0.65	0.09	–0.06
Kurtosis	0.66	0.44	1.30	0.33	0.02

MULTIPLE REGRESSION

Table 3 shows the results of hierarchical multiple regression analysis. A hierarchical multiple regression analysis was conducted to investigate the extent to which academic benefits of AI, the accessibility of AI, and school location predict students' attitudes toward AI use in education. Three models were tested sequentially.

Table 3 Summary of hierarchical regression analysis for variables predicting students' attitudes toward AI use in education (n = 306).

Note: Dependent variables: Attitudes toward AI use in education. Predictors: Academic benefits of AI, accessibility of AI, and school location. The covariates gender, age, grade, level of English proficiency, type of educational institutions, family's socioeconomic status, risks and concerns of AI, and distrust in AI were considered but not included in the final model.

MODEL	PREDICTOR	B	SE	β	T	P	R^2	F	df	P (MODEL)
1	(Constant)	0.91	0.16		5.59	0.00	0.467	266.67	1, 304	<.001
	Academic benefits of AI	0.71	0.04	0.68	16.33	0.00				
2	(Constant)	0.40	0.16		2.45	0.02	0.564	195.88	2, 303	<.001
	Academic benefits of AI	0.54	0.04	0.52	12.08	0.00				
	Accessibility of AI	0.35	0.04	0.35	8.19	0.00				
3	(Constant)	0.21	0.18		1.16	0.25	0.571	134.05	3, 302	<.001
	Academic benefits of AI	0.53	0.04	0.51	12.02	0.00				
	Accessibility of AI	0.36	0.04	0.36	8.45	0.00				
	School location	0.14	0.06	0.09	2.26	0.03				

In Model 1, the academic benefits of AI were entered as a sole predictor. The model was statistically significant, $F(1, 304) = 266.67$, $p < 0.001$, and accounted for approximately 46.70% of the variance in students' attitudes toward AI use in education, $R^2 = 0.467$. Academic benefits of AI were a significant positive predictor ($\beta = 0.68$, $p < .001$), indicating that students who recognized AI benefits also tended to report stronger positive attitudes toward AI use in education.

In Model 2, accessibility of AI was added to the regression. The model explained a significantly greater proportion of the variance, $R^2 = 0.564$, $F(2, 303) = 195.88$, $p < 0.001$. Both academic benefits of AI ($\beta = 0.52$, $p < .001$) and accessibility of AI ($\beta = 0.35$, $p < .001$) were significant predictors, suggesting that students who perceived AI benefits and had access to AI tools also reported more positive attitudes toward AI use.

In Model 3, a school location was added. The results from Model 3 indicated that roughly 57.1% of the variability in students' attitudes toward AI use in education can be explained by the combined predictors, which included academic benefits of AI, accessibility of AI, and school location, $R^2 = 0.571$, $F(3, 302) = 134.05$, $p < 0.001$. In this model, all three predictors demonstrated significant positive effects on students' attitudes toward AI use in education. Specifically, the academic benefits of AI had the strongest influence ($\beta = 0.51$, $p < 0.001$), followed by accessibility of AI ($\beta = 0.36$, $p < 0.001$). Notably, while school location is statistically significant, the effect size is small ($\beta = 0.09$, $p = 0.03$). This suggested that students' attitudes toward AI use in education were significantly and positively influenced by the perceived academic benefits of AI and accessibility of AI, while school locations tended to play a minor yet notable role.

DISCUSSION

The present study revealed that perceived academic benefits of AI, accessibility of AI, and school location were significant positive predictors of students' attitudes toward AI, collectively accounting for 57.1 % of the variance. These results offered crucial, context-specific insights for relevant stakeholders to integrate AI in underdeveloped educational settings like Cambodia. The results are in line with prior studies highlighting that students perceived AI positively because it enhances learning efficiency, gives prompt information and feedback, aids in assignments, and assists in problem-solving tasks (Pum & Sok, 2024; Sol et al., 2025a).

This study also found that the perceived academic benefits of AI ($\beta = 0.51$, $p < 0.001$) were the strongest predictor of students' positive attitudes toward AI, demonstrating that tangible utility is the most powerful driver of positive attitudes, even in a resource-constrained environment. This finding is consistent with previous studies indicating that the perceptions of these academic benefits of AI were often a primary driver of students' interest and initial acceptance of AI tools (Adiguzel et al., 2023; Kelly et al., 2023; Pyae, 2025). For example, Kelly et al. (2023) found that behavioral intention, willingness, and use behavior of AI across various industries were influenced by perceived usefulness, performance expectancy, attitudes, trust, and effort expectancy. This result suggests that emphasizing the academic benefits of AI-powered tools may help foster students' positive attitudes toward the use of AI. However, given the nature of self-reported data, it is essential to cautiously interpret this finding. In addition, accessibility of AI was also found to be the second strongest significant positive predictor of students' attitudes toward AI use. This particular finding is in line with global studies that have found that access to technology and digital infrastructure significantly influenced the effectiveness of adoption of such tools in education (Almaiah et al., 2022; Khatri & Karki, 2023).

It is important to note that not everyone in Cambodia is able to access a stable internet connection, have digital devices, and get training on digital literacy (Keo et al., 2024; Sol et al., 2025a). These inequalities directly influenced students' willingness and ability to engage with these advanced AI tools. As noted by Mariyono and Alif Hd (2025), in rural areas, the digital divide and the ability to access technology remain significant barriers, which contribute to unequal AI adoption in education unless addressed through inclusive policies. In this study, school location was also found to be a positive predictor of students' attitudes toward AI, which is consistent with previous research in the Cambodian context, indicating that the educational environment, including available resources and exposure to technology, significantly shapes students' perceptions (Keo et al., 2024; Sol et al., 2025a). In addition, our study confirms other previous studies conducted in developing countries, which found that rural students usually faced significant challenges in accessing AI-powered tools or resources (Kim et al., 2011; Pellas, 2023). However, students in urban schools are generally equipped with better technological infrastructure and exposed to AI concepts and resources (Sok et al., 2025). These challenges led to unfamiliarity and a lack of confidence in using AI tools for educational purposes among rural students (Kim et al., 2011; Pellas, 2023). A similar finding was found by López Costa (2025) that teachers have moderate levels of AI knowledge, but the practical implications of such tools were limited because of the lack of digital divide and their concerns about plagiarism. Therefore, there is an urgent need to tackle these geographical inequalities that will be more likely to promote a more uniformly positive attitude toward AI across Cambodia.

While the present study solely focused on the positive predictors of attitudes toward AI, the presence of perceived risks and concerns of AI and distrust in AI among the students should not be overlooked. Despite the fact that these negative constructs did not show strong significant correlations with attitudes in the bivariate analysis, they represented crucial aspects of students' perceptions of AI that could warrant attention for the responsible use of AI technologies. Notably, major concerns related to unethical use of AI technologies, such as academic integrity issues, privacy concerns, over-reliance on AI, and potential biases associated with AI use, seem to be critical challenges in education. This finding corroborates previous research, which found that ethical considerations, such as data privacy and algorithmic bias, are key barriers, especially in underserved areas where access disparities amplify risks (Mariyono & Alif Hd, 2025; Pum, 2026; Pum & Sok, 2024; Sok et al., 2025). In addition, López Costa (2025) and Pum and Sok (2024) have found that teachers are concerned that AI tools may reduce critical thinking and the problem of academic misconduct in the rural setting. Therefore, it is important to develop students' AI literacy and establish ethical frameworks. This aligns with extant studies that highlighted ethical dilemmas and practical challenges in AI use in educational settings (Arslan et al., 2025; Holmes & Miao, 2023; Pum & Sok, 2024; Sok & Heng, 2024b).

CONCLUSION AND IMPLICATIONS

The present study has provided empirical evidence about the key factors that predict upper-secondary school students' attitudes concerning the use of AI-enabled tools in education in Cambodia. In particular, the findings have highlighted the significant positive influence of perceived academic benefits and accessibility of AI on students' attitudes toward leveraging AI in education. Notably, school locations also have a crucial role to play in shaping these students' attitudes toward the use of AI. By addressing the identified gaps in the literature, this study has underscored the significance of considering both the intrinsic value of AI tools and the external factors that facilitate or hinder their use in fostering students' positive perceptions of leveraging AI in education. To offer the effective, ethical, and inclusive use of AI technologies in education, particularly in developing countries, there is a need to highlight the academic benefits of AI, improve the accessibility of AI for all students regardless of their locations, and address consistent concerns related to risks and concerns of AI and trust and distrust in AI. Such invaluable insights may offer potential strategies to educators, policymakers, and AI developers to encourage a more positive and inclusive environment related to the use of AI-powered tools in secondary education and education in general.

This study's findings offer several implications. First, teachers may enhance student attitudes toward the use of AI in their education by emphasizing the academic benefits of AI tools. Second, the government should invest in digital infrastructure, devices, and internet connections to provide inclusive access and resources needed for rural students. Finally, it is necessary for policymakers to develop inclusive and effective policy guidelines and procedures to govern the use of AI technologies in education and prevent the improper use of these advanced technologies in education. Finally, AI technologists should focus on creating user-friendly and accessible AI technologies that can respond to various students' learning needs.

While the present study has offered empirical findings concerning factors that influence students' attitudes toward the use of AI in education, it is important to acknowledge certain limitations. First, as this study uses a cross-sectional design, causal relationships between the predictors and students' attitudes can not be established. Second, the specific population of upper-secondary school students was skewed toward urban students (73.52% from Phnom Penh), which may limit the generalizability of the findings to other educational levels or sociocultural contexts. Future studies, therefore, should build upon these findings with practical and contextually relevant approaches. For instance, even though a full longitudinal study is usually resource-intensive, a more achievable direction could involve a short-term follow-up study tracking a cohort of students over one academic year to observe how their attitudes evolve with increased exposure to AI-powered tools and associated instruction in Cambodian curricula. Qualitative methods involving observation, focus group discussions, and/or in-depth interviews with upper-secondary school students and teachers from both urban and rural schools are also recommended. In addition, it is important to conduct comparative case studies of specific schools or regions in Cambodia that have implemented AI initiatives, as they could

provide practical lessons learned concerning successful integration strategies and persistent barriers. Finally, comparative studies between students in neighboring developing nations that encounter similar infrastructural and cultural challenges can offer broader regional empirical evidence and identify shared strategies for promoting positive AI attitudes among students and teachers.

DATA ACCESSIBILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

SUSTAINABLE DEVELOPMENT GOALS (SDGs)

This study is linked to the following SDG(s): Quality Education (SDG 4) by promoting equitable and innovative learning through AI integration in schools. It also contributes to Industry, Innovation, and Infrastructure (SDG 9) and Reduced Inequalities (SDG 10) by addressing technological access and contextual disparities in education.

ETHICS AND CONSENT

Ethical data collection was prioritized in this study. The cover page of the questionnaire clearly stated that participation was entirely voluntary, with the right to withdraw at any time without the need to provide a reason. By submitting their responses, the participants consented to the use of their responses for research and publishing purposes.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS (CRediT)

Mengkorn Pum: Conceptualization, methodology, formal analysis, investigation, data curation, visualization, writing—original draft preparation, writing—review and editing; Kimkong Heng: Conceptualization, methodology, formal analysis, investigation, data curation, visualization, writing—original draft preparation, writing—review and editing; Sarin Sok: Conceptualization, methodology, formal analysis, investigation, data curation, visualization, writing—original draft preparation, writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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REFERENCES

Abdaljaleel, M., Barakat, M., Alsanafi, M., Salim, N. A., Abazid, H., Malaeb, D., ... & **Sallam, M.** (2024). A multinational study on the factors influencing university students' attitudes and usage of ChatGPT. *Scientific Reports*, *14*(1), 1–14. https://doi.org/10.1038/s41598-024-52549-8

Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & **Ani, E. C.** (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, 4(3), 185–199. https://doi.org/10.51594/csitrj.v4i3.629

Adiguzel, T., Kaya, M. H., & **Cansu, F. K.** (2023). Revolutionizing education with AI: Exploring the transformative potential of ChatGPT. *Contemporary Educational Technology*, *15*(3), 1–13. https://doi.org/10.30935/cedtech/13152

Ahmed, F. (2024). The digital divide and AI in education: Addressing equity and accessibility. *Journal of AI Integration in Education*, *1*(2), 12–23. https://researchcorridor.org/index.php/jaiie/article/view/259

Akgun, S., & **Greenhow, C.** (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, *2*(3), 431–440. https://doi.org/10.1007/s43681-021-00096-7

Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajjej, F., Thabit, S., El-Qirem, F. A., … & **Al-Maroof, R. S.** (2022). Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: Students' perceptions at the university level. *Electronics*, *11*(22), 1–22. https://doi.org/10.3390/electronics11223662

Almogren, A. S., Al-Rahmi, W. M., & **Dahri, N. A.** (2024). Exploring factors influencing the acceptance of ChatGPT in higher education: A smart education perspective. *Heliyon*, *10*(11), 1–19. https://doi.org/10.1016/j.heliyon.2024.e31887

Arslan, N., Haj Youssef, M., & **Ghandour, R.** (2025). AI and learning experiences of international students studying in the UK: An exploratory case study. *Artificial Intelligence in Education*, *1*(1), 1–23. https://doi.org/10.1108/AIIE-10-2024-0019

Bagheri, M. M. (2015). Intelligent and adaptive tutoring systems: How to integrate learners. *International Journal of Education*, *7*(2), 1–16. https://doi.org/10.5296/ije.v7i2.7079

Baidoo-Anu, D., & **Ansah, L. O.** (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Journal of AI*, *7*(1), 52–62. https://doi.org/10.61969/jai.1337500

Baidoo-Anu, D., Asamoah, D., Amoako, I., & **Mahama, I.** (2024). Exploring student perspectives on generative artificial intelligence in higher education learning. *Discover Education*, *3*(1), 1–21. https://doi.org/10.1007/s44217-024-00173-z

Belawati, T., & **Prasetyo, D.** (2025). Generative AI-based tutoring for enhancing learning engagement and achievement. *Open Praxis*, *17*(2), 211–226. https://doi.org/10.55982/openpraxis.17.2.902

Bhatta, S. D., Katwal, S., Pfutze, T., Ros, V., Wong, Y. N., & **No, F.** (2022). *Learning Loss in Cambodia and the Use of EdTech during COVID-19*. World Bank. https://doi.org/10.1596/38351

Bozkurt, A., Xiao, J., Farrow, R., Bai, J. Y., Nerantzi, C., Moore, S., … & **Asino, T. I.** (Eds.). (2024). The manifesto for teaching and learning in a time of generative AI: A critical collective stance to better navigate the future. *Open Praxis*, *16*(4), 487–513. https://doi.org/10.55982/openpraxis.16.4.777

Chan, C. K. Y., & **Hu, W.** (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education*, *20*(1), 1–18. https://doi.org/10.1186/s41239-023-00411-8

Chiu, T. K. F., & **Chai, C. S.** (2020). Sustainable curriculum planning for artificial intelligence education: A self-determination theory perspective. *Sustainability*, *12*(14). https://doi.org/10.3390/su12145568

Choung, H., David, P., & **Ross, A.** (2023). Trust in AI and its role in the acceptance of AI technologies. *International Journal of Human–Computer Interaction*, *39*(9), 1727–1739. https://doi.org/10.1080/10447318.2022.2050543

Darwin, Rusdin, D., Mukminatien, N., Suryati, N., Laksmi, E. D., & **Marzuki.** (2023). Critical thinking in the AI era: An exploration of EFL students' perceptions, benefits, and limitations. *Cogent Education*, *11*(1), 1–18. https://doi.org/10.1080/2331186X.2023.2290342

Emerson, R. W. (2015). Convenience sampling, random sampling, and snowball sampling: How does sampling affect the validity of research? *Journal of Visual Impairment & Blindness*, *109*(2), 164–168. https://doi.org/10.1177/0145482X1510900215

Fornell, C., & **Larcker, D. F.** (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Fošner, A. (2024). University students' attitudes and perceptions towards AI tools: Implications for sustainable educational practices. *Sustainability*, *16*(19), 1–15. https://doi.org/10.3390/su16198668

Gefen, D., Karahanna, E., & **Straub, D. W.** (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, *27*(1), 51–90. https://doi.org/10.2307/30036519

Gligorea, I., Cioca, M., Oancea, R., Gorski, A. T., Gorski, H., & **Tudorache, P.** (2023). Adaptive learning using artificial intelligence in e-learning: A literature review. *Education Sciences*, *13*(12), 1–27. https://doi.org/10.3390/educsci13121216

Goel, A. (2020). *AI-powered learning: Making education accessible, affordable, and achievable*. arXiv. https://arxiv.org/abs/2006.01908

Hair, J. F., Black, W. C., Babin, B. J., & **Anderson, R. E.** (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Han, B., Nawaz, S., Buchanan, G., & **McKay, D.** (2025). Students' perceptions: Exploring the interplay of ethical and pedagogical impacts for adopting AI in higher education. *International Journal of Artificial Intelligence in Education*, 1–26. https://doi.org/10.1007/s40593-024-00456-4

Hanshaw, G., Vance, J., & **Brewer, C.** (2024). Exploring the effectiveness of AI course assistants on the student learning experience. *Open Praxis*, *16*(4), 627–644. https://doi.org/10.55982/openpraxis.16.4.719

Harwell, M. R. (2011). Research design in qualitative/quantitative/mixed methods. In *The Sage handbook for research in education: Pursuing ideas as the keystone of exemplary inquiry* (pp. 147–164). SAGE Publications, Inc. https://doi.org/10.4135/9781483351377.n11

Holmes, W., & **Miao, F.** (2023). *Guidance for generative AI in education and research*. UNESCO Publishing. https://doi.org/10.54675/EWZM9535

Hu, L. T., & **Bentler, P. M.** (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://psycnet.apa.org/doi/10.1080/10705519909540118. https://doi.org/10.1080/10705519909540118

Huang, J., & **Tan, M.** (2023). The role of ChatGPT in scientific communication: Writing better scientific review articles. *American Journal of Cancer Research, 13*(4), 1148–1154. https://pmc.ncbi.nlm.nih.gov/articles/PMC10164801/

Hung, J., & **Chen, J.** (2023). The benefits, risks and regulation of using ChatGPT in Chinese academia: A content analysis. *Social Sciences*, *12*(7), 1–15. https://doi.org/10.3390/socsci12070380

Jo, H. (2024). From concerns to benefits: A comprehensive study of ChatGPT usage in education. *International Journal of Educational Technology in Higher Education*, *21*(1), 1–29. https://doi.org/10.1186/s41239-024-00471-4

Kamaghe, J. (2026). Generative AI as a partner for teachers in building personalised learning paths for students with ease in Tanzania. *Research in Learning Technology, 34*, 1–14. https://doi.org/10.25304/rlt.v34.3594

Kelly, S., Kaye, S. A., & **Oviedo-Trespalacios, O.** (2023). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics, 77*. https://doi.org/10.1016/j.tele.2022.101925

Keo, V., Sam, R., Lan, B., & **Wen, R.** (2024). Challenges and opportunities of educational technology integration in Cambodian higher education institutions: A literature review. *International Journal of Education, Psychology and Counseling*, *9*(54), 157–176. https://doi.org/10.35631/IJEPC.954013

Kepios. (2025, March). *Digital 2025: Cambodia*. Data Reportal – Global digital insights. https://datareportal.com/reports/digital-2025-cambodia

Khatri, B. B., & **Karki, P. D.** (2023). Artificial intelligence (AI) in higher education: Growing academic integrity and ethical concerns. *Nepalese Journal of Development and Rural Studies*, *20*(01), 1–7. https://doi.org/10.3126/njdrs.v20i01.64134

Kim, J., Merrill, K., Xu, K., & **Sellnow, D. D.** (2020). My teacher is a machine: Understanding students' perceptions of AI teaching assistants in online education. *International Journal of Human–Computer Interaction*, *36*(20), 1902–1911. https://doi.org/10.1080/10447318.2020.1801227

Kim, J., & **Wargo, E.** (2025). Empowering educational leaders for AI integration in rural STEM education: Challenges and strategies. *Frontiers in Education*, *10*, 1–13. https://doi.org/10.3389/feduc.2025.1567698

Kim, P., Hagashi, T., Carillo, L., Gonzales, I., Makany, T., Lee, B., & **Garate, A.** (2011). Socioeconomic strata, mobile technology, and education: A comparative analysis. *Educational Technology Research and Development*, *59*, 465–486. https://doi.org/10.1007/s11423-010-9172-3

Kim, S. W., & **Lee, Y.** (2024). Investigation into the influence of socio-cultural factors on attitudes toward artificial intelligence. *Education and Information Technologies*, *29*(8), 9907–9935. https://doi.org/10.1007/s10639-023-12172-y

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Kozak, J., & **Fel, S.** (2024). How sociodemographic factors relate to trust in artificial intelligence among students in Poland and the United Kingdom. *Scientific Reports*, *14*(1), 1–10. https://doi.org/10.1038/s41598-024-80305-5

Ladeira, W. J., Jafar, S. H., & **Santini, F. de O.** (2025). A meta-analysis of technological adoption of financial services: investigating risk and trust perception effects. *International Journal of Bank Marketing*, 1–29. https://doi.org/10.1108/IJBM-02-2025-0156

Lei, P. W., & **Wu, Q.** (2012). Estimation in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 164–180). Guilford Press.

Li, M. (2025). Exploring the digital divide in primary education: A comparative study of urban and rural mathematics teachers' TPACK and attitudes towards technology integration in post-pandemic China. *Education and Information Technologies*, 1913–1945. https://doi.org/10.1007/s10639-024-12890-x

Lim, W. M. (2024). What is qualitative research? An overview and guidelines. *Australasian Marketing Journal*, *33*(2), 199–229. https://doi.org/10.1177/14413582241264622

Lingard, L. (2023). Writing with ChatGPT: An illustration of its capacity, limitations & implications for academic writers. *Perspectives on Medical Education, 12*(1), 261–270. https://doi.org/10.5334/pme.1072

Lockey, S., Gillespie, N., Holm, D., & **Someh, I. A.** (2021). A review of trust in artificial intelligence: Challenges, vulnerabilities and future directions. *Proceedings of the 54th Hawaii International Conference on System Sciences*, 5463–5472. https://doi.org/10.24251/HICSS.2021.664

Loma Technology. (2025, May). *Internet infrastructure in Cambodia: 2025 outlook*. LomaTechnology. https://lomatechnology.com/blog/internet-infrastructure-in-cambodia-2025-outlook/3148

López Costa, M. (2025). Artificial intelligence and data literacy in rural schools' teaching practices: Knowledge, use, and challenges. *Education Sciences*, *15*(3), 1–14. https://doi.org/10.3390/educsci15030352

Maier, R., Ghiocanu, Ș. C., Costin, A., & **Simion, I.** (2025). Students' attitude towards artificial intelligence and its predictive factors. BRAIN. *Broad Research in Artificial Intelligence and Neuroscience*, *16*(1), 264–275. https://doi.org/10.70594/brain/16.S1/22

Mariyono, D., & **Alif Hd, A. N.** (2025). AI's role in transforming learning environments: a review of collaborative approaches and innovations. *Quality Education for All*, *2*(1), 265–288. https://doi.org/10.1108/QEA-08-2024-0071

Marrone, R., Zamecnik, A., Joksimovic, S., Johnson, J., & **De Laat, M.** (2024). Understanding student perceptions of artificial intelligence as a teammate. *Technology, Knowledge and Learning*, 1–23. https://doi.org/10.1007/s10758-024-09780-z

Ministry of Education, Youth and Sport. (2024). *Education strategic plan 2024–2028*. Phnom Penh: MoEYS. https://moeys.gov.kh/storage/uploads/documents/67316f9d3a57f.pdf

Monib, W. K., Qazi, A., & **Mahmud, M. M.** (2025). Exploring learners' experiences and perceptions of ChatGPT as a learning tool in higher education. *Education and Information Technologies*, *30*(1), 917–939. https://doi.org/10.1007/s10639-024-13065-4

Ngo, T. T. A. (2023). The perception by university students of the use of ChatGPT in education. *International Journal of Emerging Technologies in Learning*, *18*(17), 4–19. https://doi.org/10.3991/ijet.v18i17.39019

Nikolopoulou, K. (2024). Generative artificial intelligence in higher education: Exploring ways of harnessing pedagogical practices with the assistance of ChatGPT. *International Journal of Changes in Education, 1*(2), 103–111. https://doi.org/10.47852/bonviewIJCE42022489

Owoc, M. L., Sawicka, A., & **Weichbroth, P.** (2021). Artificial intelligence technologies in education: benefits, challenges and strategies of implementation. In IFIP *International Workshop on Artificial Intelligence for Knowledge Management* (pp. 37–58). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-85001-2_4

Özer, M. (2024). Potential benefits and risks of artificial intelligence in education. *Bartın University Journal of Faculty of Education*, *13*(2), 232–244. https://doi.org/10.14686/buefad.1416087

Pande, K., Jadhav, V., & **Mali, M.** (2023). Artificial Intelligence: Exploring the attitude of secondary students. *Journal of E-Learning and Knowledge Society*, *19*(3), 43–48. https://doi.org/10.20368/1971-8829/1135865

Pellas, N. (2023). The influence of sociodemographic factors on students' attitudes toward AI-generated video content creation. *Smart Learning Environments*, *10*(1), 1–20. https://doi.org/10.1186/s40561-023-00276-4

Pum, M. (2025). The paradox of augmentation and erosion: Navigating utility, critical agency, and trust deficit in AI writing tools among Cambodian English major undergraduates. *Interdisciplinary Educational Technology*, *1*(1), 1–15. https://interedtech.com/download/the-paradox-of-augmentation-and-erosion-navigating-utility-critical-agency-and-trustdeficit-in-ai-17573.pdf

Pum, M. (2026). The perceived impact of AI-assisted writing tools on writing autonomy, confidence, and creativity among Cambodian first-year university students: A Quantitative study. *Sage Open*, *16*(1). https://doi.org/10.1177/21582440251415304

Pum, M., & **Sok, S.** (2024). Leveraging AI in education in Cambodia: A review of perceived concerns and associated benefits. *Asian Journal of Distance Education*, *19*(2), 157–167. https://www.asianjde.com/ojs/index.php/AsianJDE/article/view/794. https://doi.org/10.2139/ssrn.4932278

Pyae, A. (2025, June). Understanding Students' Acceptance, Trust, and Attitudes towards AI-generated Images for Educational Purposes. In *Proceedings of the 2025 Conference on Creativity and Cognition* (pp. 338–343). https://doi.org/10.48550/arXiv.2411.15710

Pyae, A., Ravyse, W., Luimula, M., Pizarro-Lucas, E., Sanchez, P. L., Dorado-Diaz, I. P., & **Thaw, A. K.** (2023). Exploring user experience and usability in a metaverse learning environment for students: A usability study of the artificial intelligence, innovation, and society (AIIS). *Electronics*, *12*(20), 1–26. https://doi.org/10.3390/electronics12204283

Rahman, M. K., Ismail, N. A., Hossain, M. A., & **Hossen, M. S.** (2025). Students' mindset to adopt AI chatbots for effectiveness of online learning in higher education. *Future Business Journal*, *11*(1), 1–25. https://doi.org/10.1186/s43093-025-00459-0

Raihan, M. M., Subroto, S., Chowdhury, N., Koch, K., Ruttan, E., & **Turin, T. C.** (2024). Dimensions and barriers for digital (in) equity and digital divide: A systematic integrative review. *Digital Transformation and Society*, *4*(2), 111–127. https://doi.org/10.1108/DTS-04-2024-0054

Royal Government of Cambodia. (2021). *Cambodia digital economy and society policy framework 2021–2035*. https://asset.cambodia.gov.kh/mptc/media/EN-Policy-Framework-of-Digital-Economy-and-Society.pdf

Santos, Z. M. B., Cadano, K. J., Gyawali, Y. P., Alieto, E. O., & **Clorion, F. D.** (2024). Navigating between conditions and convictions: Investigating the influence of socio-geographical factors on interest and attitudes toward artificial intelligence among secondary school teachers. In S. Motahhir & B. Bossoufi (Eds.), *Digital Technologies and Applications*. ICDTA 2024. Lecture Notes in Networks and Systems, (Vol. 1101, pp. 168–177). Springer, Cham. https://doi.org/10.1007/978-3-031-68675-7_17

Sok, S., & **Bennett, L.** (2025). Using MOOCs for professional development purposes by education professionals in Cambodia: A qualitative study. *Issues in Educational Research*, *35*(1), 320–338. https://www.iier.org.au/iier35/sok.pdf

Sok, S., & **Heng, K.** (2023). ChatGPT for education and research: A review of benefits and risks. *Cambodian Journal of Educational Research, 3*(1), 110–121. https://doi.org/10.62037/cjer.2023.03.01.06

Sok, S., & **Heng, K.** (2024a). Opportunities, challenges, and strategies for using ChatGPT in higher education: A literature review. *Journal of Digital Educational Technology*, 4(1), 1–11. https://doi.org/10.30935/jdet/14027

Sok, S., & **Heng, K.** (2024b). *Generative AI in higher education: The need to develop or revise academic integrity policies to ensure the ethical use of AI*. Cambodia Development Center. https://www.cd-center.org/wp-content/uploads/2024/07/P124_20240702_V6IS1_EN.pdf

Sok, S., Heng, K., & **Pum, M.** (2025). Investigating high school students' attitudes toward the use of AI in education: Evidence from Cambodia. *Sage Open*, *15*(3). https://doi.org/10.1177/21582440251353575

Sol, K., & **Heng, K.** (2024). AI-powered chatbots as personalized academic writing assistants for non-native English speakers. In M. A. Peters, Heraud, R. (Ed.), *Encyclopedia of Educational Innovation* (pp. 1–5). Springer. https://doi.org/10.1007/978-981-13-2262-4_313-1

Sol, K., Heng, K., & **Sok, S.** (2025a). Using AI in English language education: An exploration of Cambodian EFL university students' experiences, and perceptions. *Journal of Science of Learning and Innovations*, *1*, 1–32. https://doi.org/10.1163/29497736-bja00015

Sol, K., Sok, S., & **Heng, K.** (2025b). Rethinking assessment in higher education in the age of generative AI. In M. A. Peters & R. Heraud (Eds.), *Encyclopedia of Educational Innovation* (pp. 1–5). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-13-2262-4_327-2

Sova, R., Tudor, C., Tartavulea, C. V., & **Dieaconescu, R. I.** (2024). Artificial intelligence tool adoption in higher education: A structural equation modeling approach to understanding impact factors among economics students. *Electronics*, *13*(18), 1–30. https://doi.org/10.3390/electronics13183632

Srinivasa, K. G., Kurni, M., & **Saritha, K.** (2022). Harnessing the power of AI to education. In *Learning, Teaching, and Assessment Methods for Contemporary Learners*. Springer Texts in Education (pp. 311–342). Springer Singapore. https://doi.org/10.1007/978-981-19-6734-4_13

Stratton, S. J. (2021). Population research: Convenience sampling strategies. *Prehospital and Disaster Medicine*, *36*(4), 373–374. https://doi.org/10.1017/S1049023X21000649

UNESCO. (2023a). *Global education monitoring report 2023: Technology in education—A tool on whose terms?* UNESCO Publishing. https://doi.org/10.54676/UZQV8501

UNESCO. (2023b). *Technology in education: A case study on Cambodia*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000387739

Venkatesh, V., Morris, M. G., Davis, G. B., & **Davis, F. D.** (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Vieriu, A. M., & **Petrea, G.** (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences*, *15*(3), 1–12. https://doi.org/10.3390/educsci15030343

World Bank. (2024). *Rural population (% of total population) — Cambodia*. https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=KH

Xu, Z. (2024). AI in education: Enhancing learning experiences and student outcomes. *Applied and Computational Engineering*, *51*(1), 104–111. https://doi.org/10.54254/2755-2721/51/20241187

Zhang, C., Hu, M., Wu, W., Kamran, F., & **Wang, X.** (2025). Unpacking perceived risks and AI trust influences pre-service teachers' AI acceptance: A structural equation modeling-based multi-group analysis. *Education and Information Technologies, 30*(2), 2645–2672. https://doi.org/10.1007/s10639-024-12905-7

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