Investigating students' perceptions towards artificial intelligence in the College of Education at Kuwait University

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Abstract

This study aimed to examine the perceptions of College of Education students at Kuwait University regarding the use of artificial intelligence in education. The research employed a descriptive analytical approach. Using a questionnaire, 633 students participated to share their views on AI. The questionnaire was randomly distributed to the sample using both paper-based and electronic formats to maximize reach. Participants were informed about the study's purpose, assured of the confidentiality of their responses, and provided consent before taking part. The results showed that students had a moderate level of attitudes and knowledge about AI, with interest in AI surpassing their actual knowledge. Additionally, inferential statistics indicated no statistically significant differences between students based on gender and age. However, there were significant differences related to higher academic years (fourth and graduate) concerning attitudes and knowledge of AI. This study is limited to students at the College of Education, and further research involving more colleges and students across Kuwait is recommended.

Keywords: Artificial Intelligence, Perceptions, College of Education, Kuwait.

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□دراسة تصورات الطلبة نحو الذكاء الاصطناعي في كلية التربية بجامعة الكويت

وليد العنزي نادية الرياحي أحمد سليمان

المستخلص

هدفت هذه الدراسة إلى استكشاف تصورات طلاب كلية التربية بجامعة الكويت حول استخدام الذكاء الاصطناعي في قطاع التعليم. استخدمت الدراسة منهجًا تحليليًا وصفيًا. باستخدام استبيان، شارك في الدراسة 633 طالبًا لتقديم تصوراتهم حول الذكاء الاصطناعي. تم توزيع الاستبانة على عينة الدراسة بشكل عشوائي وذلك باستخدام الصيغ الورقية والإلكترونية لضمان الوصول إلى أكبر عدد ممكن من المشاركين. وتم إبلاغ المشاركين بهدف الدراسة، وضمان سرية إجاباتهم، والحصول على موافقتهم قبل المشاركة. كشفت نتائج الدراسة عن مستوى متوسط من المواقف والمعرفة بالذكاء الاصطناعي بين طلاب كلية التربية في جامعة الكويت، حيث كان اهتمام الطلاب بالذكاء الاصطناعي أكبر من معرفتهم بهذه التكنولوجيا. بالإضافة إلى ذلك، كشفت الإحصاءات الاستدلالية عن عدم وجود فروق ذات دلالة إحصائية بين فئات الطلاب من حيث الجنس والعمر، بينما كانت هناك فروق ذات دلالة إحصائية تتعلق بفئات السنة الدراسية العليا (الرابعة والدراسات العليا) فيما يتعلق بمواقف ومعرفة الذكاء الاصطناعي. تقتصر هذه الدراسة على طلاب كلية التربية. ومن المستحسن إجراء المزيد من الدراسات التي تشمل المزيد من الكليات والطلاب في الكويت.

الكلمات المفتاحية: الذكاء الاصطناعي، التصورات، كلية التربية، الكويت.

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Introduction

Global investment in the education sector in Information and Communication Technology (ICT) has risen significantly. It is projected that global investments in ICT education will surpass $350 billion by 2025. There is a growing emphasis on integrating and embracing Artificial Intelligence (AI) in the field of education (Al-Badi & Khan, 2022)[1]. AI is a term that was coined in 1956 by John McCarthy, who defined it as "the science and engineering of making intelligent machines, especially intelligent computer programs" (Almaraz-López, Almaraz-Menéndez, & López-Esteban, 2023). AI refers to enabling machines to mimic intelligence through providing them with human-like abilities like comprehension, logic, and problem-solving (Buabbas et al., 2023). AI processes outside information, assimilates knowledge from it, and applies that knowledge to accomplish particular objectives and activities (Enholm et al., 2022). These features make AI tools helpful in various fields, including learning and education (Trappey et al., 2017). AI has made its way into the conventional education system with the ability to revolutionize it entirely (Al-Badi & Khan, 2022). The goal is to provide custom learning resources and courses. AI in the education sector has great potential to customize learning experiences and make education more accessible globally. AI-powered educational platforms, smart agents, automated scoring and evaluation, and chatbots for learner-to-instructor and student-student interaction and teamwork are part of it (Holmes, Bialik, & Fadel, 2019). It has also begun to play a role in education through the use of teaching robots, intelligent tutoring, virtual classrooms, and adaptive learning systems (Chen, Chen, & Lin, 2020; Chen et al., 2022; Demir & Güraksın, 2022; Huang, Saleh, & Liu, 2021). Furthermore, AI can assist in educational settings by automating tasks like student admissions, creating smart content, and digitizing textbooks in schools (Alzahrani, 2023). Recent evaluations have shown that AI has the potential to assist students in acquiring knowledge, developing emotionally, and enhancing their language skills (An et al., 2023). AI can also assist in e-learning by analyzing the learner profile to create a suitable learning environment and link them with the appropriate learner network (Kashive, Powale, & Kashive, 2020). The 21st century has seen the emergence of AI in foreign language education to replicate students' language acquisition (Lee, Davis, & Lee, 2024).

[1] APA 7th edition style.

In this context of AI use in education, it is worth noting that UNESCO has been at the forefront of worldwide initiatives focused on AI and education, with the goal of guaranteeing that the integration of AI in education is beneficial for all; and educational systems impart the skills required for the AI era (Miao & Holmes, 2022; Pedro et al., 2019). In recent years, AI's significance in the educational sector has increased due to its ability to enhance learning in different environments (Lutfi, 2022), It holds significant potential for decreasing barriers to learning access, automating management processes, and optimizing methods to enhance student performance and ultimately, learning results (Almaiah, Alfaisal, Salloum, Hajjej, Thabit, El-Qirem, & Alkhdour, 2022). Even though AI technology has various advantages in the education field, it is not always embraced by teachers, administrators, or students, indicating that its full potential is not being fully realized (Chrisinger, 2019; Sakulwichitsintu, 2022). Furthermore, technology usage could result in negative emotional reactions caused by the discomfort and unfamiliarity of educational tools when students are just beginning to interact with computers (Almaiah, Alfaisal, Salloum, Hajjej, Thabit, El-Qirem, & Alkhdour, 2022). Consequently, it is imperative to study students' perceptions of AI use in the educational context.

In the Kuwaiti context, as far as we know, there is limited research on the use of AI technology in the education industry in Kuwait. Considering the limited usefulness of previous studies on student views regarding the use of AI in the education sector in Kuwait, the current study aims to investigate how students at Kuwait University's College of Education (CEKU) perceive the use of AI in education.

Literature Review

A survey of the literature about AI use in education will further clarify the context of this study. This section will address four topics, namely students 'perceptions of AI use in education, constraints of this use, the importance of AI training, and the Gulf context concerning AI use in education.

Students' perceptions

Throughout history, AI has been defined as the creation of smart machines capable of completing tasks that usually require human intelligence (Almaraz-López, Almaraz-Menéndez, & López-Esteban, 2023), and the incorporation of AI into the field of education has garnered considerable interest in recent years, with expected worldwide

investments to surpass $350 billion by the year 2025. This significant number emphasizes the significance of comprehension regarding students' attitudes towards AI, particularly with its increasing presence in educational environments (Al-Badi & Khan, 2022).

An et al. (2023) explored how the use of AI for language learning by middle and high school students is influenced by technological, social, and motivational factors in a distinct educational setting. By utilizing a questionnaire with eight factors and 524 valid responses, the study put forth various hypotheses grounded in the UTAUT model. It found that motivational factors, like past learning experiences and cultural interests in AI, act as mediators in the connection between technological and social influences and students' acceptance of AI.

On the other hand, in their study, Chen et al. (2022) pointed out how growing up with AI technologies like Siri and Amazon Alexa can influence children's attitudes and cognitive growth. Research on middle and high school students showed that their views of Alexa became more positive after attending week-long workshops where they coded conversational agents. Post-workshop evaluations revealed that students believed Alexa was smarter and felt a stronger connection, with notable links between perceptions of Alexa's warmth, reliability, and security.

In addition, Jeffrey (2020) conducted a quantitative analysis, which showed that although students have overall positive views of AI, worries remain about its fast development and consequences for society. Heightened knowledge of advancements in AI is linked to both positive and negative views, showcasing a nuanced environment characterized by societal tensions surrounding technological progress.

Also, Kim and Lee (2020) conducted a study with the goal of creating a tool to evaluate high school students' perceptions and comprehension of AI. Findings showed that students who had direct or indirect AI exposure had better attitudes than those without it, but students who had received formal AI education had less positive attitudes in general. This inconsistency highlights how different experiences can influence perceptions.

Additionally, Moldt et al. (2023) conducted a study where they collected feedback from medical students at the University of Lübeck and the University Hospital of Tübingen about AI and chatbots, showing a positive outlook on AI in research and administrative functions. However, there were worries about the changing role of AI in

medicine, leading to recommendations for incorporating AI and data skills into medical education to equip future healthcare professionals for a more digital world.

Constraints of AI use in education

A study conducted by Al-Zahrani and Alasmari (2024) examined the elements that impact students' actions and viewpoints towards AI in higher education, utilizing a quantitative approach based on different adoption theories, such as the Unified Theory of Technology Acceptance and Use (UTAUT) model. Through the examination of information gathered from a survey answered by 350 students using a structural equation model, it was discovered that perceived risks influenced attitudes towards AI in a negative way, whereas performance predictors and facilitating conditions had a positive effect on students' intentions to embrace AI in their educational journey.

As Chen et al. (2022) found that the academic community is increasingly interested in AI applications in education, such as intelligent tutoring systems, natural language processing, educational robots, and other technologies. This study emphasized the importance of trainers' acceptance of AI by engaging them in system design, highlighting the increasing incorporation of AI technologies in different educational contexts.

In general, UNESCO-led global efforts stress the significance of incorporating responsible AI into educational systems. Nevertheless, students still feel uneasy and unfamiliar with AI technologies, indicating a pressing necessity to delve deeper into student attitudes to enable successful AI incorporation (Miao & Holmes, 2022).

AI Training

AI's wide range of applications includes personalized learning experiences designed for individual requirements, automation of administrative tasks to improve educational efficiency, and enhanced teaching methods through data analysis. These developments indicate that AI could significantly alter educational environments, creating a more flexible and accommodating space for various learning preferences (Almaiah, Alfaisal, Salloum, Hajjej, Thabit, El-Qirem, et al., 2022; Holmes, Bialik, & Fadel, 2019).

Furthermore, Chaudhry and Kazim (2022) examined the capacity of AI in education, highlighting its potential to lessen teachers' burdens and customize student learning, as well as discussing ethical concerns and the impact of the COVID-19 pandemic

on upcoming studies. The research emphasized that the focus of AI should be on achieving educational goals and meeting the needs of both teachers and students.

Additionally, a study conducted by Gillissen et al. (2022) on the 2020 class of medical students, which used a combination of methods, found that students in programs with a problem-based curriculum viewed AI as a better diagnostic tool compared to those in science-based programs. Yet, many students did not feel adequately ready for the practical aspects of AI in healthcare because it is not extensively covered in medical training programs, highlighting the necessity for increased incorporation of technology in education.

AI in Gulf contexts

Although AI shows potential in education, there is a significant lack of insight into how students in Kuwait view AI technologies due to limited research on their attitudes (Chrisinger, 2019; Sakulwichitsintu, 2022). Furthermore, Buabbas et al. (2023) carried out a cross-sectional survey with medical students at Kuwait University's College of Medicine between June and November 2021 in the field of medical education. Findings showed that students have a high level of confidence in AI's ability to revolutionize the healthcare industry, with the consensus being that AI will not supplant doctors but will bring about substantial changes in healthcare procedures.

In addition, Research conducted by Syed and Basil A. Al-Rawi (2023) at King Saud University revealed that pharmacy students showed a high level of understanding regarding AI, along with favorable views on its advantages and uses. Many participants highlighted the importance of introducing AI concepts early in their coursework to facilitate the seamless integration of these technologies in their upcoming professions.

As can be seen, previous studies provide a comprehensive overview of global perceptions regarding the use of AI in education. The main themes of this literature review include the significance of integrating AI into education, highlighting the importance of understanding student attitudes toward this integration, especially given the anticipated investments in the field. That literature review presents definitions and applications of AI in education and explores various factors that influence student attitudes, such as technological expertise, prior experience, perceived risks, and societal concerns. It addresses knowledge and attitude gaps, with an emphasis on specific regional perspectives, such as in Kuwait, where there is strong confidence in the potential of AI in healthcare. However, the studies also point out the limited exposure and

understanding among students, underscoring the need for enhanced training and awareness.

Those findings are important for policy and curriculum design, as they assist educators and policymakers in understanding student perceptions and developing effective AI programs. The review also highlights the need to include AI training in curricula and addresses ethical and societal concerns. By acknowledging societal worries about the rapid advancement of AI, educators can better integrate ethical discussions into their training efforts.

In this context, this research makes important contributions to existing studies by focusing specifically on the educational context in Kuwait. While most previous research has been conducted globally or in Western countries, this study centers on students in the College of Education at Kuwait University. It aims to provide local insights into students' perceptions of AI within the cultural and educational framework of Kuwait. Additionally, this study examines perceptions of AI training, highlighting the gap between awareness of the importance of AI and the actual knowledge or confidence in its practical use. It explores various factors that influence students' perceptions of AI, including academic year, gender, and age, and emphasizes the role of academic progress in shaping these perceptions. The research also underscores the necessity of integrating AI training into higher education curricula to better prepare students for a technology-driven future.

Theoretical framework

The diverse properties of tools enable students to use multiple learning activities. This research is guided by the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). The intention to use new digital tools, including AI tools, as well as the actual interaction with the technology, may be influenced by performance expectations, effort expectations, social pressure, and favorable conditions. (Venkatesh et al., 2003). This theory serves as a comprehensive framework for understanding the formation of attitudes and acceptance behaviors related to the adoption of AI technologies (Alzahrani, 2023). UTAUT has been commonly applied in educational settings to explore students' opinions about the use of AI tools (Al-Zahrani & Alasmari, 2024; Tian et al., 2024; Wang & Shi, 2024; Yakubu, David, & Abubakar, 2025).

For both teachers and students, there is an increasing reliance on AI tools for teaching, research, and learning, leading to various challenges in higher education (Yakubu, David, & Abubakar, 2025). For example, the concept of plagiarism in higher education has become more complex than it used to be (Hutson, 2024). Higher education institutions needed to update their academic policies and teaching methods as the widespread use of AI by students outpaced their professors' ability to understand (Yakubu, David, & Abubakar, 2025).

Problem statement

In Kuwait, a committee was formed to incorporate AI technology into the computer curriculum, recognizing its compatibility with current technological progress. The significant impact of AI on different educational areas like teaching, assessment, guidance, and curriculum development in Kuwait's educational institutions is widely recognized, highlighting the importance of integrating it into education as a reflection of the government's dedication to technologically literate younger generations. This action is a component of the worldwide digital evolution in the Kuwaiti educational system, highlighting that AI symbolizes the highest point of scientific accomplishments, technological advancements, and industrial growth.

Because of the insufficient research in Kuwait on university students' opinions on the implementation of AI in education, this study aims to address this gap by examining the views of CEKU's students on artificial intelligence. The specific research goals include examining (1) how students perceive the significance of AI in their future careers; (2) their comprehension of AI technology; (3) their level of confidence in utilizing AI tools in their field, and (4) their assessment of the AI education they may have received.

Our hypothesis is that there may be differences between students who have received some training/and or education in AI and those who have not. Our postulation is that receiving AI education may lead students to have a more positive perception of the possible impact of AI on their future professional careers. Therefore, this research examines the perceptions of students at Kuwait University on AI use in education. The study is guided by the following research questions:

Q1. What are the perceptions of students of CEKU about previous AI training they may have received?

Q2. What are the perceptions of CEKU's students about attitudes and knowledge of AI?

Q3. Are there statistically significant differences between the means of responses of the study sample regarding attitudes and knowledge of AI attributed to age, gender and academic year?

Significance of the Study

The research about how universities should teach AI skills cannot be complete without considering students' views on AI and the education quality. Hence, this research will add to the current body of knowledge about integrating AI in academia, by investigating the elements affecting students' actions and opinions towards the application of AI in higher education. This present study can also provide theoretical knowledge and practical insight that can help in comprehending the factors that affect the incorporation of AI in education and the creation of customized learning experiences for university students. Moreover, this research can help pinpoint the essential tactics and technological methods needed to implement AI in higher education.

Study Purpose

This research quantitatively investigates the perceptions of CEKU's students on AI use in education sector.

Methodology

Design

This study uses a descriptive analytical approach, considering that it relies on studying reality and is concerned with describing it accurately, so that it is expressed quantitatively through analyzing and interpreting the results, which deals with the opinions of a sample of male and female students of the CEKU.

Sample

The population of the study included students from the CEKU. Study sample was selected according to the simple random sample method, as it amounted to (633) individuals, equivalent to 7.2% of the total study population (N= 8777) in the CEKU (Kuwait-University, 2024). Table 1 shows the characteristics of the sample individuals according to the study variables (age, gender, and current academic year).

Table 1. Characteristics of the study sample (n = 633).

Variable	Category	Frequency	Percentage
Age (in years)	18 - 20	353	55.7
	21 - 23	139	22.0
	More than 23	141	22.3
Gender	Male	53	8.4
	Female	580	91.6
Current academic year	First	83	13.1
	Second	179	28.3
	Third	231	36.5
	Fourth	115	18.2
	Graduate	25	3.9
Total		**633**	**100.0**

Data collection

Based on UTAUT, the study instrument is adopted from the study of Almaraz-López, Almaraz-Menéndez and López-Esteban (2023), and then it gathered responses from the students. The instrument consists of three parts; the first part is related to the characteristics of the study sample individuals (age, gender, and academic year); the second part is concerned with inquiring about receiving training in the field of AI, the duration of training and type of training, and the duration of training in hours; and the third part is about the attitudes and knowledge about AI, consisting of 10 items. To answer the questions of the second axis of the questionnaire, a five-point Likert-Scale was used, from strongly agree (5) to strongly disagree (1). The item that obtained a Mean, ranging from 1.00 to 2.33, is within the estimate of (Low). The item that obtained a Mean, ranging from 2.34 to 3.66 is within the estimate of (Medium). The item that received a Mean, ranging between 3.67 and 5.00, is considered to be high.

Data Analysis

The data were processed statistically using the SPSS software as follows:

1- Descriptive Statistics: means and standard deviations.
2- Inferential Statistics: Independent sample t-test and One-Way Analysis of Variance (ANOVA) test.

Validity and Reliability of the study tool

Face validity

The study tool was presented to a group of fellow university professors at the CEKU. Based on the comments provided by the arbitrators, some statements were excluded and the wording of others was modified.

Construct validity

The researcher applied the tool to a survey sample of (40) students from the CEKU, where the correlation coefficients were calculated between each statement and the total score of the axis to which it belongs. The results of the correlation coefficients indicated a strong positive correlation between the scores of each statement and the axis to which it belongs as shown in Table 2.

Table 3. Correlation coefficients between items and the total score of the related axis (Attitudes and knowledge about AI).

Attitudes and knowledge about AI			
#	**Correlation Coefficient**	**#**	**Correlation Coefficient**
1	.500**	**6**	.657**
2	.723**	**7**	.467**
3	.692**	**8**	.736**
4	.701**	**9**	.865**
5	.658**	**10**	.605**

** *Correlation is significant at 0.01 level*

Reliability

The internal consistency of the tool was assessed using Cronbach's alpha method, obtaining reliability value for Cronbach's alpha coefficient of 0.917 for the second axis (Attitudes and Knowledge about AI), indicating high internal consistency of the axis.

Results

What are the perceptions of students of CEKU about previous AI training they may have received?

The survey revealed that only 30.6% (n=194) of the study sample members received AI training. Table 4 shows details about these training courses (Evaluation of the usefulness of training, Type of received training and Training duration) as reported by the responses of the trainees.

Table 4. Perceived quantity and quality of the AI training received by students.

Variable	Category	Frequency	Percentage
Evaluation of the usefulness of training	Not at all useful	12	6.2
	Not very useful	10	5.2
	Somewhat useful	86	44.3
	Very useful	49	25.3
	Extremely useful	37	19.1
Type of received training	Formal training as a compulsory part of their studies	64	33.0
	Fair training as an optional part of their studies	20	10.3
	Internal training at the university such as Continuing Education courses Self-training	48	24.7
	Other	62	32.0
Training duration	Between 0 - 10 hours	154	79.4
	Between 10 - 30 hours	33	17.0
	More than 30 hours	7	3.6
Total		**194**	**100.0**

It is clear from the table above that 44.3% of students evaluate the training courses as "Somewhat useful". In addition, 33% of the students received AI training as a compulsory part of their studies, while 24.7% of them were self-trained at the university. Furthermore, the majority of students (79.4%) received between 0 and 10 h training.

What are the perceptions of CEKU's students about attitudes and knowledge of AI?

Table 5. Students' perceptions about attitude and knowledge of AI.

#	Item	Mean	SD	Evaluation	Order
1	AI will play an important role in education	4.10	1.20	High	1
2	Some professional profiles in education will be replaced by AI during my lifetime	3.37	1.23	Medium	7
3	I understand the basic computational principles of AI	3.00	1.32	Medium	10
4	I am comfortable with the terminology related to AI	3.11	1.20	Medium	8
5	I understand the limitations of AI	3.07	1.25	Medium	9
6	AI training will be beneficial to my career	3.91	1.26	High	3
7	All education students should receive training in AI	3.87	1.28	High	4
8	By the end of my training, I will be confident in using basic AI tools for education if necessary	3.97	1.16	High	2
9	By the end of my training, I will have a better understanding of the methods used to evaluate the performance of AI algorithms for education	3.86	1.15	High	5
10	Overall, at the end of my training, I believe that I will have the knowledge necessary to work regularly with AI in education	3.85	1.17	High	6
	Overall Mean	**3.61**	**0.89**	**Medium**	

Table 5 shows that the highest ranks were for items 1, 8 and 6, having high rating with means of 4.10, 3.97 and 3.91, respectively. These items are related to the important role of AI in education, role of AI training in using basic AI tools for education, and the usefulness of AI training for students' careers, respectively. Items 3, 4, and 5 came in the last three ranks with a medium rating with means of 3.00, 3.11, and 3.07, respectively. These items (3, 4, and 5) indicate that most of the study sample disagreed with understanding the computational principles of AI, being comfortable with the terms related to AI, and understanding the limits of AI, respectively.

In general, it is clear from Table 5 that the overall mean of the items of the axis "attitudes and knowledge of AI" reached 3.61 with a standard deviation of 0.89, which indicates a medium to high degree of support.

Are there statistically significant differences between the means of responses of the study sample regarding attitudes and knowledge of AI attributed to age, gender, and academic year?

Inferential statistical methods were used, including the independent t-test for gender variables, while the One-Way ANOVA test was used for age and academic year variables. Table 6 explores the statistical differences between means according to the gender variable.

Table 6. Analysis of the t-test for statistical differences between means according to the gender variable.

Axis	Gender	N	Mean	SD	D.f.	t	Sig.
Attitudes and knowledge of AI	Male	18	3.56	1.19	192	0.65	0.519
	Female	176	3.71	0.90			

It is clear from the results in Table 6 that there are no statistically significant differences between gender (males/females) in the axis of "attitudes and knowledge of AI". The value of Significance is greater than 0.05.

Table 7 gives the analysis results regarding the differences between means (axis of attitudes and knowledge of AI) according to age and academic year variables, using the ANOVA test.

Table 7. Analysis of One-Way ANOVA for statistical differences between means according to age and academic year variables.

Variable	Category	N	Mean	Sum of Squares		D.f	F	Sig.
Age	18 - 20	111	3.65	Between Groups	0.59	2	0.34	0.710
	21 - 23	39	3.74	Within Groups	165.16	191		
	More than 23	44	3.78	Total	165.75	193		
Academic year	First	22	3.51	Between Groups	3.38	4	4.20	0.003
	Second	76	3.76	Within Groups	0.81	189		
	Third	52	3.37	Total	4.19	193		
	Fourth	34	4.01					
	Graduate	10	4.28					

It is clear from the results in Table 7 that there are no statistically significant differences between age categories (Significance is higher than 0.05). At the same time, there are statistically significant differences between academic year categories (Significance is less than 0.05). Using the Tukey hoc-test, it was found that there were differences at a significance level of 0.05 between the (fourth) academic year and the (third) academic

year in the direction of the (fourth) academic year, as well as differences at a significance level of 0.05 between the (graduate) academic year and the (third) academic year in the direction of the (graduate) academic year.

Discussion

It is essential to understand university students' perceptions of AI, which is increasingly being used in educational settings across all disciplines (Al-Badi & Khan, 2022; Almaraz-López, Almaraz-Menéndez, & López-Esteban, 2023; Sassis et al., 2021; Sit et al., 2020). In this context, the present study aimed to explore the perceptions of CEKU's students on AI use in the education sector. Three axes of interest were evaluated. The first is the perception of CEKU students about the previous AI training they received, the second is the perceptions of CEKU's students about attitudes and knowledge of AI. The third is related to investigate the statistically significant differences between the means of responses of the study sample regarding attitudes and knowledge of AI attributed to age, gender and academic year.

The study sample is characterized by a percentage of 55.7 in the age range (18-20), and male-to-female distribution (8.4% to 91.6%), which reflects the characteristics of the students' population of young ages and female predominance at the CEKU. About half of the students had literate computer skills. However, only 29.4% of them always use computer technology in their learning, a rate that is not expected nowadays. 36.5% of respondents were in their third academic year, while only 3.9% of them were in their graduate year. The findings showed that only 30.6% of students received AI training. This relatively low figure highlights a significant gap in current educational programs, especially as AI tools become more integrated into various fields worldwide. That was proved by Wickramasinghe (2025).

However, this percentage is higher than other reported percentages that reported by other research groups among university students, such as that reported by Almaraz-López, Almaraz-Menéndez and López-Esteban (2023) (19.68 %) at the Faculty of Education of the University of Salamanca (Spain), that reported by Sit et al. (2020) (9.2%) from 19 UK medical schools, and that reported by Syed and Basil A. Al-Rawi (2023) (20%) among senior pharmacy students in Saudi Arabia. The higher percentage of students with AI training in our study, compared to other global contexts, may indicate regional or institutional efforts to incorporate AI into higher education, as was pointed out Chan

(2023). However, the overall findings emphasize the necessity for expanded and structured AI education.

The survey of CEKU's students revealed a moderate level of understanding and attitudes toward AI, with a mean score of 3.61. This suggests that while students recognize the importance of AI, they lack a comprehensive understanding of the subject. Notably, there is a significant gap between their positive attitudes towards the potential of AI in education and their limited knowledge of its basic principles and limitations. This disparity indicates that, despite their awareness of AI's significance, students are not adequately prepared to use these tools effectively and responsibly, which could jeopardize their future professional roles. This idea was emphasized by Pedro et al. (2019).

Pinto dos Santos et al. (2019) Mentioned that students' attitudes and knowledge about AI can be directly influenced by the information and reports published in the available media. Our results are in line with those of Almaraz-López, Almaraz-Menéndez and López-Esteban (2023) others Sit et al. (2020) in terms of university students' awareness of the importance of AI in education and their lack of knowledge of this technology. It is worth noting that our results show that students' interest in AI is greater than their knowledge of this technology, which is consistent with the study Almaraz-López, Almaraz-Menéndez and López-Esteban (2023). Therefore, future work plans should focus on AI training, so that all students, who will soon enter the job market in their respective fields, can access more information about AI tools (Sánchez Holgado, Arcila Calderón, & Blanco Herrero, 2022).

The absence of significant gender and age differences suggests a broad understanding of the importance of AI that crosses demographic lines. However, Spanjaard, Hall and Stegemann (2018) notable variations across academic years, especially among students nearing graduation, emphasize the value of experiential learning and career readiness. As these students prepare to enter the job market, it is crucial to incorporate AI training into the curriculum to ensure they are proficient and confident in using AI tools.

In general, our results agree with other studies (Almaraz-López, Almaraz-Menéndez, & López-Esteban, 2023) that AI education should be expanded and improved, so that students can use AI with confidence and responsibility in their future careers. In addition, it is necessary to develop applicable strategies to improve knowledge

and use of AI in line with the framework adopted by UNESCO (Pedro et al., 2019), which contains learning with AI (using AI tools in the classroom), being aware of AI tools use, and AI readiness allowing all citizens to recognize the potential impact of AI on human life.

Expanding AI education not only enhances students' technical skills but also promotes responsible use, critical thinking, and ethical considerations — essential elements for addressing the societal impacts of AI. Schreiber and Schreiber (2024) said that addressing identified knowledge gaps through targeted training can help mitigate potential negative consequences, such as misuse or overreliance on AI, which may undermine professional judgment and ethical standards. Overall, these findings highlight the need for comprehensive and accessible AI education strategies that prepare students to harness its benefits while understanding its limitations effectively. This ensures they are equipped to adapt to the evolving technological landscape in their future careers.

Conclusions

Our main findings are that the Kuwait University College of Education students who participated in this study believe that AI will have an impact on their careers, and that they emphasize the need to continue their education in the field of AI. However, their current knowledge and confidence in using this technology is somewhat limited because most of them (69.4%) have not received training in the field of AI. However, they were shown to be able to realize the potential of AI as a valuable tool in education and their later careers. We observed no statistically significant differences between student categories of gender and age. At the same time, there were statistically significant differences related to higher academic year categories (fourth and graduate) in terms of attitudes and knowledge of the field of AI. Our findings indicate that students are more interested in AI than in their understanding of the technology. Given the growing impact of AI on students' personal and professional experiences, we believe that AI education should be provided to university students across all fields, enabling them to become well-informed citizens and use this technology responsibly and confidently.

Although this study provided some insights into the perceptions of CEKU's students toward AI, there are some limitations to this research. First, our sample included only students enrolled in the CEKU. Students from different colleges may have perceptions that differ from the conclusions drawn from the current findings. Next, the quantitative

method may limit our understanding of students' perceptions of AI. In future research, it is important to include a broader range of colleges and students from different regions of the country.

Recommendations

Based on the results of this study, the following recommendations are proposed:

1. Developing an advanced AI training curriculum that includes:

A. A foundational module explains the basic concepts of AI, highlighting AI applications in education both globally and regionally, data privacy, and the responsible use of AI, and addresses the social and ethical implications of AI using the UNESCO framework for action.

B. A module focused on AI tools, which aims to introduce students to AI-powered educational tools (such as adaptive learning platforms, chatbots, and assessment tools), demonstrating how to integrate AI into lesson planning and classroom management, and host workshops on using relevant AI tools in education.

C. An AI competency development module focused on equipping students with the skills necessary to develop AI applications for education and create graduation projects that tackle real-life educational challenges using AI.

2. Integrating AI training into curricula by organizing training programs at universities, collaborating with AI technology providers in the Gulf region, offering training courses for students and graduates, incorporating AI modules into teacher preparation courses in alignment with national education policies in the Gulf countries, and conducting periodic assessments to evaluate student competencies and attitudes toward AI.

3. Linking policies to the regional context by aligning this AI curriculum with Kuwait's national strategy, raising awareness about the role of AI in achieving sustainable development goals relevant to the Gulf region, and promoting the ethical use of AI through the policies of the Gulf countries, including Kuwait.

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