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PAPER

Artificial Intelligence in Education: Perspectives and Challenges

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ABSTRACT

Understanding the integration of artificial intelligence (AI) in academic institutions is crucial given Kuwait's commitment to innovation and educational excellence. This study explores the integration of AI into higher education in Kuwait, revealing both positive perceptions and critical concerns. Qualitative insights from faculty and students highlight AI's potential to improve learning across multiple academic disciplines. Quantitative data, collected from 310 students, shows that a majority of students hold optimistic views on AI's effectiveness in enhancing educational processes and project-based activities. However, concerns were raised about the ethical implications, high costs, data privacy, and the complexity of AI tools. Importantly, no statistically significant difference was found between male and female students' views on AI's role in education. These findings are significant for policymakers and educators, guiding how to address practical and ethical challenges while facilitating the effective incorporation of AI into the educational system.

KEYWORDS

artificial intelligence (AI), perspectives, e-learning, education, technology integration

1 INTRODUCTION

Artificial intelligence (AI) has become a significant force shaping various industries, and the field of education is no exception. With the advancement of technology, there is a growing interest in understanding how AI can be effectively utilized in education [1]. This interest is driven by AI's potential to address diverse educational needs, making learning more adaptive and effective for students of various backgrounds and abilities [2, 3]. Researchers recognize AI's ability to transform teaching and learning processes and enhance educational environments by providing personalized learning experiences [4, 5], automating administrative tasks [6], and supporting both students and educators with tools for improved engagement and accessibility [7]. Moreover, tools enhanced by AI can offer valuable analysis on student performance, assisting educators

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in promptly identifying and addressing areas of learning deficiency [8, 9]. With the ongoing advancement and broadening of AI technology, educational institutions are facing the challenges and benefits of incorporating these tools [6, 10, 11, 12].

There is a scarcity of literature concerning the perceptions of learners and instructors regarding the utilization of AI in education, particularly in Kuwait. Kuwait, a nation committed to innovation and educational excellence, is witnessing a growing interest in the integration of AI into its educational system. ChatGPT has quickly emerged as an exciting tool in Kuwait's higher education sector, beneficial for both students and educators. Its unrestricted accessibility, user-friendly design, and powerful conversational AI capabilities enrich education and learning. ChatGPT serves as a round-the-clock virtual assistant for students, facilitating understanding of intricate subjects and enhancing writing skills; simultaneously, it aids educators in developing lesson plans, compelling educational resources, and interactive classroom activities [13]. Examining the perspectives of students and instructors on ChatGPT and other AI applications in education is essential for several reasons. The primary goal of this study is to fill the existing gap by offering insights from both students and faculty members. Combining qualitative insights derived from a focus group with faculty members and college students at the Public Authority for Applied Education and Training (PAAET) in Kuwait with quantitative data collected through a standardized questionnaire sent to the student population. This research examines the perspectives of students and faculty members concerning the utilization of AI in education in Kuwait, offering insights into their awareness, expectations, encouragement, and job satisfaction [14], while emphasizing the significance of AI abilities and its incorporation into the curriculum. This comprehension is necessary for stakeholders to assess AI's integration into education, emphasizing its benefits and drawbacks. Secondly, comprehending user experiences and expectations may aid policymakers and educators in tailoring AI applications to local cultural and pedagogical requirements [15]. This can alleviate concerns and foster an environment favorable to the effective integration of AI tools, offering substantial recommendations that may impact Kuwait's strategic vision for AI in higher education, ensuring that technology enhances learning rather than hinders it [16]. The specific objectives of this study are to:

1. Explore students' and instructors' awareness of AI tools and their understanding of how these tools can be utilized for teaching and learning.
2. Investigate perceptions of the potential benefits and challenges associated with integrating AI tools in education.
3. Understand the concerns and expectations of educators regarding the implementation of AI in educational institutions.
4. Examine differences in students' opinions in terms of gender.
5. Highlight the importance of AI proficiency among educators and students, advocating for its integration into the curriculum.

The structure of this paper is as follows. Section 2 contains the literature review, Section 3 elaborates on the methodology, Section 4 presents a summary of the findings and discussions, Section 5 delineates the conclusion, and Section 6 addresses the study's limitations and future directions.

2 LITERATURE REVIEW

2.1 Introduction

The field of AI in education is growing rapidly as schools and universities worldwide adopt AI-driven tools to enhance learning and streamline administrative tasks [17]. With the advancements in AI technology, research demonstrated interest in understanding how AI can be effectively utilized in educational settings [1]. According to [18], AI technologies hold the potential to significantly impact education, playing a crucial role in the global economy and contributing to innovation, employment, and economic growth. Authors in [19] define AI as the imitation of human cognitive abilities by computers, encompassing abilities such as learning, thinking, problem solving, perception, and language comprehension, with the objective of executing tasks that often require human intelligence. A subset of AI is machine learning (ML), which focuses on developing algorithms that allow systems to improve based on data. In education, ML powers adaptive learning systems that adjust to student performance, predict learning outcomes, and refine instructional materials [4]. The purpose of this literature review is to examine existing studies related to the integration of AI in educational settings, focusing specifically on current issues and challenges associated with AI adoption. This review aims to elucidate the potential benefits and challenges of incorporating AI in education, featuring cases that illustrate the viewpoints of stakeholders.

2.2 Potential of AI in education

Artificial intelligence possesses transformative potential in education, fundamentally altering the learning processes of students and the instructional methods of educators [20]. Research indicates that AI can customize content to accommodate the distinct needs, capabilities, and learning preferences of individual students, thereby ensuring inclusivity [21]. Furthermore, AI-driven tools, including virtual tutors and interactive platforms, offer immediate feedback, enhancing engagement and efficiency in learning. In addition, AI can automate administrative tasks, such as grading and attendance tracking, freeing up time for more meaningful student interactions [7].

Personalize and adaptive learning. Personalized learning is an approach to learning that customizes instruction, content, pacing, and evaluation to meet each student's individual needs, interests, and capabilities [22]. In contrast to conventional education, personalized learning recognizes individuals' varied learning styles, paces, and comprehension levels [23]. According to [21], AI can transform personalized education by employing data and algorithms to develop customized learning experiences that adjust to each student's requirements, speed, and learning preferences. This personalization is accomplished chiefly via adaptive learning platforms and intelligent tutoring systems that utilize AI to evaluate student data and modify content delivery accordingly [4]. The author [24] showcases the capacity of AI to enhance individualized learning, while [25] documented the influence of AI on education, highlighting its capacity to facilitate personalized and adaptive learning experiences. However, the study lacked comprehensive solutions addressing the challenges associated with the implementation of AI in education.

Task automating. Artificial intelligence is changing education by automating many administrative tasks, which frees up instructors to focus more on teaching and fostering the learning environment. For example, [19] states that AI-powered systems, such as Gradescope, make grading easier by analyzing and giving consistent feedback on multiple-choice and essay-type questions, greatly reducing the time instructors spend on assessments. Similarly, AI scheduling tools make class schedules and teacher schedules more efficient, which frees teachers from having to coordinate them by hand. Finally, automated feedback systems can give detailed, personalized suggestions for improvement, which improves the learning process while saving teachers a lot of time and effort [26]. In a similar manner, [8] confirmed that by utilizing AI platforms, educators can carry out various administrative tasks, such as evaluating and assessing students' assignments, with greater effectiveness and efficiency, resulting in improved teaching quality [27]. Similarly, [20] showcases that using AI technology helps in automating the assessment process so that time and energy can be much more efficient, while [25] believed that AI can help make schools more welcoming and improve formative assessments. According to [24], AI can assist instructors, make administrative tasks more accessible, and promote inclusive education, while [28] pointed out that one of the advantages of AI is the automation of processes that accomplish repetitive tasks.

Interactivity and engagement. Artificial intelligence is instrumental in developing immersive, virtual, and engaging educational environments that improve learning experiences [29]. AI attempts to empower students with more control in their learning journey, providing a tailored experience that enhances engagement and academic performance. The study [28] explores the possible advantages of AI, such as increased student engagement, while [18] indicate that the utilization of AI technology facilitates the identification and assessment of students' critical thinking skills and that AI can conduct an analysis of students' learning behavior. As noted by [30], AI technologies such as virtual reality (VR) and augmented reality (AR) enable interactive simulations that allow students to investigate intricate concepts and enhance students' engagement in these settings to deliver real-time feedback, thereby ensuring a customized and effective learning experience. Furthermore, [7] provided a comprehensive examination of the potential impacts of several AI techniques in education on teaching, learning, assessment, and educational assistance. The findings highlighted essential advancements that have profoundly influenced students' engagement, encompassing data mining, ML, natural language processing, and computer vision. However, the findings of [2] suggest that the utilization of AI for customized and engaged learning is currently at the experimental stage, alongside a shortage of resources and ethical considerations. In a similar manner, [31] asserts that governments and politicians globally are showing growing interest in the efficient integration of technology and economic well-being to facilitate the advancement of education through digital, robotic-based instruction.

2.3 Challenges of AI in education

The area of education is experiencing a growing deployment of AI. Despite the potential advantages, there are several challenges that need to be addressed to fully harness the power of AI in education. One challenge is the ethical implications of AI in education. For example, the collection and use of student data by AI systems raise concerns about privacy and data security [32]. Another challenge is the potential for bias in AI algorithms. This can lead to inequitable outcomes and reinforce

existing inequalities in education [33]. Additionally, there is the challenge of striking a balance between the use of AI and human interaction in education [32, 34]. While AI can automate tasks and provide personalized support, human instructors are essential for mentorship, emotional support, and the development of social and emotional skills [34].

According to [21], the utilization of AI in education is hindered by issues related to cost and reliance on technology. Hence, the implementation of AI in the field of education necessitates careful consideration, particularly regarding the economic aspect and the accessibility of technological infrastructure, especially in developing countries. The importance of ensuring the validity and dependability of AI in education is a matter of discussion, as emphasized by [35]. To ensure the accuracy of AI in generating outcomes, it is crucial to expose it to thorough testing and development based on rigorous criteria. Similarly, [20] addressed various problems, including the validity and reliability of AI, cost, technology dependency, data privacy and security, and changes in participant behavior that can alter assessment results. The author emphasized the importance of applying AI technology with caution and consideration for existing difficulties. The challenges of integrating AI in education are multifaceted and require comprehensive solutions that prioritize ethical considerations, regulatory frameworks, and equitable access to education for all students.

2.4 Perspective on AI in education

This section provides some research results of empirical studies investigating issues related to the potentials and challenges of AI in education from a number of regions. The research undertaken by [35] examined the influence of AI on education, and results revealed that AI has a significant impact on human laziness. The researchers collected data from 285 students enrolled in different institutions in Pakistan and China. The objective was to explore the effects of AI on decision-making, laziness, and privacy concerns among university students. The results suggest that the impact of AI on Pakistani and Chinese culture is accountable for 68.9% of human laziness, 68.6% of challenges related to personal privacy and security, and 27.7% of decision-making loss. Another study undertaken by [36] explores the application of AI models in assessing academic achievement in primary school. The authors stated that despite substantial spending in education, Latin American governments had made limited progress. Their results stress that AI models provide a distinct method for analyzing educational dynamics and detecting patterns by leveraging their exceptional data processing capabilities.

A study conducted by [37] to investigate factors affecting students' utilization and intention to adopt AI technologies. The study involved a survey of 199 students from the University of Patras in Greece. The results demonstrated anticipated performance, habit, and excitement as key aspects influencing students' desire to engage with AI technologies. Moreover, behavioral intention, habit, and positive circumstances were identified as key factors influencing the actual utilization of these tools. This study is especially significant for scholars and policymakers as it elucidates the behavioral and contextual determinants influencing AI adoption in educational environments. Academicians can utilize such information to construct AI-enhanced teaching approaches and curriculum designs that align with students' preferences and behaviors. For policymakers, the findings underscore the importance of creating supportive environments. An investigation conducted by [38] examined the deployment of AI in education, addressed its limitations, and analyzed forthcoming

trends that will influence the educational landscape in Oman. The paper assessed the advantages and disadvantages of AI in education, drawing on the perspectives of fifty academics from various universities through a mixed-methods methodology. The authors also used a quantitative method and collected data via a questionnaire from eleven professors and 250 students representing diverse college levels in Muscat City, Oman. The conclusions derived from the analysis align with similar studies present in the literature. The findings revealed that the incorporation of AI in education offers numerous advantages for the learning and teaching process, including enhancements in students' skills and competencies. The results also indicate a significant correlation between participants' awareness of AI-related risks in education and their assessments of AI's influence on the college education system, highlighting the complex relationship between awareness and attitudes toward AI in education. The research has identified several unfavorable elements, including generalizability.

In Kuwait, a study carried out by [13] examined the perspectives of students at Kuwait University regarding the integration of AI in education. A group of medical students participated in an online survey, resulting in 352 valid responses. The majority of students (99.1%) held the belief that AI would have a substantial impact on healthcare. Additionally, a considerable proportion (60.5%) demonstrated a solid understanding of the fundamental principles of AI, while a substantial percentage (93.4%) exhibited familiarity and ease with AI terminologies. Moreover, 83.5% of respondents stated that having knowledge about AI will benefit their professional growth, while 82.1% expressed the belief that medical students should undergo training in AI. The findings of this study indicate that most students held favorable attitudes toward artificial intelligence.

2.5 Conclusion of the literature review

The literature review underscores the revolutionary capacity of AI in education, focusing on its applications in personalized learning, task automation, and student engagement. AI-driven solutions have shown the capacity to customize educational content to meet individual learners' requirements, boost learning outcomes via adaptive platforms, and increase engagement through immersive technologies such as VR and AR [4, 7, 29]. Moreover, AI streamlines repetitive administrative duties like grading and scheduling, allowing educators to allocate more time to significant student interactions [19, 20]. The literature review identifies barriers such as ethical issues with data privacy, algorithmic bias, and financial and technological obstacles that impede AI integration in under-resourced [21, 32]. The findings emphasize the nascent phase of numerous AI technologies; while many studies discuss AI's potential, there is a lack of longitudinal research evaluating its long-term impacts on learning outcomes and educational equity [2]. Moreover, a significant portion of current study focuses on high-income nations, yielding less understanding of the difficulties encountered in low-income and resource-limited settings. Moreover, research frequently neglects the wider social ramifications of AI in education, encompassing its effects on student well-being, technological infrastructure, and access to technology. This study will enhance the existing knowledge in this field, particularly in a developing country such as Kuwait. Table 1 summarizes reviews and shortcomings of various studies on AI in education, highlighting gaps in the literature and suggesting areas for further research. Advancing research necessitates conducting additional empirical investigations.

Table 1. Summary of reviews and shortcomings of studies in AI in education

Research Title	Author(s)	Topic	Shortcomings
"The use of technology in English language learning: A literature review"	Ahmadi, S. 2018	Overview of AI applications in education, including personalized learning and administrative tasks.	Limited discussion on long-term implications and challenges in diverse educational settings.
"A review of AI applications in educational assessment"	Gao, T., & Cho, S. 2020	Exploration of AI-powered tools for improving personalized learning experiences in education.	Focuses mostly on technical tools with little emphasis on ethical concerns and teacher readiness.
"Artificial Intelligence in Education: A Review"	Chen, L., & Lin, J. 2020	Examines opportunities and challenges of AI in education, including its role in improving student outcomes.	Lacks empirical data on the actual effectiveness of AI tools in different educational contexts.
"A Comprehensive Review on the Integration of Artificial Intelligence in the Field of Education"	Dayal et al. 2024	Highlighted the significance of AI in education and list the issues that support the growth and development of the education world.	The study lacks a model or framework to support the contribution of the paper to translate the issues that were discussed.
"Applications and Challenges of Implementing Artificial Intelligence in Medical Education: Integrative Review"	Chan, S., & Zary, N. 2019	Focuses on the current applications of AI in medical education as well as the challenges of implementing AI in medical education.	Does not provide practical solutions to address AI in medical school curriculum to better understand AI algorithms and maximize it.
"Personalized learning and AI in science education: current state and future perspectives"	Özkan, D. 2020	AI applications in early childhood science education and their impact on learning and development.	Lacks comprehensive analysis of the impact of AI on educational outcomes and address the barriers to its implementation
"Investigating Students' Perceptions towards Artificial Intelligence in Medical Education"	Buabbas et al. 2023	Survey of medical students of the effectiveness of AI tools into learning practices. Results demonstrated positive impact.	No focus on subjective assessment nor students full understanding of AI tools.
"Integration of Artificial Intelligence in Education: Opportunities, Challenges, Threats and Obstacles. A Literature Review"	Saputra, K., et al. 2023	Addresses the opportunities, challenges, threats, and obstacles to the implementation of AI in education.	the study lacked comprehensive solutions addressing the challenges associated with the implementation of AI in education.
"Role of AI in Education"	Harry & Sayudin 2023	Discusses the potential, and barriers associated with the use of AI in education in order to assist the role of AI in management of education.	The authors only list and describe benefits and challenges of AI in education without conducting holistic investigation.

3 RESEARCH METHODOLOGY

This study followed a sequential explanatory mixed-methods design, consisting of two distinct phases: a qualitative phase followed by a quantitative phase. The initial qualitative phase will provide contextual understanding and richer insights, while the subsequent quantitative phase will help identify patterns and trends.

3.1 Qualitative phase: Focus group discussion

A focus group discussion session was performed with the objective of gaining comprehensive insights into the perspectives of students and instructors during the Spring semester of the 2023–2024 academic year. The study utilized purposeful

sampling to acquire extensive viewpoints and enable thorough conversations. The sample comprises twenty-six individuals, including twelve students and fourteen faculty members from the College of Business Study (CBS) in Kuwait. These individuals possess varying degrees of expertise and practical experience using AI tools. The students, aged 18 to 22, were both males and females studying business and finance, while the instructors, aged 28 to 68, similarly included both genders with a business qualification. The limited selection of focus group participants may constrain the results of this research. The session took place at the lecture room of CBS. The discussion guide encompassed topics including the perceived advantages and obstacles of AI, attitudes towards AI in education, and recommendations for enhancement. The conversation was captured using audio technology with the participants' permission and then transcribed for the purpose of analysis. The method of thematic analysis was utilized to find reoccurring themes and patterns within qualitative data. Analytical coding and categorization were conducted to derive insights into the subtle components of students' perspectives. At the end of the session, we administered the questionnaire to the participating students from the focus group and additional students, totaling 43 (21 male and 22 female). The aim of the pilot study was to identify any ambiguities in the statements and modify them accordingly. The aim of the pilot study was to identify any ambiguities in the statements and modify them accordingly. The final version of the questionnaire, comprising twenty-four items aligned with five constructs, was influenced by the focus group's insights and the pilot study. Questions were modified, removed, and incorporated in accordance with the findings of the pilot study.

3.2 Quantitative phase: Questionnaire design and administration

Population and sample. The target population consists of students enrolled in the College of Business Studies (CBS) at PAAET in Kuwait, comprising a total of 310 students, with 142 being male and 168 being female. The quantitative study does not encompass instructors. Table 2 displays the demographic information and distribution of the study population, including gender and proficiency in artificial intelligence.

Table 2. Sample distribution according to the demographic variables (310 Students)

Variables		*Frequency (F)*	*Percent %*
Gender	Male	142	45.8
	Female	168	54.2
Proficiency in using AI	Poor	79	25.5
	Medium	177	57.1
	High	54	17.4
Total		310	100%

Questionnaire design. A carefully designed survey questionnaire was developed for this research with the objective of soliciting viewpoints from participants (students) and examining both the challenges and prospects of AI in education. The questionnaire comprises two sections: part 1 gathers participants' demographic information, while part 2 consists of 24 questions that are divided into five key groups. These groups include *students' knowledge about AI tools*, their *perception of*

the effectiveness of AI, the *perceived impact of AI in education*, their *willingness to use AI*, and the *challenges associated with using AI in education*. Each of the five groups employs a 5-point Likert-type scale, with 1 representing strong disagreement, 2 representing disagreements, 3 representing neutrality, 4 representing agreements, and 5 representing strong agreement.

Validity and reliability. A pilot study was performed on the research instruments to ascertain that the questionnaire meets its stated objectives, assess the feasibility of the survey, and validate initial findings. The statistical findings indicate relationships between individual questionnaire questions and their respective factor totals as well as the overall questionnaire total. These correlations are crucial for evaluating the questionnaire's validity, especially its construct validity. The correlations between items and their factor totals, along with the overall questionnaire total, indicate that most items exhibit strong correlations, hence demonstrating robust construct validity. Nonetheless, items exhibiting lesser correlations may necessitate additional scrutiny to confirm their precise contribution to both the component and the primary objective of the questionnaire. Furthermore, the statement "*I am willing to learn and use AI tools to enhance my learning at the college*" exhibits a correlation of 0.772 with the overall questionnaire score. This indicates that the item is closely associated with the overarching concept of the questionnaire, feasibly reflecting the common perception of AI in education. On the other hand, the question "*I believe that AI assists in replacing instructors*" exhibits a correlation of 0.391 with the whole questionnaire, suggesting that this item may assess a concept (instructor replacement) that is less aligned with the overarching construct.

SPSS was utilized to calculate the correlation coefficients. The relationships between the various dimensions and the aggregate score exhibited a significant level of statistical significance ($p < 0.01$). Similarly, the reliability of the questionnaire was assessed by calculating Cronbach's alpha using SPSS. The reliability of the questionnaire's dimensions is demonstrated by the coefficient degrees presented in Table 3, which vary from 0.74 to 0.91. The total Cronbach's alpha score is 0.94. Hence, the questionnaire can be administered to the core sample for the purpose of conducting a fundamental investigation, and the resulting conclusions can be considered trustworthy. Inferential statistics like correlation or regression might have been used to analyze relationships between awareness, experience, and usage of AI in education. This would be critical for establishing how different factors relate to overall student familiarity.

Table 3. Reliability statistics

	Group	*No. of Items*	*Cronbach's Alpha*
A	AI Awareness	4	0.74
B	Perceived Benefits of AI	5	0.91
C	Perceived Impact of AI on education	7	0.88
D	Willingness and Future Involvement with AI	3	0.86
E	Challenges	5	0.82
Total		**24**	**0.94**

3.3 Research procedures

Multiple approaches were employed. A literature review provides a comprehensive understanding of the current views and usage of AI in education by researchers

and practitioners. A qualitative method enabled a deeper understanding of the reasoning, viewpoints, motivations, attitudes, and other elements of participants, so encouraging the creation of unexpected ideas and insights regarding advantages, motives, and challenges. A total of 26 participants, including academicians and students, took part in a focused group session. The researchers conducted a two-hour session, which took place in a meeting hall at CBS. Additionally, a quantitative methodology was employed by creating and distributing a questionnaire to a total of 310 students. The statistical software SPSS was utilized to do an in-depth analysis, including several statistical techniques, including an independent-sample t-test, mean, standard deviation (SD), frequency, and percentage. The independent-sample t-test was used to determine if there is a statistically significant difference between the means of two independent variables, such as male and female students.

4 RESULTS AND DISCUSSIONS

This section incorporates both quantitative and qualitative findings to fully comprehend students' and instructors' impressions of AI tools and their awareness of their potential applications in promoting education.

4.1 Qualitative analysis (Focus group discussion)

Twenty-six individuals participated in the focus group session, including 14 faculty members and 12 students, in order to gather insights, experiences, and opinions on the influence of AI tools on education within the qualitative study sample. The discussion was initiated by a facilitator who introduced the study's purpose and emphasized the importance of participant input during a face-to-face focus group session at CBS. The researchers' predetermined sequence of statements directed the focus group discourse, which lasted approximately one hour and a half. The data collection procedure was contingent upon the facilitator's notes taken during team discussions and the written comments of the participants. This facilitated an understanding of the current situation, challenges, opportunities, and the skills necessary to adjust to the recently established professional environment. The data collection process utilized a question-and-answer method that encouraged free discussion, allowing for the gathering of qualitative data regarding the viewpoints, experiences, and suggestions of the participants. Following that, a thematic analysis was conducted to ascertain the presence of repeating themes, patterns, and noteworthy topics that arose [39]. Moreover, the discussion encompassed other subjects, such as the theoretical foundations of AI's capabilities, the present and potential impact of AI on education, the obstacles that have been faced, and prospective solutions for these obstacles. The subsequent extensive discussion of the focus group yielded a more profound understanding of the members' opinions. The researchers verified and assessed the report that detailed the outcomes. Both instructors and students voiced numerous opinions regarding the use of AI tools and applications in the context of education. While several individuals highlighted the capacity of AI to individualize learning experiences and amplify student engagement, others emphasized the significance of preserving human contact and tackling ethical concerns. In general, there was agreement on the significant impact that AI can have on education, as long as it is implemented with the guidance of educational principles, ethical standards, and a focus on student-centered learning.

Instructors' perspectives. Instructors held diverse viewpoints regarding using AI applications and tools in education, highlighting the benefits, and raising certain concerns. An instructor claimed that AI possesses the capacity to transform education by customizing learning experiences, automating administrative duties, and delivering immediate feedback to learners. Nevertheless, it is essential to achieve an appropriate balance between utilizing AI to enhance efficiency and maintaining human contact in education. A Professor expressed his perspective on AI, stating that we perceive it as a beneficial instrument for tailoring education to suit students' unique needs and learning preferences. He added we believe that AI has the potential to provide valuable insights for making instructional design choices and improving learning outcomes. Similarly, a faculty member stated that AI-powered adaptive learning platforms have the capacity to meet the varied requirements of students and encourage self-directed learning. Nevertheless, she recommended that educators carefully assess the quality and accuracy of AI algorithms to guarantee that they conform to pedagogical standards. Another instructor supports the idea that AI-powered ChatGPT and virtual assistants may enhance student engagement by offering immediate help, addressing queries, and facilitating conversations beyond the traditional classroom setting. He emphasized the importance of cultivating a nurturing learning environment where students feel at ease requesting assistance from AI and human professors. An instructor claimed that AI-driven evaluation systems can offer educators significant insights into student development and performance, enabling more focused interventions and personalized feedback. Nevertheless, she emphasized that evaluation algorithms must exhibit fairness, transparency, and alignment with learning objectives. Conversely, an English instructor stated that AI-powered language learning platforms can offer students immersive and dynamic experiences for acquiring language skills. She added that these platforms can speed up the process of language learning and enhance fluency in various linguistic environments.

According to a professor, AI technologies can simplify tasks such as reviewing literature, collecting data, managing citations, identifying relevant sources, and extracting valuable insights from research. Another instructor promotes using emerging technologies, such as VR and AR, to provide students with immersive and interactive learning experiences. He stated that technologies could improve student engagement and retention by enabling them to apply theoretical concepts in practical scenarios. Similarly, a faculty member said that AI-driven cognitive tutoring systems utilize concepts of cognitive psychology to improve student learning and memory retention. She added these systems offer immediate feedback and adjust education based on student performance. Concerning plagiarism, most instructors agree that AI-driven grading systems and plagiarism detection tools provide instructors with a scalable and efficient method of evaluating student work by automating regular grading duties and identifying any academic integrity violations. An instructor claims that AI can enhance interdisciplinary learning by integrating knowledge from various sources and disciplines. This enables educators to develop a cross-disciplinary curriculum that promotes critical thinking and creativity. Similarly, a professor asserted that AI-powered adaptive learning platforms could customize educational content and activities according to students' unique demands and learning preferences, hence improving students' interactions and performance. Regarding disabilities, a faculty member stated that AI-powered assistive technologies can enable students with various learning needs and disabilities to access educational content and actively engage in classroom activities. The majority of participants expressed that the use of AI technologies needs training and that the

technological infrastructure in the college is inadequate for implementing AI technology, namely in terms of hardware, software, and policies.

Students' perspectives. The students actively participated in the discussion, joyfully raising their hands to provide input and engage in each question. In general, students indicated positive viewpoints regarding the utilization of AI technologies in education, emphasizing the advantages. A student from the business department mentioned her appreciation for the convenience and flexibility provided by AI learning platforms. She finds these platforms beneficial for individualized interactive learning. A student from the accounting department requests professors to exercise caution, stating that it is crucial for instructors to maintain an individual connection with us as students. An additional student from the information system department said, "I can benefit from hands-on experience with AI tools and algorithms, experimenting with ML models, data visualization techniques, and predictive analytics." Another student from the computer department stated, "As a study programming language, I appreciate the role of AI in enabling practical coding exercises and project-based learning." She added, "AI-powered coding platforms empower me to enhance my programming skills."

A student said that AI assists them in solving complex problems, completing their homework and assignments, as well as creating and refining their PowerPoint presentations. Similarly, a student expressed enthusiasm for learning how to utilize ChatGPT, since it assists in writing about various subjects as an additional task for the class. Another student enrolled in the SMEs course mentioned, "Since our course is project-oriented, I utilized an AI application to create the branding for my project, identify specific market opportunities, and establish my marketing campaign using social media platforms." Another finance student stated, "The utilization of AI-powered financial modeling tools enabled me to effectively apply theoretical concepts to practical financial situations and investment strategies." Another student emphasized the necessity to promote transparency and accountability in AI-powered learning environments to prevent cheating, which can negatively impact high-achieving students. In addition, a student said, "We are occupied with our schoolwork in order to achieve excellent grades, leaving us with insufficient time to acquire knowledge about AI tools and applications." A student raised a valid issue regarding the absence of a practical, credit-bearing course on AI tools and applications, particularly considering that the college specializes in business education. Many students claimed that ChatGPT is the most used AI tool. However, they wondered why some instructors prohibit the use of AI applications.

Summarizing the qualitative analysis. The above-mentioned perspectives by faculty and students at CBS underscore the multifaceted impact of AI on teaching and learning across various disciplines and educational contexts. ChatGPT is considered one of the main tools in teaching and learning among various AI tools. A general agreement that AI can improve accessibility, personalization, and engagement in education by enhancing assessment, interactivity, and content creation. Integrating AI into educational processes can enhance learning experiences for all learners by making them more inclusive, adaptive, and successful. These additional viewpoints demonstrate the extensive influence of AI and emphasize the varied uses of AI in improving teaching and learning experiences in different academic fields and educational environments. While AI presents educators and students with valuable resources to improve engagement, personalization, and effectiveness in education, there are numerous concerns around the implementation of AI in the education sector as stated by students and instructors.

4.2 Quantitative analysis

The next sections describe and analyze the results of the questionnaire that examines the students' perceptions of AI in education. Tables 4 to 8 display statistical data on five groups of factors: *students' awareness of AI, perceived effectiveness of AI, perceived impact of AI on education, willingness to use AI, and challenges related to AI use in education.*

Students' awareness of artificial intelligence. The mean values in Table 4, all exceeding 3.0, indicate a neutral to positive perception of students' awareness of AI, with the highest mean value reflecting familiarity with AI concepts (*mean = 3.46*). This signifies that students have a moderate to high degree of awareness of AI. The moderate familiarity with AI aligns with recent research demonstrating a growing awareness of AI among students, especially as it becomes increasingly incorporated into daily life and educational technologies [13]. Nonetheless, this awareness may remain insignificant, lacking profound technical comprehension or practical experience, a concern identified by [19]. The neutral score on learning AI instruction from educators (*mean = 3.01*) indicates that the incorporation of AI into formal education is still inconsistent. This corresponds with work emphasizing the disparate integration of AI in curricula, influenced by factors such as instructors' readiness, institutional resources, and curriculum design [40]. Augmenting AI-centric curricula and equipping educators with additional resources could mitigate this deficiency.

Table 4. Students' awareness of AI (frequency)

NO	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Rank
1	I am familiar with the concept of AI.	31	125	123	17	14	3.46	0.912	***1***
2	I learned using AI tools from my instructors at my college	16	102	95	62	35	3.01	1.091	***4***
3	I have experience using AI tools and applications	23	93	98	71	25	3.06	1.072	***3***
4	I used some AI tools that are used in the context of learning	32	126	87	47	18	3.35	1.043	***2***

Perceived effectiveness of artificial intelligence. The mean values in Table 5 indicate that students regard AI tools as effective in many contexts. Students perceive AI's capacity to automate repetitive administrative duties as a substantial advantage, evidenced by the highest mean score of 3.93. The belief that AI can improve efficiency and automation corresponds with extensive discourse in educational technology literature, highlighting AI's ability to adopt routine tasks, so enabling students and educators to concentrate on more significant, intricate activities [8]. This is especially apparent in AI technologies that facilitate administrative functions, evaluations, and information dissemination. The positive evaluation of AI's function in self-directed learning (mean = 3.72) indicates trends in personalized education. AI-driven adaptive learning platforms, which are tailored to students' learning styles and speeds, have demonstrated an enhancement in engagement and self-directed learning [25]. Nevertheless, the moderate ratings indicate that although students acknowledge this potential, its use in their educational experience may remain constrained.

Table 5. Students' perceived effectiveness of AI (frequency)

NO	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Rank
1	I believe that AI tools can contribute to Automation of tasks	84	147	60	12	7	3.93	0.906	1
2	I believe that AI tools can save my time than other applications	75	144	64	17	10	3.83	0.965	2
3	I believe that AI tools can contribute to increase Competition	70	125	82	21	12	3.71	1.014	4
4	I believe that AI tools can contribute to improve self-learning	62	142	73	23	10	3.72	0.973	3
5	I believe that AI tools can contribute to enhancing efficiency	62	137	78	19	14	3.69	1.005	5

The perceived impact of AI on education. The data reported in Table 6, with mean values of the seven items ranging from 2.75 to 3.68, indicates that students believe AI positively influences education, especially regarding innovation (*mean = 3.70*) and enhancing educational quality (*mean = 3.68*). Nonetheless, considerable opposition exists over the notion of AI replacing educators (*mean = 2.75*).

Table 6. Students' perceived impact of AI on education (frequency)

NO	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Rank
1	I believe that artificial intelligence can enhance the quality of education	59	130	91	22	8	3.68	0.948	2
2	I believe that AI tools can positively make learning engaging	63	127	82	23	15	3.65	1.038	3
3	I believe that AI tools can make Innovation for learning	54	144	87	14	11	3.70	0.930	1
4	I believe that AI help in replacing the instructors	22	62	93	81	52	2.75	1.164	7
5	I believe that AI tools can contribute to do my college projects	42	124	106	24	14	3.50	0.975	6
6	I have a positive attitude toward the use of AI tools in education.	38	128	112	20	12	3.52	0.927	5
7	Artificial Intelligence has value in education.	46	141	95	14	14	3.62	0.947	4

The preeminent ratings for AI's contribution to innovation and educational enhancement correspond with studies that emphasize AI's potential to transform learning by offering personalized educational experiences, automating content distribution, and facilitating novel interactions via virtual classrooms and intelligent tutoring systems [7, 41]. The hesitance to embrace AI as a substitute for educators (*mean = 2.75*) reflects apprehensions documented in the research regarding AI's inadequacies in emulating the human aspects of teaching, including emotional intelligence, mentorship, and individualized support [6, 34]. AI is regarded as a supplementary instrument rather than a replacement, highlighting the significance of human-AI collaboration in education. Incorporating AI into education to enhance

rather than replace traditional methods necessitates a balanced, collaborative strategy that regards AI as a support tool for educators. This can be accomplished by employing AI technologies for personalized education, such as adaptive learning platforms that customize information to meet individual student requirements while enabling instructors to offer guidance and context. According to [8], AI has been integrated into schools for administrative and educational purposes; it can automate administrative responsibilities such as grading and attendance monitoring, allowing educators to concentrate on engaging and innovative teaching methodologies, but the authors, along with [42], were not sure if AI will replace educators. [43], argues that AI has constraints that raise doubt on replacing human educators with AI. He stressed that AI currently lacks sentience and self-awareness, generating purely mechanical responses empty of emotions. Therefore, institutions should promote blended learning models, wherein AI enhances in-person instruction via technologies such as virtual tutors, language processors, or data-informed analyses of student performance. Professional development for educators helps ensure that AI enriches teaching, boosts student engagement, and reinforces the human connection in education.

Willingness to utilize artificial intelligence. The data in Table 7 indicate that students exhibit a moderate willingness to utilize AI tools, with the highest mean score reflecting the belief that AI will influence the future (*mean = 3.67*). This demonstrates an awareness of AI's increasing significance across various sectors. The students' confidence in AI's prospective function mirrors wider cultural patterns. Research indicates that familiarity with AI applications in daily life has fostered the perception that AI is essential for future professional settings, especially in sectors such as healthcare, finance, and education [13]. Students' readiness to utilize AI corresponds with research indicating that the younger demographic is typically more receptive to embracing new technology for personal and professional advancement [44].

Table 7. Students' willingness to utilize artificial intelligence (frequency)

NO	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Rank
1	I am willing to learn and use AI tools to enhance my learning at the college.	47	135	94	19	15	3.58	0.981	2
2	I believe that AI will play a significant role in shaping the future?	71	130	83	18	8	3.77	0.954	1
3	I plan to use AI tools for my learning after I graduate	45	123	109	19	14	3.54	0.967	3

The relatively lower score for the intention to utilize AI post-graduation (*mean = 3.54*) may reflect pragmatic issues, such as restricted access to AI resources or ambiguities regarding the efficient incorporation of AI into their professional trajectories, as posited by [40]. This underscores the necessity for enhanced AI literacy initiatives and exposure to practical AI applications.

Challenges of using artificial intelligence in education. Table 8 indicates significant apprehensions regarding the issues associated with AI, with the foremost concern pertaining to AI's involvement in evaluating academic performance (*mean = 3.34*) and ethical considerations (*mean = 3.33*). Concerns regarding AI's involvement in assessing academic performance correspond with broader worries about the fairness, transparency, and bias inherent in AI algorithms employed in grading systems. Research indicates that AI systems, while effective, may unintentionally

perpetuate biases, especially when the training data is unreliable [24, 21]. Ethical issues around data privacy (*mean = 3.26*) and cost (*mean = 3.29*) align with challenges identified in the research concerning the extensive implementation of AI, especially in under-resourced educational environments [45, 32]. Students' hesitation about the complexity of AI technologies (*mean = 3.18*) indicates an awareness that proficiency in AI tools necessitates technical competence that numerous learners and educators may currently lack [20]. This corresponds with research indicating that AI literacy continues to be an impediment to comprehensive adoption and efficacy [40]. Enhanced training and assistance for both students and instructors are essential to mitigate these issues.

Table 8. Challenges of using AI for business operations (frequency)

NO	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	SD	Rank
1	I have Concerns about ethical considerations with the adoption of AI tools	33	108	119	29	21	3.33	1.016	2
2	The cost of AI applications and AI technologies is a major challenge for me	25	102	136	32	15	3.29	0.931	3
3	I have Concerns about data security and privacy with the adoption of AI tools	33	91	125	45	16	3.26	1.004	4
4	The complexity and difficulty of AI technologies is a major challenge for me.	26	92	121	53	18	3.18	1.004	5
5	I have Concerns about AI assessing my academic performance, such as exams	34	103	121	38	14	3.34	0.981	1

4.3 Gender differences

The diverse attributes and individual traits, which may vary based on gender, might influence how students engage with and make use of online technology, namely artificial intelligence tools and applications. The perspective of a student varies based on their unique characteristics, such as gender and age, as well as their prior experiences, which shape their ideas and habits [46, 47]. Gender plays a significant role in Kuwait, as men and women tend to have distinct attitudes when it comes to using technology [48]. Gaining insight into the reasons behind the existence of this phenomenon in relation to cultural norms is essential for harmonizing systems with the cultural elements of a traditional society. It is expected that both males and females in Kuwait will adapt to using AI technology to improve their social connections, despite the influence of a collectivist society [48].

The data presented in Table 9 indicates that there is no statistically significant difference between male and female students in their assessment of the importance of education and their perspectives on AI. The t-test result, with a p-value of $p < 0.05$, indicates a lack of sufficient evidence to support the presence of gender disparities in the data. After examining the average values shown in the table, students have a positive view of AI and education. There is no significant variation across genders. Nevertheless, there is a substantial disparity between males and females, with males being more inclined towards perceiving greater benefits of AI. Recognizing the importance of considering gender views can stimulate creativity, enhance the quality of decision-making, provide fair opportunities to benefit from AI, and cultivate the educational environment.

Table 9. Gender differences in the perceptions of using AI in education (frequency 310)

Group	Gender	Mean	SD	t	Significance
AI Awareness	Male	3.18	0.689	–0.815	0.42
	Female	3.25	0.844		
Perceived Benefits of AI	Male	3.89	0.791	2.283	0.02
	Female	3.68	0.859		
Perceived Impact of AI on Education	Male	3.53	0.777	0.955	0.34
	Female	3.45	0.734		
Willingness or Future Involvement with AI	Male	3.71	0.862	1.630	0.10
	Female	3.56	0.841		
Challenges	Male	3.29	0.739	0.202	0.84
	Female	3.27	0.761		
Total	Male	3.52	0.636	1.088	0.28
	Female	3.44	0.655		

5 CONCLUSION

This paper thoroughly investigates how AI is incorporated into Kuwaiti higher education systems, shedding important light on the perspectives of faculty members and students alike. The mixed-methods design used in this study was instrumental in capturing multifaceted perspectives. Quantitative measurements provided statistical evidence of trends and correlations, while qualitative data obtained from instructors and students from CBS in Kuwait enriched understanding by offering detailed narratives and contextual insights. Overall, the findings indicate that students and instructors possess positive opinions regarding AI's role in education, especially its capacity to automate tasks, stimulate innovation, and enhance self-directed learning. Nonetheless, concerns regarding ethical problems, complexity, cost, and the possible displacement of educators suggest that they perceive AI as a complement rather than a replacement in the educational realm. These findings correspond with the current research, which underscores both the potential and constraints of AI in education. Addressing student concerns, including providing structured learning opportunities, ethical AI deployment, and equitable access across genders, is crucial for successfully integrating AI into educational institutions. In addition, the study revealed no statistically significant differences in the opinions on AI between male and female students, implying a general awareness of its relevance between genders. These findings underline the need to consider both the advantages and limitations of AI, especially in relation to Kuwait's more general objectives for modernization and educational excellence.

This study provides value by emphasizing current technology's potential impact on enhancing higher educational institutions' productivity, innovation, and global competitiveness. Understanding these varied perceptions is crucial for scholars, researchers, and technology developers to address concerns and create an environment conducive to the successful integration of AI tools, facilitating the transformation of education in a digital age. In addition, the study may inform the development of educational programs that enhance students' preparedness for the workforce landscape increasingly shaped by AI technologies. Encouraging individuals to engage in futuristic tools is crucial for the vision and mission of educational institutions in

Kuwait and other countries and regions, particularly in the context of the knowledge economy, positioning nations to excel in a rapidly evolving global landscape. This study will also show how important it is for both instructors and students to be able to use AI, arguing that it should be used as a change in how we teach rather than just a change in technology. The findings will also inform educational policymakers, administrators, educators, and AI developers about the opportunities, challenges, and ethical considerations associated with the integration of AI in educational practices and curriculum development. Policymakers play a vital role in supporting responsible and ethical AI development and application in educational settings by providing clear standards, regulations, and frameworks that stress equity, transparency, and privacy. They are responsible for ensuring that AI technologies correspond with educational goals and course objectives, respect ethical norms, and manage risks such as bias, discrimination, and data misuse. Policymakers and academicians in higher education must promote continuous monitoring and assessment of AI technologies; they could encourage the effective use of AI by offering a supportive infrastructure, resources, and training that enable educators to integrate AI into their methods of teaching properly. This entails providing professional development programs centered on the pedagogical applications of AI, ensuring faculty comprehend both the potential advantages and ethical implications. Policies may motivate educators to adopt AI as a revolutionary instrument for improving teaching and learning. They must emphasize accessibility to intuitive AI tools and foster collaborative environments for educators and students to exchange best practices and innovations.

6 LIMITATIONS AND FUTURE STUDIES

The focus group, with 26 participants, is small; although it facilitates the examination of crucial themes, its modest size significantly constrains the generalizability and dependability of the findings. The limited sample size constrains the capacity to extrapolate the results to the broader population of students or educators. The results represent the perspectives and experiences of the participants, which may not be indicative of all respondents. Regarding participant responses to the questionnaire, response bias may occur, causing participants to provide answers they think are expected and be afraid of a lack of knowledge about AI tools. It is suggested that future studies improve question wording or use anonymous surveys to minimize pressure to give socially desirable responses. In addition, the study sample involved in this study represents one academic institution (College of Business Studies) in Kuwait. Broadening the focus of the investigation to include additional educational institutions and a more diverse student population across Kuwait would help to better grasp the role that AI plays in education. Comparative analyses of Kuwaiti institutions with those elsewhere could also provide insightful analysis of best practices for AI integration.

Future studies should focus on creating plans to solve the challenges found in this study, especially those connected to ethical issues, expenses, and data security. To fully appreciate artificial intelligence's sustainability and efficiency, more research on how it might affect Kuwaiti educational results is required. Additionally, looking at the abilities and knowledge needed by educators to apply AI technologies in the classroom will help AI to be adopted successfully in the field of education. Furthermore, the statistical methods employed in this investigation may be insufficient to yield strong and varied findings. Subsequent studies ought to utilize more sophisticated statistical methodologies with expanded datasets to investigate more profound correlations. The authors also recommend an empirical study to develop a full array of models and an implementation framework for the effective integration

of AI in higher education institutions. This framework could serve as a significant resource for policymakers and scholars, offering actionable strategies and guidelines for the effective integration of AI technologies into educational systems.

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