Exploring the Utilization of Artificial Intelligence on Educational Efficiency:
A Field Study in Riyadh

Mrs. Sarah Hamoud Al-Kahtani

College of Management | Midocean University | UAE

Abstract: The integration of artificial intelligence (AI) in various domains has revolutionized the way individuals approach problem-solving and decision-making. In the field of education, AI has emerged as a powerful tool with the potential to enhance learning experiences and improve educational outcomes..The study aimed to explore the utilization of using artificial intelligence applications on achieving the effectiveness of education and on the success of the educational process in general.This study was conducted at an educational institiution as a field study in Riyadh, Saudi Arabia. The researcher used the descriptive-analytical approach by applying a questionnaire as a tool to collect data for the study.The researcher applied an electronic survey in the period from December of the academic year 2023 to February 2024. The primary data included information about the sample for the study according to the independent study variables, which are (profession-specialization applications, the support from the side of the institution administration to utilize artificial intelligence, factors that helped in the transition to the utilization of artificial intelligence applications and the difficulties faced by students, teachers, and administrators in benefiting from artificial intelligence applications.The study found significant correlations between AI application utilization and support from the side of the educational institution's administration, including encouragement, resource provision, and addressing challenges faced by female students and teachers in accessing AI-related resources. Based on the results and the growing demand for using these applications and this technology, the researcher recommends: raising awareness of AI's societal impact and ethical challenges, implementing a robust regulatory framework, and innovating a national application of AI-based on data governance. investing in AI ethics research and tools for monitoring ethical implications.

Keywords::, Artificial intelligence, educational efficiency, transition to AI applications, educational outcomes, Riyadh.

استكشاف استخدام الذكاء الاصطناعي لتحقيق الكفاءة التعليمية: دراسة ميدانية بالرياض

أ. ساره حمود القحطاني

كلية الإدارة | جامعة ميدأوشن | الإمارات العربية المتحدة

المستخلص: لقد أحدث استخدام الذكاء الاصطناعي(AI) ثورة في طريقة تعامل الأفراد في حل المشكلات وصنع القرار في مختلف المجالات., وقد برز الذكاء الاصطناعي في مجال التعليم كأداة قوية لديها القدرة على تعزيز تجارب التعلم وتحسين المخرجات التعليمية. هدفت الدراسة إلى استكشاف استخدام تطبيقات الذكاء الاصطناعي في تحقيق فاعلية التعليم ونجاح العملية التعليمية بشكل عام. تمت هذه الدراسة في مؤسسة تعليمية كدراسة ميدانية في الرياض، المملكة العربية السعودية. استخدم الباحث المنهج الوصفي-التحليلي من خلال توزيع استبانة كأداة لجمع البيانات. تم تطبيق استبانة إلكترونية في الفترة من ديسمبر للعام الأكاديمي 2023 حتى فبراير 2024. تضمنت البيانات الأولية معلومات حول العينة للدراسة وفقًا للمتغيرات المستقلة للدراسة، والتي هي (المهنة- التخصص- العمر). شملت الاستبانة 32 عبارة موزعة على أربعة محاور كما يلي: مدى الاستفادة من تطبيقات الذكاء الاصطناعي، والدعم من جانب إدارة المؤسسة لاستخدام الذكاء الاصطناعي، والعوامل التي ساعدت في الانتقال إلى استخدام تطبيقات الذكاء الاصطناعي، والصعوبات التي يواجهها الطلاب والمعلمون والإداريون في الاستفادة من تطبيقات الذكاء الاصطناعي. أظهرت نتائج الدراسة وجود علاقات ذات دلالة بين استخدام تطبيقات الذكاء الاصطناعي والدعم من جانب إدارة المؤسسة التعليمية، بما في ذلك التشجيع وتوفير الموارد ومعالجة التحديات التي تواجهها الطالبات والمعلمات في الوصول إلى الموارد المتعلقة بالذكاء الاصطناعي. استنادًا إلى النتائج والطلب المتزايد لاستخدام هذه التطبيقات وهذه التقنية، توصي الباحثة بزيادة الوعي بتأثيرات الذكاء الاصطناعي على المجتمع والتحديات الأخلاقية، وتنفيذ إطار تنظيمي قوي، وابتكار تطبيق وطني قائم على حوكمة البيانات. كما توصي بالاستثمار في أبحاث الأخلاقيات المتعلقة بالذكاء الاصطناعيتعاوني وأدوات مراقبة الآثار الأخلاقية.

الكلمات المفتاحية: الذكاء الاصناعي, ، الكفاءة التعليمية، التحول نحو تطبيقات الذكاء الاصطناعي، المخرجات التعليمية، الرياض.

1-Introduction.

Artificial intelligence applications have shown an effective role in the field of education, and there is a global trend towards relying heavily on these applications in most educational fields due to their ease of use, low cost, and ability to store a large amount of information, as these applications depend on machine learning or deep learning. Artificial intelligence can be defined as the science that is concerned with making electronic systems with intelligence similar to human intelligence, enabling the systems to think, make decisions, and act according to them in a manner commensurate with the nature of the tasks assigned to them (Shahatah, 2022).

(Awad et al., 2022).In addition, digital learning made learning easier and facilitated the work of educators and teachers by giving them the best techniques to make their jobs easier by using technology with AI as an assistant. Actually, artificial intelligence has a great importance and a positive impact on education in general. They also said the development of artificial intelligence will lead for a larger success and effectiveness of the education process.Therefore, this study aimed to explore the relationship between the utilization of artificial intelligence applications and the educational efficiency.

Research problem:

The research problem revolves around understanding the role of artificial intelligence (AI) applications in education as an emerging and rabidly envolving method that requires attention and awareness.It involves both technological and ethical considrations that require increased awareness and more researchs to ensure responsible, useful implementation. Despite the rapid advancements in information and communication technology, AI still lacks attention and real integration within the educational curriculum. Furthermore, there is a need for more scientific studies and researches that focus on this matter.

The research questions:

The main question here is:

- What is the extent of the benefit of utilizing Artificial intelligence on the educational efficiency ?

  Sub-questions are:

1- What is the level of support provided by the the educational institution's administration to utilize AI in learning?

2- What are the factors that facilitated the transition to the utilization of AI?

3- What are the challenges faced by students in utilizing AI in learning?

Hypothesis:

1- There is a statistically significant positive relationship between utilizing artificial intelligence applications and the support from the side of the ediocational instition's administration.

2- There is a statistically significant positive relationship between utilizing artificial intelligence applications and the support factors.

3- There is a statistically significant inverse relationship between utilizing artificial intelligence applications and the difficulties faced by students and staff in utilizing it.

The research objectives

1- Identify and explore the benefits of utilizing various applications of artificial intelligence in the field of education.

2- Investigate the reality of the utilization of artificial intelligence on the effectiveness of education in Saudi Arabia.

3- Explore the effects of artificial intelligence on student engagement and learning outcomes in the educational field.

4- Identify and analyze the benefits and challenges associated with the integration of artificial intelligence in the educational efficiency.

The significance of the research

The integration of artificial intelligence (AI) on educational efficiency has gained increasing attention due to its transformative potential, and this study seeks to explore the reality of the utiliziation of AI in the educational field in order to enhance effective learning in Saudi Arabia. Moreover, this study gains its importance since the potential benefits and challenges of utilizing AI in education that are crucial for educators, policymakers, and researchers who are interested in leveraging technology to improve

educational outcomes.Furthermore, the insights gained from this study can lead to an innovation of a national application of AI-based on data governance. It would ensure the ethical and safe implementation of the application to enhance and improve student learning experiences and outcomes.

Also, it can guide efforts to ensure that AI technologies are implemented in a professional way, benefiting all learners. Finally, it gains its importance due to the scarcity of studies in this regard.

2- Literature review

2-1- AI in education

Initially, the term AI was described as the task of making machines behave intelligently in a way that imitates human behavior. Since then, numerous definitions of AI have been proposed by scholars, along with advancements in AI technology. While a consensus has yet to be reached, experts generally agree that AI encompasses various forms of technology. Specifically, AI refers to the utilization of software, methodologies, and computer algorithms to address human-related problems(Akgun& Greenhow, 2022). According to (Al Darayseh, 2023) AI can be defined as a technology that builds systems with the capacity to think and act in ways similar to humans, and achieve objectives.Similarly, (Wardat et al., 2024) defines AI as Computing devices that engage in cognitive activities commonly linked to the human intellect, such as acquiring knowledge and resolving problems. Unlike conventional computer technologies that follow fixed sequences without considering individual needs and knowledge, AI analyzes patterns in gathered information (e.g., student comprehension and errors) and makes informed decisions to optimize outcomes (Lameras& Arnab., 2021). Moreover, AI assesses the results of previous approaches and generates new ones through continuous learning and reasoning processes. Consequently, AI is expected to have a positive impact on student achievement, creative thinking abilities, and problem-solving skills (Mohamed et al., 2022).

The potential of artificial intelligence (AI) to revolutionize how educators interact with students and fulfill their responsibilities in higher education is widely acknowledged. AI tools have been implemented in various educational institutions, leading to increased effectiveness in learning activities (Cui et al., 2019). Research studies have primarily focused on the attitudes of users towards embracing AI for personalized professional development, curriculum design, assessment and grading, as well as student support (Franzoni et al., 2020). Recent investigations have delved into the attitudes and behaviors of instructors when utilizing AI-integrated customer relationship management (CRM) systems, alongside their digital competencies that enhance work engagement (Ng et al., 2023).

2-2-previous studies

- *The study of (Denny et al., 2024)* aimed to investigate the possibilities of utilizing generative AI to improve education. Additionally, the study offered a comprehensive view of the workshop activities and identify various prospective research paths in the field of Generative AI in Education (GAIED). The researchers employed a survey article as their methodology. The findings underscore the importance of considering multiple viewpoints and recognizing the distinct challenges that arise in educational applications, emphasizing the continued cultivation of a supportive community in the realm of GAIED.

- *The study of (Forero and Negre, 2024)* aimed to explore possibilities for enhancing teaching and learning processes, as well as educational management, across all levels of the education system using machine learning and artificial intelligence. The research conducted a bibliographic search using the Web of Science and Scopus databases, and the methodology followed the PRISMA statement. A total of 55 articles published in high-impact journals between 2021 and 2023 were obtained and analyzed. The findings revealed that these studies discussed 33 different techniques of machine learning and artificial intelligence, along with their varied applications in educational settings at the primary, secondary, and higher education levels. The research was conducted in 38 different countries. The conclusions highlighted the significant impact of machine learning and artificial intelligence, which was evident in the implementation of diverse intelligent techniques in educational contexts and the growing research interest in artificial intelligence in secondary schools.

- *The study of (Wardat et al., 2024)* examined how math teachers in Abu Dhabi perceive the use of AI systems and applications in schools. The sample included 580 male and female math teachers from public and private schools in three educational regions of

Abu Dhabi. The research followed a descriptive analytical approach. The findings showed that incorporating AI in the curriculum can enhance teaching and improve student performance. It increases motivation, encourages competition and differentiation among students. There were no significant differences in teachers' perspectives on the importance of using AI in teaching, but variations were found in the challenges faced based on educational qualifications, particularly among teachers with master's degrees. These results can guide the development of guidelines for integrating AI in education based on teachers' experiences and considerations.

- *The study of (Uygun, 2024) was a* comprehensive research that engaged 74 educators and employed the Opinion Scale on Artificial Intelligence in Education to gather valuable perspectives. The findings demonstrate a predominantly favorable outlook on the utilization of AI in education, although significant concerns regarding ethical and privacy-related matters were evident. This study makes a substantial contribution to the ongoing discourse surrounding the role of AI in education, underscoring the need for a well-balanced approach that optimizes the advantages of AI while ensuring the protection of the rights and interests of all stakeholders.

- *The study of (Mafara and Abdullahi.2024)* aimed to explore the adoption of Artificial Intelligence (AI) in education, focusing on its challenges and possibilities. The research utilized a review paper approach to discuss various AI applications in education, such as machine learning, speech recognition, expert systems, and robotics. The findings highlight the advantages of AI adoption, including improved collaboration between teachers and students and real-time data provision. However, challenges were identified, such as the digital divide and the need for reliable infrastructure. The study concludes by emphasizing the importance of AI adoption in education while acknowledging the need to address these challenges.

- *The study of (Rahiman and Kodikal, 2024)* aimed to ascertain the extent of faculty members' awareness regarding the practicality and integration of artificial intelligence. Additionally, the research aimed to uncover the impact of AI on their learning experiences and the level of work engagement exhibited by teachers in higher education. The researcchers selected 250 faculty members from institutions ranked by QS (Quacquarelli Symonds) that operate in hybrid education modes. Through a quantitative research approach and the implementation of a structural equation model, the study examined the factors that influence the adoption of AI in this context. The results demonstrated that the implementation of AI facilitated the development of robust evaluation and assessment methods, leading to increased levels of work engagement among faculty members.

- *The study of (Ivanashko et al., 2024)* aimed to explore the role of artificial intelligence in education by analyzing its opportunities and challenges. The study used qualitative and quantitative methods, adhering to ethical standards. Over 50 recent works were reviewed, and 56 instructors from various Ukrainian higher education institutions participated. The positive impacts of artificial intelligence include personalized learning, automation of administrative tasks, enhanced support, and improved assessment. Challenges involve data privacy, security, bias, and the need for additional training. The findings suggested that implementing artificial intelligence in personalized learning, predictive analytics, and other areas can effectively shape the educational process and modernize training. The results can be used to raise awareness and promote the use of AI tools in educational institutions.

- *The study of (Awad et al., 2022)* aimed to explore the effects of e-learning, specifically through the utilization of artificial intelligence (AI) and future management tools, on the learning management system during the COVID-19 pandemic. The methodology involves examining the key benefits of Education 4.0, which encompasses the digital, virtual, and smart revolution in education. The findings of this study highlight the impact of e-learning, AI, and future management tools in effectively managing the learning process during the COVID-19 pandemic.. The study suggested activiating the use of digital technology, including AI, because it is not only facilitating educators' work but also enhances learning outcomes for students.

- *The study of (Chen et al., 2022)* aimed to identify trends and topics related to AI applications in education (AIEd).It used topic-based on bibliometrics. The study showed results of an increasing interest in using AI for educational purposes from the academic community, and recommender systems for personalized learning

- *The study of (Alzahrani, 2022)* aimed to focus on the role of artificial intelligence in education in the Arab world during the last five years. The study used a literature review research process, and the data was collected by retrieving research papers from three credible online databases (IEEE, ERIC, and Google Scholar). Results from AI usefulness showed AI has positive impact, Arab governments supported Universities in using this new method of learning, and also provided developmental training courses for

various technologies during the pandemic. Thus it recommended for, more research, resources, and funding by governments. Also, Arab countries must continue to invest in and utilize AI within their systems to keep up with the quickly changing world.

- *The study of (Chen et al., 2020)* aimed to to assess the impact of Artificial Intelligence (AI) on education.The researchers used a literature review as a research design and approach to facilitate the realization of the study purpose. The study found that AI has been used in education, which lead to achieve higher quality in teaching activities, improving the quality of learning. Therefore, it recommened that AI systems should be used more widely, which is expected to thrive on all aspects such as personal skill, learning ability and career development instead of just assisting students in understanding of specific knowledge.

- *The study of (Elhajji et al., 2020)*aimed to propose a strategic approach for implementing artificial intelligence (AI) in higher education to enhance learning outcomes and educational quality. The methodology involved analyzing and investigating the effective utilization and adoption of AI by universities in Saudi Arabia, aligning with the Kingdom's 2030 vision. The results indicated that AI can improve accessibility and inclusivity in learning, serving as a learning assistant that facilitates knowledge transmission. The paper provided a framework with specific recommendations for integrating AI into the teaching and learning process. It highlighted the need for collaborative efforts from all stakeholders in higher education to ensure the successful and beneficial use of this technology, in line with Saudi Arabia's 2030 vision.

- *The study of (Ma and Siau, 2018)* aimed to analyze the impact of artificial intelligence on higher education. The research examined the use of AI in higher education delivery and support. It used a longitudinal action research methodology, Using a scientific and known research method. The study provided insightful information for educators and detailed knowledge for academic theory building. Many jobs will become obsolete and new skill sets will be required. At the end of the study the researcchers recommended the Higher education administration to rise the challenge to prepare students for the AI revolution and equip them with the necessary skill sets to compete in the AI age.

In reference to previous studies:

The researcher agrees with previous studies on:
- The potential role of artificial intelligence (AI).
- Ethical concerns arise due to AI inheriting biases from its information sources. Key concerns based on ethics, which can lead to raise awareness and promote the use of AI tools in educational institutions.
- Importance of the goverments funding to encourage the educational institution utilizing the AI appliacations.
- The role of the administrations is also crucial as some of the previous studies mentioned.
- Some of these studies raised awareness while implementing the AI tools and suggested some ways and work frames.
- It is also clear that such technology need to raise the importance of engaging teachers, parents in conversations with their children to increase awareness and prevent complete reliance on AI.
- It is crucial to empower individuals to discern between right and wrong in utilizing AI, aiming for the desired benefits.
- Most of the previous studies used quantataive and qualtitative methods. On the other hand, some conducted a bibliographic search using the Web of Science and Scopus databases while others applied questionairs that conducted in several educational levels in different countries.
- Most of the findings insisted on the crucial role of AI applications to enhance the educationalproccess

Comment on the previous studies:

These studies offer a wealth of insights into the utilization of artificial intelligence (AI) in education, presenting both opportunities and challenges for educators, administrators, and policymakers. By exploring various applications and impacts of AI in the educational process, and how stakeholders can derive several benefits:

1- **Enhanced Teaching and Learning:** Studies such as (Elhajji et al., 2020 ; Chen et al., 2020 ; Alzahrani, 2022 ; Forero and Negre, 2024 ; Mafara and Abdullahi.2024 ;Rahiman and Kodikal, 2024 ; Ivanashko et al., 2024) highlight how AI can improve teaching quality, learning outcomes, and student engagement, serving as a learning assistant that facilitates knowledge transmission.However, it was evident in the implementation of diverse intelligent techniques in educational

contexts, including improved collaboration between teachers and students and real-time data provision.Also, the implementation of AI that facilitated the development of robust evaluation and assessment methods, leading

2- **Sustainability:**The study of (chen et al., 2020) recommened that AI systems should be used more widely, which is expected to thrive on all aspects such as personal skill, learning ability and career development instead of just assisting students in understanding of specific knowledge.Also, the stuy of (Chen et al., 2022)showed results of an increasing interest in using AI for educational purposes from the academic community, and recommender systems for personalized learning.

3- **Research and Innovation:** Studies like *(Elhajji et al., 2020)* provided a framework with specific recommendations for integrating AI into the teaching and learning process.Moreeover, The study of (Chen et al., 2022) identified emerging trends and innovative applications of AI in education, providing valuable insights for future research and development.

4- **Preparation for the Future:** The study of *(Ma and Siau, 2018)* asked to prepare students for the AI revolution and equip them with the necessary skill sets to compete in the AI age.The study of (Wardat et al., 2024) aligns with the recent research, which revealed that incorporating AI in the curriculum can enhance teaching and improve student performance

5- **Challenges:**

   - While these studies highlight the potential benefits of AI in education, they also identify several challenges and considerations: The findings of the study of (Denny et al., 2024) underscore the importance of considering multiple viewpoints and recognizing the distinct challenges that arise in educational applications. The study of (Wardat et al., 2024) found some challenges based on educational qualifications, particularly among teachers with master's degrees.. The study of (Uygun, 2024) revealed a significant concerns regarding ethical and privacy-related matters were evident. However, challenges were identified in The study of (Mafara and Abdullahi.2024) as the digital divide and the need for reliable infrastructure. While The study of (Ivanashko et al., 2024) showed that the challenges involve data privacy, security, bias, and the need for additional training, to raise awareness and promote the use of AI tools in educational institutions.

What distinguishes our study is that it stands out as a recent investigation that examines the utilization of artificial intelligence in the field of education. Notably, this study focuses specifically on students in an iducational English institution in Riyadh as a field study, where the application of artificial intelligence had not been previously explored. Moreover, the researcher conducted an analytical study on a random sample of students and teachers in the institution from all specializations, and this will be a new addition to the research topic, allowing for a comprehensive analysis of the topic at hand.

3-Methodology and Research Methods.

To achieve the research purposes and objectives, the researcher followed a descriptive analytical approach. This was done to explore the positive effects of using artificial intelligence applications and their role in the success of the educational process at an English institution in Riyadh, as well as the possibility of sustainability to enhance the efficiency of education. The researcher distributed an electronic questionnaire to the students at the English institution to study their experience with using artificial intelligence applications from October 2023 to February 2024 at the Language Institute. The perspectives from the side of students, teachers, and administrators were taken into account.

Study Tools:

To achieve the study objectives, the researcher used a questionnaire based on two previous studies conducted by researchers (Al-Ibrahim, 2022 ; Al-Kahtani, 2023). The questionnaire consisted of five sections based on a five-point Likert scale. The data was collected quantitatively and analyzed using the Statistical Package for the Social Sciences (SPSS).

Research Population:
Sample Description:

The research population consists of female students and teachers of an English Language Institute in Riyadh, with a total of approximately 500 students and employees from various disciplines and study levels (general, health, applied). The questionnaire was distributed to a random sample of 217 students and teachers.

Thus, the research tool became ready in its final format to measure what it was designed for. The research tool consisted of two main parts:

1.   The first part:

Demographic characteristics of the sample, including initial data about the individuals in the study sample based on independent study variables such as occupation, specialization, and age.

2.   The second part:

The research tool consisted of 32 statements divided into four dimentions as follows:

-    Benefit from artificial intelligence applications.

-    The institution's admenstration support for the use of artificial intelligence applications.

-    Factors that contributed to the transition to using artificial intelligence applications.

-    Difficulties faced by students and teachers in benefiting from artificial intelligence applications.

Study Limitions:

●   Place Limitation:

Kingdom of Saudi Arabia, Riyadh- English Language Institute.

●   Human Limitation:

Female students and teachers of an English Language Institute from the following specializations: health, general and applied.

●   Time Limitation:

This study was conducted during the academic year 2023-2024.

Proposed process:

In this study, the researcher conducted surveys from October 2023 to February 2024. The aim was to distribute questionnaires to the sample members and analyze their data to obtain clear research results according to the timeline.

Statistical Analysis:

The researcher used the Statistical Package for the Social Sciences (SPSS) software, which is abbreviated as SPSS, to analyze the data. The collected data was processed and analyzed using the questionnaire tool to calculate validity and reliability through standard deviation, mean, and correlation coefficient.The researcher assigned one score to each statement in the five statements (very high, high, moderate, weak, very weak).

Validity and Reliability:

Sincerity of internal consistency:

To verify the validity of the internal consistency of the study tool, Pearson's correlation coefficient was calculated between the score of each instrument statement and the total score of the dimension to which the statement belongs on the--- scale, and its results are shown in the following table:

Table number (1) Pearson's correlation coefficient for scale statements with the dimension of the statement

The fourth Correlation coefficient		The third dimension Correlation coefficient		The second dimension Correlation coefficient		The first dimension Correlation coefficient	
.212*	19	.905**	15	.824**	12	.490**	1
.354**	20	.872**	16	.877**	13	.641**	2
.564**	21	.789**	17	.833**	14	.621**	3
.441**	22	.761**	18			-0.1	4
.603**	23					.675**	5

The fourth Correlation coefficient		The third dimension Correlation coefficient		The second dimension Correlation coefficient		The first dimension Correlation coefficient	
.420**	24					.655**	6
.539**	25					.645**	7
.492**	26					.550**	8
.431**	27					.684**	9
.394**	28					.694**	10
.526**	29					.577**	11
.378**	30						
.301**	31						
.338**	32						

**Correlation coefficient D statistically at the significance level ($\alpha \leq 0.01$).. * Correlation coefficient D statistically at the significance level ($\alpha \leq 0.05$).

It is clear from the results of the previous table that all Pearson's correlation coefficients between the degree of each statement of the resolution and the total degree of the dimension to which the statement belongs were statistically significant except for statement (4). In the first dimension, which requires deletion in order for the tool to be honest.

Consistency of the dimensions of the tool:

To verify the consistency of the dimensions of the study tool, Pearson's correlation coefficient was calculated between the score of each dimension of the--- scale and the overall score of the instrument, as shown in the following table:

Table No. (2) Pearson's correlation coefficient for the dimensions of the tool with the total degree of the study tool

Correlation coefficient	Dimension
.838**	The first
.500**	The second
.714**	The third
.774**	The fourth

**Correlation coefficient D statistically at the significance level ($\alpha \leq 0.01$).. * Correlation coefficient D statistically at the significance level ($\alpha \leq 0.05$).

It is clear from the results of the previous table that the Pearson correlation coefficients between the score of each dimension and the overall score of the instrument were statistically significant.

Stability of the study instrument:

The stability of the study instrument was tested, using Cronbach's Alpha equation. The following table shows the stability coefficients of the study instrument:

Table No. (3) Tool stability coefficient using Cronbach alpha equation

Number of statements	Alfakronbach Laboratories	Dimension
11	0.742	The first
3	0.798	The second
4	0.848	The third
14	0.651	The fourth
32	0.833	The tool as a whole

It is clear from the results of the previous table that the values of the stability coefficient of the dimensions were between (0.848) and (0.651). It is also clear that the stability coefficient of the tool as a whole was (0.833). This indicates that the tool has high stability.

4-Results

4-1-The result of the main question: "What is the extent of the benefit of utilizing Artificial intelligence on the educational efficiency?"

To answer this question; means, standard deviations, and rankings were calculated for the phrases of "the dimension of the benefit of utilizing Artificial intelligence in education, " and the results were as shown in the following table:

Table No. (4)

n	items	mean	std	rank	level
8	The artificial intelligence applications provided me with various useful tools	4.31	0.62	1	high
10	Artificial intelligence applications have enhanced my learning experience	4.28	0.65	2	high
11	Artificial intelligence applications have increased student engagement and participatio	4.23	0.73	3	high
2	The use of artificial intelligence applications has positively influenced the effectiveness of education at the institution	4.20	0.82	4	high
1	Artificial intelligence applications were used in studying at the institution	4.11	0.72	5	high
9	Artificial intelligence applications have improved the quality of feedback and assessment	4.11	0.78	6	high
3	Artificial intelligence applications have improved educational outcomes	4.06	0.86	7	high
5	Artificial intelligence applications made communication with friends available through the day on weekdays	3.79	0.88	8	high
7	Artificial intelligence applications made communication with teachers available through the day on weekdays.	3.72	0.81	9	high
6	Artificial intelligence applications made communication with institution administration available through the day on weekday	3.65	0.88	10	high
4	I did not take artificial intelligence applications seriously for study	1.89	1.12	11	low
	whole dimension	3.69	0.35	high	

The previous table indicates the extent of the benefit of utilizing Artificial intelligence in education.

The dimension ranked at the level of high as the average response of the sample to the dimension's statements was (3.69) with a standard deviation of (0.35).The phrase "The artificial intelligence applications provided me with various useful tools" came in first place at the level of high as the average response of the sample to the dimension's statements was (4.31) with a standard deviation of (0.62). In last place was the phrase "I did not take artificial intelligence applications seriously for study" with a level of low where the average response of the sample to the dimension's statements was (1.89) with a standard deviation of (1.12).which agrees with rhe study of *(Ma and Siau.2018)* that showed the great impact of AI on higher education in a significant way as well as the The study of (Chen et al, .2020) which concluded that AI has been used in education, which lead to achieve higher quality in teaching activities, improving the quality of learning.More over, the findings of the study of *(Wardat et al, .2024)* showed that incorporating AI in the curriculum can enhance teaching and improve student performance.

The result of the sub-questions:

1. What is the level of support provided by the educational institution's administration to utilize AI in learning?

To answer this question; means, standard deviations, and rankings were calculated for the phrases of "the level of support provided by the the institution administration for utilizing(AI) in learning" and the results were as shown in the following table:

Table No. (5)

n	items	mean	std	rank	level
2	The institution administration provides support to research for utilizing artificial intelligence	3.75	0.87	1	high

n	items	mean	std	rank	level
	application				
1	The institution administration actively encourages the use of artificial intelligence applications in education	3.72	0.89	2	high
3	The institution administration provides training programs for utilizing artificial intelligence application	3.59	0.83	3	high
	whole dimension	3.69	0.73	high	

The previous table indicates that the level of support provided by the the institution administration for utilizing(AI) in learning dimension ranked at the level of high as the average response of the sample to the dimension's statements was (3.69) with a standard deviation of (0.73), and the phrase "The institution administration provides support to research for utilizing artificial intelligence application" came in first place at the level of high as the average response of the sample to the dimension's statements was (3.75) with a standard deviation of (0.87). In last place was the phrase "The institution administration provides training programs for utilizing artificial intelligence application" with a level of high where the average response of the sample to the dimension's statements was (3.59) with a standard deviation of (0.83).

4-2- What are the factors that facilitated the transition to the utilization of AI?

To answer this question; means, standard deviations, and rankings were calculated for the phrases of "the factors that facilitated the transition to Utilizing (AI)" and the results were as shown in the following table:

Table No. (6)

n	items	mean	std	rank	level
2	Using artificial intelligence applications has allowed me to receive assistance whenever I want.	4.25	0.81	1	high
1	Using artificial intelligence applications has allowed me to receive assistance wherever I am.	4.23	0.74	2	high
4	Using artificial intelligence applications has saved time in submitting assignment.	4.18	0.77	3	high
3	Artificial intelligence applications have helped me in quickly understanding the lessons.	4.12	0.84	4	high
	whole dimension	4.19	0.66	high	

The previous table indicates that the level of the factors that facilitated the transition to Utilizing (AI) dimension ranked at the level of high as the average response of the sample to the dimension's statements was (4.19) with a standard deviation of (0.66), and the phrase "Using artificial intelligence applications has allowed me to receive assistance whenever I want." came in first place at the level of high as the average response of the sample to the dimension's statements was (4.25) with a standard deviation of (0.81). In last place was the phrase "Artificial intelligence applications have helped me in quickly understanding the lessons." with a level of high where the average response of the sample to the dimension's statements was (4.12) with a standard deviation of (0.84).

4-3-What are the challenges faced by students in utilizing AI in learning?

To answer this question; means, standard deviations, and rankings were calculated for the phrases of "the extent of the benefit of utilizing Artificial intelligence in education," and the results were as shown in the following table:

Table No. (7)

n	items	mean	std	rank	level
10	Using Artificial intelligence applications is beneficial in the field of education.	4.29	0.77	1	high
6	I find using artificial applications in education enjoyable	4.19	0.75	2	high
9	Using Artificial intelligence applications is essential in the main time	4.1	0.86	3	high
4	I have a passion for using artificial intelligence applications	4.00	1.00	4	high
8	Enhancing the use of artificial intelligence applications in education is the best way forward for the future	4.00	0.85	5	high
7	Using artificial intelligence applications is the best learning experience in the institute	3.81	0.76	6	high
2	Clear guidelines and policies were established to ensure effective and ethical use of	3.74	0.74	7	high

n	items	mean	std	rank	level
	artificial intelligence applications				
1	Adequate infrastructure and technological support were provided for implementing artificial intelligence applications	3.66	0.85	8	high
3	I need training to operate those applications	3.10	1.08	9	moderate
14	Limited availability of technical support and assistance affected the implementation of artificial intelligence applications	2.93	1.06	10	moderate
5	I don't have any concerns about data privacy and security posed challenges in utilizing artificial.intelligence applications	2.87	1.04	11	moderate
11	Lack of technical skills and knowledge hindered the effective use of.artificial intelligence applications	2.79	1.09	12	moderate
12	Insufficient access to necessary technology and devices limited the utilization of artificial intelligence.applications	2.58	1.04	13	low
13	Resistance to change and reluctance to adopt new technologies were barriers to implementing artificial intelligence applications	2.50	1.15	14	low
	whole dimension	3.47	0.40		high

The previous table indicates that the extent of the benefit of utilizing Artificial intelligence in education dimension ranked at the level of high as the average response of the sample to the dimension's statements was (3.47) with a standard deviation of (0.44), and the phrase "I find using artificial applications in education enjoyable" came in first place at the level of high as the average response of the sample to the dimension's statements was (4.29) with a standard deviation of (0.77) which agrees with the study of **(Chen et al, .2022)** that showed results of an increasing interest in using AI for educational purposes from the academic community. In last place was the phrase "Resistance to change and reluctance to adopt new technologies were barriers to implementing artificial intelligence applications" with a level of low where the average response of the sample to the dimension's statements was (2.50) with a standard deviation of (1.15). On the other hand, the findings of the study of (Ivanashko et al.2024) showed that challenges involve data privacy, security, bias, and need additional training.

4-4-Hypothises:

There is a statistically significant positive relationship between utilizing artificial intelligence applications and the support from the side of the ediocational instition's administration.

To verify this hypothesis, The researcher calculated the Pearson correlation coefficient between utilizing artificial intelligence applications and the suppor from the side of the institution's administration, the results were as shown in the following table:

Table No. (8)

Variable 1	Variable 2	Pearson correlation	p-value
utilizing artificial intelligence applications	**upportingthe institute management or administration**	.675**	.001

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

The previous table indicates the p-value of the Pearson correlation coefficient amounted to (0.001), this means there is a statistically significant correlation between utilizing artificial intelligence applications and the suppor from the side of the institution's administration, the value of the correlation coefficient reached (0.675), this indicates that The correlation is a strong positive.

There is a statistically significant positive relationship between utilizing artificial intelligence applications and the support factors.

To verify this hypothesis, the researcher calculated the Pearson correlation coefficient between utilizing artificial intelligence applications and support factors; the results were as shown in the following table:

Table No. (9)

Variable 1	Variable 2	Pearson correlation	p-value
utilizing artificial intelligence applications	support factors	.531**	.001

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

The previous table indicates the p-value of the Pearson correlation coefficient amounted to (0.001), this means there is a statistically significant correlation between utilizing artificial intelligence applications and support factors, the value of the correlation coefficient reached (0.531), and this indicates that the relationship is a moderate positive.

There is a statistically significant inverse relationship between utilizing artificial intelligence applications and the difficulties faced by students and staff in utilizing it.

To verify this hypothesis, the researcher calculated the Pearson correlation coefficient between utilizing artificial intelligence applications and the difficulties faced by female students and staff in benefiting from it, the results were as shown in table10:

Table No. (10)

Variable 1	Variable 2	Pearson correlation	p-value
utilizing artificial intelligence applications	the difficulties faced by female students and staff in benefiting from it	.522**	.001

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

The previous table indicates the p-value of the Pearson correlation coefficient amounted to (0.001), this means there is a statistically significant correlation between utilizing artificial intelligence applications and the difficulties faced by female students and staff in benefiting from it, the value of the correlation coefficient reached (0.522), this indicates that The correlation is a moderate positive.

		Frequency	Percent
	Administration	5	2.30
	Teacher	32	14.75
Valid	Student	180	82.95
	Total	217	100.0

		Frequency	Percent
	Other	57	26.27
	Applied	12	5.53
Valid	Health	101	46.54
	General	47	21.66
	Total	217	100.0

		Frequency	Percent
	30 or older	36	16.59
	26-29 years	3	1.38
Valid	18-25 18- 25 years	178	82.03
	Total	217	100.0

To connect the main question regarding the extent of the benefit of utilizing artificial intelligence (AI) in education with the descriptive statistics provided, the researcher can analyze the findings and draw insights from the data presented.

Extent of Benefit of Utilizing Artificial Intelligence in Education:

The analysis revealed that the majority of respondents perceived significant benefits in utilizing artificial intelligence applications in education. Phrases such as "Artificial intelligence applications have enhanced my learning experience" and "Artificial intelligence applications have increased student engagement and participation" received high rankings, indicating positive perceptions

among respondents. These findings align with previous studies such as (Elhajji et al., 2020 ; Chen et al., 2020 ; Alzahrani, 2022 ; Forero and Negre, 2024 ; Mafara and Abdullahi.2024 ; Rahiman and Kodikal, 2024 ; Ivanashko et al., 2024), which emphasized the positive impact of AI on education and the quality of learning.

Moreover, the data indicated strong support from the institution administration for utilizing AI in learning. Statements such as "The institution administration actively encourages the use of artificial intelligence applications in education" and "The institution administration provides support to research for utilizing artificial intelligence application" ranked high, indicating proactive support from the administration. This institutional support is crucial for the successful integration of AI in education, as highlighted by the study of (Elhajji et al., 2020), which emphasized the need for collaborative efforts from all stakeholders in higher education. Additionally, the factors that facilitated the transition to utilizing AI in education were positively perceived by respondents. Statements such as "Using artificial intelligence applications has allowed me to receive assistance wherever I am" and "Using artificial intelligence applications has allowed me to receive assistance whenever I want" ranked high, indicating the convenience and efficacy of AI-driven assistance. These findings underscore the potential of AI to improve accessibility and support in educational settings, as discussed by (Elhajji et al., 2020).

Connection to the Main Question:

The descriptive statistics provided insights into the extent of the benefit of utilizing artificial intelligence in education. The high rankings and positive perceptions among respondents suggest that AI holds significant potential to enhance learning experiences, improve educational outcomes, and facilitate access to support resources. These findings support the hypothesis that there is a statistically significant positive relationship between utilizing artificial intelligence applications and supporting the institute management, as well as the support factors. Moreover, the data indicated a moderate positive correlation between utilizing artificial intelligence applications and the difficulties faced by female students and staff in benefiting from it. This suggests that while AI offers substantial benefits, there may still be challenges and disparities in its implementation and accessibility that need to be addressed.

4-6-Discussion

The study's findings shed light on several crucial aspects surrounding the utilization of Artificial Intelligence (AI) in education. Firstly, they reveal a generally positive role of AI in the educational process. Statements such as "Artificial intelligence applications have improved educational outcomes" and "Artificial intelligence applications have enhanced my learning experience" received high rankings. These results align with existing research emphasizing the significant impact of AI on higher education, indicating improved teaching quality and student performance. Additionally, the study's findings underscore the proactive role of institution administrations in supporting the integration of AI into learning environments. Statements like "The institution administration actively encourages the use of artificial intelligence applications in education" reflect a supportive envirnoment towards AI implementation, including initiatives like research support and training programs.

Moreover, the study identifies various factors that facilitate the transition to utilizing AI in education. Respondents emphasized the accessibility and convenience offered by AI applications, such as receiving assistance wherever and whenever needed. These findings highlight the importance of user-friendly AI tools in driving their adoption and integration into educational practices. However, alongside these positive perceptions, the study also highlights challenges faced by students in utilizing AI. Concerns regarding the need for training, limited technical support, and data privacy and security issues emerge as significant barriers to effective AI utilization in education. These challenges underscore the importance of addressing infrastructure and support systems to ensure the seamless integration of AI technologies into the educational process.

In line with the study's hypotheses, the findings confirm the positive relationship between utilizing AI applications and supporting institute's adminstration, as well as the support factors such as training programs. However, an unexpected positive relatinship is observed between AI utilization and the difficulties faced by female students and staff. This suggests the need for further investigation is needed to explore the challenges associated with integrating AI technologies into education and to determine the benefits it can bring. Overall, the study's insights provide valuable guidance for educators, and administrators seeking to benefits from AI while addressing associated challenges to foster inclusive and effective learning environments.

The findings regarding the integration of artificial intelligence (AI) into education reveal a complex landscape of opportunities and challenges. Firstly, research indicates a significant positive impact on teaching quality and student performance

resulting from the incorporation of AI tools. This aligns with prior studies, like the one conducted by (Mafara and Abdullahi, 2020), which emphasized the positive transformation that occurred when AI was utilized education. However, despite recognizing the potential positive role of AI, there are existing gaps in institutional support and training programs. Nonetheless, the statistically significant positive relationship between the AI utilization and institutional support showes a recognition within educational institutions of the importance of utilizin AI in education, which leads to enhanced investment in training and resources.

Moreover, AI applications are facilitating the learning process by providing assistance, useful learning tools, and educational materials. This shows that utilizing AI in education can be a great way to provide personalized learning that meets the need of different learners effectively and leads to learning sustainability. Yet, the correlation between AI utilization and factors such as ease of control, technical support, and clear protocols underscores the critical role of supportive infrastructure and guidelines in maximizing the efficacy of AI in education. This necessitates ethical frameworks to ensure responsible AI usage. Nevertheless, alongside the benefits, challenges, particularly concerning the equitable access and utilization of AI technologies.Students and teachers face notable barriers, such as the weak infrastructure and tools, hindering their ability to benefit from AI integration. Additionally, concerns regarding ethical and privacy-related matters loom large, emphasizing the importance of addressing these issues to foster an inclusive and responsible utilization of AI in education.

So, results can be summarized as the following:

Utilizing artificial intelligence in education has significant benefits, improving teaching quality and student performance. There is a statistically significant relationship between utilizing artificial intelligence applications and the educational effectiveness which agrees with the study of (Mafara and Abdullahi, 202) that emphasized on the importance of AI adoption in education while acknowledging the need to address these challenges.

The institution administration provides support for utilizing AI in learning, although training programs could be improved. There is a statistically significant correlation between utilizing artificial intelligence applications and supporting Institute Administration such as encouranging, providing resources and training

AI applications facilitate learning by providing assistance and aiding quick understanding of lessons. There is a statistically significant correlation between utilizing artificial intelligence applications and support factors such as ease to control, the provided technical support and clear protocols that established to insure effective and ethical use of it.

There is a statistically significant correlation between utilizing artificial intelligence applications and the difficulties faced by female students and staff in benefiting from it like infrastructures and tools. The study of (Uygun, 2024) also mentioned a significant concerns regarding ethical and privacy-related matters were evident.

Recommendations:

Based on the previous resultsand the growing demand for using these applications and this technology, the researcher recommends the following:

1. Artificial intelligence should be integrated into the educational curricula.
2. Enhance awareness of utulizations of artificial intelligence on society and individuals, with a focus on ethical aspects and associated challenges.
3. Develop a robust regulatory framework that governs the use of artificial intelligence, ensuring compliance with ethical standards and human rights.
4. Stakeholders should increase awareness and develop a national and local application dedicated to its integration in education, to promote the utilization and benefits of artificial intelligence, ..
5. Foster research in the ethics of artificial intelligence and provide resources to develop tools and methodologies for assessing and monitoring the ethical impact of technology.

References

-   Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics, 2*(3), 431-440

- Al Darayseh, A. (2023). Acceptance of artificial intelligence in teaching science: Science teachers' perspective. *Computers and Education: Artificial Intelligence*, *4*, 100132.

- Al-Ibrahim, A. B. I. (2022). The experience of transitioning to distance learning in public education following the COVID-19 pandemic: Students' perspectives. Journal of Faculty of Education (Assiut), 38(12), 330-362.(translatedvfrom Arabic)

- Al-kahtani, S. H. (2023). The impact of distance education on achieving the effectiveness of the educational process during the COVID-19 pandemic: A case study at Princess Nourah University in Riyadh. Journal of Educational and Psychological Sciences, 7(41), 47-61..(translatedvfrom Arabic)

- Alzahrani, A. (2022). A systematic review of artificial intelligence in education in the arab world. *Amazonia Investiga*, *11*(54), 293-305.

- Awad, S. O., Mohamed, Y., & Shaheen, R. (2022). Applications of Artificial Intelligence in Education. *Al-Azkiyaa: International Journal Languages and Education*.

- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, *8*, 75264-75278.

- Chen, X., Zou, D., Xie, H., Cheng, G., & Liu, C. (2022). Two decades of artificial intelligence in education. *Educational Technology & Society*, *25*(1), 28-47.

- Cui, W., Xue, Z., & Thai, K. P. (2018, November). Performance comparison of an AI-based adaptive learning system in China. In *2018 Chinese automation congress (CAC)* (pp. 3170-3175). IEEE.

- Denny, P., Gulwani, S., Heffernan, N. T., Käser, T., Moore, S., Rafferty, A. N., & Singla, A. (2024). Generative AI for Education (GAIED): Advances, Opportunities, and Challenges. *arXiv preprint arXiv:2402.01580*.

- Elhajji, M., Alsayyari, A. S., &Alblawi, A. (2020, March). Towards an artificial intelligence strategy for higher education in Saudi Arabia. In *2020 3rd International Conference on Computer Applications & Information Security (ICCAIS)* (pp. 1-7). IEEE.

- Forero-Corba, W., &Bennasar, F. N. (2024). Techniques and applications of Machine Learning and Artificial Intelligence in education: a systematic review. *RIED-Revistalberoamericana de Educación a Distancia*, *27*(1).

- Franzoni, V., Milani, A., Mengoni, P., &Piccinato, F. (2020). Artificial intelligence visual metaphors in e-learning interfaces for learning analytics. *Applied Sciences*, *10*(20), 7195.

- Ivanashko, O., Kozak, A., Knysh, T., &Honchar, K. (2024). The Role of Artificial Intelligence in Shaping the Future of Education: Opportunities and Challenges. *Futurity Education*, *4*(1), 126-146.

- Lameras, P., & Arnab, S. (2021). Power to the teachers: an exploratory review on artificial intelligence in education. *Information*, *13*(1), 14.

- Ma, Y., & Siau, K. L. (2018). Artificial intelligence impacts on higher education.

- Mafara, R., & Abdullahi, S. (2024). Adopting Artificial Intelligence (AI) in Education: Challenges & Possibilities. *Asian Journal of Advanced Research and Reports*, *18*(2), 106-111.

- Mohamed, M. Z. B., Hidayat, R., & Mahmud, M. K. H. B. (2022). Artificial Intelligence in Mathematics Education: A Systematic Literature Review. *International Electronic Journal of Mathematics Education*, *17*(3).

- Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2023). Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world. *Educational technology research and development*, *71*(1), 137-161.

- Rahiman, H. U., &Kodikal, R. (2024). Revolutionizing education: Artificial intelligence empowered learning in higher education. *Cogent Education*, *11*(1), 2293431.

- Shahtah, N. R. M. (2022). Utilizing artificial intelligence applications in the educational process. The Scientific Journal of the Egyptian Association for Computer-Assisted Education, 10(2), 205-214..(translatedvfrom Arabic)

- Uygun, D. (2024). Teachers' perspectives on artificial intelligence in education. *Advances in Mobile Learning Educational Research*, *4*(1), 931-939.

- Wardat, Y., Tashtoush, M., AlAli, R., & Saleh, S. (2024). Artificial Intelligence in Education: Mathematics Teachers' Perspectives, Practices and Challenges. *Iraqi Journal for Computer Science and Mathematics*, *5*(1), 60-77.