

The Reality of Artificial Intelligence in the School Environment

واقع الذكاء الاصطناعي في الوسط المدرسي

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Abstract:

Artificial intelligence in the school environment is a pivotal tool for improving the quality of education and providing unique learning experiences, as it is used to analyze student data, identify strengths and weaknesses, and provide individualized study plans. However, the reality of implementing this technology is not without challenges; schools face difficulties in protecting student privacy and securing data, in addition to a lack of qualified personnel to use it effectively. Furthermore, the costs associated with implementing artificial intelligence are significantly tied to school budgets, making its adoption difficult in many institutions. There is also concern about the impact of this technology on human interaction between students and teachers, as it may reduce opportunities for direct communication.

Keywords: artificial intelligence, school education, technical challenges, human interaction, educational assessment.

ملخص: يعد الذكاء الاصطناعي في الوسط المدرسي أداة محورية لتحسين جودة التعليم وتقديم تجارب تعلم متفردة، حيث يُستخدم في تحليل بيانات الطلاب، وتحديد نقاط القوة والضعف، وتوفير خطط دراسية فردية. غير أن واقع تطبيق هذه التكنولوجيا لا يخلو من التحديات؛ إذ تواجه المدارس صعوبات في حماية خصوصية الطلاب وتأمين البيانات، بالإضافة إلى نقص الكوادر المؤهلة لاستخدامها بفعالية. كذلك، ترتبط تكاليف تطبيق الذكاء الاصطناعي بشكل كبير بميزانيات المدارس، مما يجعل تبنيه صعباً في العديد من المؤسسات. كما أن هناك قلقاً من تأثير هذه التكنولوجيا على التفاعل الإنساني بين الطلاب والمعلمين، إذ يمكن أن يقلل من فرص التواصل المباشر.

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1. Introduction

The products of artificial intelligence and modern technologies currently available across various industries, particularly in the field of education, have provided us with new tools to support learning skills and encourage abilities among students. By focusing on technology and teachers, the emphasis is on improving education and providing the latest technologies to meet the needs of each student. Strategies such as interactive learning activities and educational games are intertwined with teaching tools that utilize the learning capabilities of the student, and traditional teaching methods often face limitations in achieving academic success as education progresses across different learning levels. In this context, artificial intelligence plays a significant role in enhancing children's creativity, as well as critical thinking in problem-solving. It offers challenging and stimulating education that requires analytical and creative thinking, while also helping children develop the thinking skills they need for future challenges. Additionally, artificial intelligence assists in structuring the teaching experience to guide the details of practice, which requires teachers to dynamically focus on each student's strengths and weaknesses. In addition to its recreational impact, technology also contributes to the development of social skills in children, such as managing their emotions and their ability to communicate positively with others. Projects and tools based on modern sciences help build children's self-confidence and encourage them to collaborate in a safe and healthy manner. This integration plays an important role in enhancing social and emotional well-being, preparing children to be active members of society who value connections and solidarity with their environment. On the other hand, artificial intelligence experiences provide children with opportunities to think in new and unconventional ways, assisting them in creativity and achievement.

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2. Research Problem:

Despite the significant benefits that artificial intelligence technologies offer in the field of education (Beijing Conference, 2019), (Jeddah Conference, 2019), their use in developing the capabilities of school-aged children raises a set of issues and challenges that require in-depth study. One of the fundamental issues lies in how to balance reliance on these technologies and traditional educational methods to ensure the achievement of integrated educational outcomes (Mona, Mohammed, 2022). While AI-supported tools provide advanced opportunities for personalized learning and the enhancement of cognitive and creative skills, concerns arise regarding their impact on children's social and emotional interactions, as excessive use may lead to a decline in human communication and weakened teamwork skills.

There are also questions regarding the role of artificial intelligence in developing critical and independent thinking in children, as well as its impact on their ability to make decisions independently of reliance on technology. Furthermore, there is the issue of the privacy of children's personal data and the potential for its inappropriate use or violation. All these challenges raise questions about the best ways to employ artificial intelligence technologies in education to achieve a balance between developing educational skills and enhancing the social and emotional aspects of the school-aged child.

Question: How can artificial intelligence technologies effectively contribute to the development of a school-aged child's abilities, in light of the challenges related to the excessive use of these technologies and the concerns associated with data privacy and intellectual independence?

3Importance of the Research:

The importance of this study lies in highlighting the role of artificial intelligence in developing educational practices and its direct impact on the learner's capabilities. It also examines how to best utilize these strategies to achieve maximum improvements in children's imagination and creativity, considering the potential challenges associated with the significant interest in this technology. It plays a role in developing integrated teaching methods

that align with the demands of the digital age.

-4 Research Objectives:

To identify the contribution of these technologies to the development of intellectual and social skills in children within the educational environment. In addition, to examine the effects of frequent technology use on children's ability to build social relationships .

In addition to clarifying the implications of excessive use of artificial intelligence technologies in education and the potential effects on the student's personality and mind as well as their overall development, exploring the ethical implications of collecting and using children's data, and identifying best practices to protect their privacy to ensure an AI-based educational environment. Formulating educational strategies that take into account technological advancements while maintaining a balance between the use of modern technology and the development of children's human potential.

5. Definition of Terms :

5.1-Artificial Intelligence :

Artificial Intelligence is defined as "a set of creative methods, means, and theories" for creating and designing models of intelligent computer systems that enable them to simulate the capabilities and behaviors of the human brain (Ocaña-Fernandez, 2019) .

Abu Zaid defines it as a branch of computer science that can be developed and programmed using computers that mimic human intelligence; however, computers can perform certain tasks instead of humans, which require thinking, understanding, hearing, speaking, and movement in a logical and organized manner .

On the other hand, Al-Blowi believes that artificial intelligence is based on the idea of modeling and imitating human intelligence using advanced systems and technical devices to find solutions to complex problems in a manner more suitable for humans (Al-Blowi, 2020).

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6. Previous Studies :

The study by Fernandez-Ocaña et al. (2019) titled "Artificial Intelligence and Its Implications in Higher Education" aimed to identify artificial intelligence and its implications in higher education. After completing the analytical descriptions, it successfully demonstrated that computer tools can significantly enhance visual forms of artificial intelligence in education across various educational levels, with qualitative improvements being unsuccessful. It provided students with precise specializations tailored to their learning requirements, and they were able to integrate different forms of human interaction with technological information and communication. The study emphasizes that the major challenges faced by universities in the new millennium are centered around the urgent need for planning and implementing digital skills for their students, in order to better train them and subsequently understand entities and their diversities according to their needs, in addition to applying a digital language supported by artificial intelligence programs. The study by Qashti (2020) titled "The Impact of Artificial Intelligence on the Development of Educational Systems" aimed to identify the use of artificial intelligence applications in supporting education and the extent of their impact on the development of educational systems. The study relied on an inductive approach through the theoretical analysis of artificial intelligence and reached a set of recommendations, the most important of which is the necessity of using artificial intelligence applications to support education at all its stages in a manner that makes students eager and enthusiastic about it, making the study enjoyable, entertaining, and appealing. It also emphasized the need to develop the educational environment for interaction with artificial intelligence applications and to meet the requirements for transitioning to knowledge-based learning. Additionally, it called for the preparation of training programs to develop skills in using artificial intelligence applications and conducting studies and research in this framework (Qashti, 2020). The study by Imam, Walid (2015) addressed the use of social media platforms by children and its impact on their social interaction and skills in this area. The study was conducted on a

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sample of 200 children from schools in Cairo and Menoufia. The media survey method was employed to analyze the data. The results showed that the children included in the study use social media platforms on a daily basis, and there is a positive correlation between the use of these platforms and increased social interaction among children. However, no long-term effect of social media use on children's social interaction in their social relationships was observed. (Walid, 2015)

The study by Mansour (2021), titled "Artificial Intelligence between Reality, Truth, and Imagination in the Educational Process," aimed to investigate the role and importance of artificial intelligence in the educational process. It relied on a descriptive approach by extrapolating and analyzing studies, research, and books related to its subject; this was done to identify the theoretical foundation for the applications of artificial intelligence that are beneficial for the development of the educational process. It also concluded that employing certain applications of artificial intelligence in the educational process, such as smart education systems, smart content, and virtual reality technology, can address some of the challenges and problems faced. The study provided several recommendations based on its findings, the most important of which is the necessity of employing artificial intelligence applications in educational institutions and utilizing them in various fields of the educational process, as well as training those involved in the educational process to use technology and smart systems to keep pace with the developments occurring in the field of artificial intelligence (Mansour, 2021).

7. Concept of Artificial Intelligence :

Ismail defines it as the engineering science that makes machines intelligent, particularly computer programs, and pertains to the task of using computers to understand human intelligence (Ismail, 2018) .

Fuqy defines it as one of the computer sciences that seeks advanced methods for programming to perform tasks resembling human intelligence by understanding mental processes and their equivalent computational operations, which enhance the computer's ability to solve complex problems and make decisions (Fuqy, 2012) .

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8. Artificial Intelligence and Education :

Traditional education has gaps from which artificial intelligence emerges to serve the educational process, as classrooms, printed textbooks, and lectures are incapable of achieving success in the educational process for some learners. They require a more effective means to achieve good performance and acquire knowledge, which is found in digital education and its superior ability to learn quickly. Its roles have become to simulate the roles played by the teacher and the methods and strategies for presenting and displaying information to students in a way that motivates the learning process and satisfies their needs regarding perplexing inquiries, in addition to measuring students' levels and making decisions based on that (Saad, Shatouh, 2019).

9. Applications of Artificial Intelligence in Learning:

Many studies, such as those by Al-Qahtani (2021) and Al-Hujaili and Al-Faran (2020), agree that the most important applications of artificial intelligence used in the educational and learning process are as follows:

9-1 Smart Chatbots: A software program designed for intelligent human interactions, based on the interaction between the user and the program. It seeks to communicate through text (words), or sounds (voice), or a combination of both. This process takes various forms, such as a messaging system, a website, or a memory device application, or a phone. Students can interact with it by formulating a question related to a specific topic, and then the chatbot takes on the role of answering the posed question, providing solutions, assistance, advice, guidance, or even empathy, depending on what the recipients require. One of the most prominent and recent examples is the training of ChatGPT or Transformer Training-Pre Generative Conversation by the American company OpenAI.

9-2 Educational Robots: Autonomous machines that follow a set of instructions stored in the device's electronic memory. These software programs are designed using special computer programs and are connected to the robot's components. They can classify an educational program, or an

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educational tool, or a teaching method, performing roles parallel to those of the teacher.

9-3 Smart Educational Games: Proposed games programmed by computers designed to achieve specific educational goals, filled with fun, challenge, focus, and competition. They are designed in a way that alleviates mental fatigue, increases concentration, allows for rational decision-making, and facilitates quick problem-solving while strengthening relationships and social cohesion.

9-4 Smart Assessment: Computer programs that can evaluate higher-order thinking skills, automatically grade assignments and complex tests. They analyze learners' performance, identify their strengths and weaknesses, and provide necessary support in a timely manner.

10. The Impact of Artificial Intelligence Techniques on the School-Aged Child:

Artificial intelligence techniques are considered modern tools that are bringing about a radical transformation in various fields, especially in the field of education. The impact of these techniques on the school-aged child is evident through several key aspects, including skill enhancement.

10 . 1 The Impact of Artificial Intelligence on the Development of Cognitive Skills (Critical Thinking, Problem Solving).

The impact of artificial intelligence on the development of cognitive skills, such as critical thinking and problem solving, is a topic of significant importance in the modern era. By analyzing vast amounts of data rapidly, it helps individuals better understand information and make evidence-based decisions. AI also provides information from diverse sources, encouraging individuals to consider multiple perspectives. Furthermore, it enhances problem-solving skills by offering innovative solutions through advanced algorithms and by providing simulation models to practice these skills in educational environments. In addition, it offers personalized learning experiences, helping individuals improve their skills according to their needs.

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By analyzing mistakes and providing suitable learning opportunities, it supports adaptability, motivating individuals to develop new thinking strategies. Overall, we conclude that artificial intelligence plays a crucial and significant role in supporting and developing cognitive skills; however, it requires individuals to engage actively and productively with these tools to ensure successful outcomes. (Al-Qahtani, 2021)

11. The Role of Artificial Intelligence in Supporting Creativity and Innovative Thinking .

Artificial intelligence plays a significant role in enhancing creativity and innovative thinking by providing tools and techniques that support innovation across various fields. AI enables individuals to explore new ideas and generate serious solutions through data analysis, as well as offering platforms for collaboration among learners, contributing to the exchange of ideas and engagement in collective thinking. Furthermore, AI-powered systems can provide appropriate and effective suggestions that assist in the development of new projects, enhancing the capacity for creative thinking. By using artificial intelligence and transcending traditional boundaries, it leads to the development of innovative ideas and projects that drive progress in multiple areas, ranging from science to technology. Thus, artificial intelligence becomes a key driver of creativity and innovative thinking in the modern era.

12- Response of Teachers to Changes Imposed by Artificial Intelligence Technologies.

The response of teachers and parents to the changes imposed by artificial intelligence technologies in education varies, as this response is influenced by levels of understanding and acceptance of technology. On one hand, some teachers and parents show great enthusiasm for integrating artificial intelligence into the curriculum, citing the benefits of these technologies in enhancing and personalizing educational experiences according to individual student needs. Others support the use of artificial intelligence tools to improve educational efficiency and facilitate assessment processes. On the

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other hand, there are concerns and anxieties among some regarding the impact of these technologies on the quality of education and human interaction. Some teachers express their worry that excessive reliance on artificial intelligence may negatively affect the development of critical and social thinking skills among students. Additionally, some parents voice their concerns about privacy and security, emphasizing the importance of protecting their children's data. Therefore, continuous communication between schools and parents is deemed essential to ensure that everyone understands artificial intelligence technologies and their potentials, as well as to address the associated issues and concerns, contributing to a positive integration between education and technology.

13.The Importance of Integrating Artificial Intelligence with Traditional Educational Methods.

The importance of integrating artificial intelligence in a manner that complements traditional educational methods is a vital element for improving the quality and effectiveness of education. A balanced integration between artificial intelligence and traditional techniques allows teachers to utilize AI tools to analyze students' needs based on their individual approaches, thereby enhancing educational effectiveness. Additionally, artificial intelligence can assist in providing interactive and engaging educational content that motivates students to participate and encourages them to explore. At the same time, traditional methods maintain the significance of human interaction, which is essential for developing communication and collaboration skills among students. By integrating artificial intelligence with traditional methods, a dynamic learning environment can be created that supports the development of students' cognitive, social, and emotional skills, and better prepares them to face future challenges. Consequently, this integration represents a step towards achieving balanced and high-quality education that aligns with the demands of the digital age.

14. Strategies for Effectively Employing Artificial Intelligence Technologies in Education

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Effectively employing artificial intelligence technologies in education requires the adoption of multiple strategies that ensure the realization of educational benefits while safeguarding student safety and privacy. Educational stakeholders must develop a comprehensive plan for training teachers on the use of artificial intelligence tools, enabling them to understand how to integrate these technologies into curricula in effective and appropriate ways. There should be clear guidelines regarding data protection, including strict policies for data collection and usage, as well as guarantees for protecting student privacy. Additionally, it is preferable to integrate artificial intelligence with traditional educational methods, allowing the strengths of both approaches to be leveraged without losing the essential human interaction. It is noteworthy that continuous communication with parents and the local community regarding the use of artificial intelligence should be enhanced to address concerns and increase trust. Furthermore, the evaluation and assessment of artificial intelligence tools should be conducted periodically to ensure their alignment with educational goals and the needs of students. Through these strategies.

15 .Challenges Associated with the Overuse of Artificial Intelligence in Education

The challenges related to the excessive use of artificial intelligence in education parallel a range of issues that negatively impact the learning experience. An overreliance on technology can lead to a reduction in human interaction, thereby eliminating opportunities for the development of social skills and effective communication between students and teachers. It is noteworthy that this may cause feelings of isolation among students, as they tend to rely on systems rather than engage in group activities. We conclude that there is a risk to the future of the educational and learning process, as artificial intelligence may focus on providing content tailored to specific learning styles, depriving students of diverse experiences that encourage critical thinking and innovative creativity. Finally, a significant reliance on artificial intelligence may erode fundamental cognitive abilities in students, such as independent thinking and problem-solving, if technology is not

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integrated in a balanced manner within the educational process. Therefore, it is essential that artificial intelligence is used in a thoughtful manner that ensures educational benefits while not overlooking these challenges .

16- The barriers to integrating artificial intelligence into curricula.

The integration of artificial intelligence into educational curricula faces a number of challenges that may hinder the realization of the potential benefits of this technology. Many educational institutions lack the necessary technological infrastructure to support AI applications, which requires significant investments in hardware and software, in addition to professional training for teachers. There are challenges related to academic training, and teachers need adequate training to understand how to use these technologies effectively, which may not be available in some schools. Concerns regarding privacy and security also arise, raising questions about how to protect student information. Furthermore, the absence of a well-thought-out strategy for how to use AI in education may lead to ineffective or inappropriate applications. It should be noted that resistance to change from some teachers and administrators may be another obstacle, as some prefer traditional teaching methods and fear reliance on technology. Therefore, it is essential to address these barriers comprehensively to ensure the successful integration of artificial intelligence into educational curricula and to enhance the educational process.

Conclusion:

The impact of artificial intelligence technologies on education and the development of children's skills is evident through this technology, which offers real opportunities to enhance the educational process and facilitate personalized learning. However, the effective use of these technologies requires a delicate balance between benefits and ethical and social considerations. By integrating artificial intelligence with traditional methods and enhancing privacy protection, a rich educational environment can be achieved that supports the holistic growth of children. We must continue to develop effective strategies to ensure the ethical use of technology, contributing to preparing future generations to face the challenges of the

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digital age with efficiency and confidence. Investing in technology-supported education, while considering ethical and social dimensions, represents a fundamental step towards a better and more advanced educational future, where every child can harness their potential and energies in a safe environment.

-Recommendations

-Educational institutions should establish general policies to protect student data privacy and ensure strict procedures for data collection and usage, with an emphasis on the Parents' Law .

-Provide a comprehensive training program for teachers on the use of artificial intelligence, to understand its active applications in the curriculum .

-There is a necessity for strategic coordination in the use and safety of AI-supported tools and services, to ensure that its learning objectives align with the needs of learners .

-Plan for the development of diverse artificial intelligence technologies to meet the needs of all students .

- Encourage research and development in the field of artificial intelligence technologies to achieve continuous improvement in educational systems and ensure the effective use of these technologies.

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