



## Exploring Benefits and Addressing Challenges of Artificial Intelligence in Education

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DOI : <https://doi.org/10.55248/gengpi.6.0125.0312>

### ABSTRACT

Artificial intelligence or AI in educational settings garners immense spotlight. This is especially true in current times. It is altering the landscape of how we conduct education and learning. Implications of AI in the educational system hold complexity. The current article therefore delves into its potential merits and demerits. Personalized educational experiences - are one of its potential benefits. Streamlined administration procedures are another benefit. Additionally, there are data-driven insights for instructors and academic organizations. Upgraded assessments can also be attributed to AI. There is also automation and innovations in education associated with this. The positive aspects of AI in education are balanced by a few drawbacks. Some of these include concerns about ethics. Another is the technological gap and complexities of data security and privacy in AI-powered education. The article's goal is to offer a comprehensive understanding of artificial intelligence's operation in the educational sector. We need a comprehensive strategy to use AI. It is essential to ensure an equitable, cutting-edge morally upstanding learning environment. This is needed especially for students from diverse backgrounds. How the education sector is growing more diverse is also important.

**Keywords:** Artificial intelligence AI in Education, Potential Advantages, Disadvantages of AI.

### Introduction

Artificial intelligence AI is a technique for simulating human intelligence in computer systems. It is used to ensure that it mimics the thinking and actions of humans. Computers today are equipped with cognitive abilities. These abilities are indicative of humans. Artificial intelligence's foremost objective is to emulate human behavior. Artificial intelligence (AI) technology is a dynamic and expanding discipline with decades of experience. It puts special emphasis on intelligent agents—machines that can understand their surroundings, make judgments, and take actions to improve the potential for success (Shabbir & Answer, 2018). The phrase "artificial intelligence" conjures up images of supercomputers, which are computers with massive amounts of processing power, and adaptive behavior, such as the addition of sensors and other parts that allow them to function and think like humans. This strengthens the bond between the supercomputer and humans (Chen et al., 2020).

Artificial intelligence is the capacity of computer programs to learn and think. When a computer program performs a task that typically needs human intelligence people consider it artificial intelligence (Mitchell, 2019). AI holds an extensive variety of applications across many industries. It finds a notable role in education. Artificial intelligence in education (AIED), is a specialized field. It originated in the 1970s. It captures technological advancements fitted to educational environments. Those environments are mainly higher learning institutions. Apart from basic automation, AIED's main focus is to provide individuals with flexible specific, and interesting learning avenues. AI learning has three main categories: *Super* which is believed to surpass human capabilities; *General*, which mimics human cognitive processes. Lastly *narrow*, it accomplishes very specific tasks. Four categories of AI emerge from this division. The first category is *Reactive Machines*, It specializes and does not store memory. The second category is *Limited Memory*, This is similar to the function of the human cerebral cortex. It gets better with data. It however lacks memory retention. The third category is the *Anticipated Theory of Mind*, Its vision is to simulate human connections. It aims to understand feelings thoughts and motives. Finally, we have the fourth category which is *projected Self-Awareness*, It visualizes being cognizant of oneself. Exploration of its state and predicting the emotions of others. In this way, Artificial intelligence, known as machine intelligence, pertains to the use of technology. This technology is mostly computers that have the capability to process huge data. They show better efficiency than humans. It often surpasses humans. This efficiency in processing allows for the completion of tasks. Tasks that usually necessitate human intervention. Tasks like making decisions and object detection and resolving multifaceted problems feasible. However, the program is capable of making short work of them. It can identify objects. It makes it possible to detect objects. Yet there is an important consideration to be remembered that, the data must be of good quality. A level of accuracy is required in the gathered information. The system's potential lies in the data's purity. The AI system can only be as efficient as the information fed into it.

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## Artificial Intelligence in Education

Education holds paramount significance to everyone as the foundation for a successful life. Constant efforts are being carried out to boost the quality of education, from amendments to curricula to pedagogical techniques. Over the past 25 years, there has been considerable advancement in the application of AI in education (Roll & Wylie, 2016). Artificial Intelligence has been widely used in education since the development of computing and information processing technologies. AI in education creates emerging opportunities, challenges, and potential for teaching strategies (Ouyang & Jiao, 2021). Through field testing and the development of modular standard prototypes for statistical reasoning, data visualization, and learning analytics, artificial intelligence (AI) in education aims to dramatically enhance teaching methodologies (Alam, 2021). Artificial intelligence (AI) is noteworthy amidst the frequent drifts. It's a blossoming tech innovation reshaping cultural norms and infiltrating a few sectors. AI has the potential for pronounced impact in one sphere. In some cases, it has shown that potential. This sphere is education. Artificial intelligence in education has the ability to help students grow. It supports in gaining knowledge across various scenarios. AI in education continues to develop new methods. In current times, educational establishments worldwide utilize AI frequently. AI is used in different scenarios. Instructors learners, parents and colleges are exploring new perspectives. These perspectives deepen the understanding of education. Contention arises about replacing humans with humanoid robots as educators. This isn't the future path of AI in education. It's the opposite. The focus is to use computational intelligence to enhance the learning process. This enhancement is for students and instructors. It's about expanding the efficacy and efficiency of the educational system. Looking towards the future, education plans to accept an array of AI-driven tools. These tools will impact the upcoming educational landscape fundamentally. AI has potential to revolutionize teaching and learning. Innovative methods to promote personalized education are possible with AI. Tools to upgrade assessments can be created. AI can minimize time spent on teacher planning. Responses to AI's adoption in education are assorted encompassing enthusiasm anxiety, numerous inquiries. While some people think positively about how artificial intelligence (AI) could revolutionize the educational system, others are worried about the potential hazards it might bring to humanity. Despite the incorporation of artificial intelligence (AI), the educational sector has undergone an incredible evolution, as evidenced by an assortment of cutting-edge platforms and apps. Applications including *Duolingo*, *Dream Box Learning*, *Scribe Sense*, *Squirrel AI*, *Cram101*, *Quillionz*, *Story Stream*, *Edmentum*, *Knewton*, *Edpuzzle*, *ChatGPT*, etc are a few examples. These illustrations highlight in what manner AI is boosting the educational process while fostering productivity and personalization. Nevertheless, as AI keeps influencing the education sector, it becomes increasingly important to thoroughly evaluate not merely the benefits but also the possible disadvantages or problems associated with the equity adaptation and shifting responsibilities of instructors.

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## The Potential Advantages of Artificial Intelligence in the Education Sector.

### 1. Enhancing the precision of assessment and personalized learning:-

In the last few decades, there has been an upsurge in enthusiasm for using AI to transform personalized learning in education and cater experiences of learning to the requirements of each student. One of the most important objectives of AI in education is to provide each student with personalized educational support or aid according to their learning circumstance, preferences, or other personal characteristics (Hwang, 2014; Hwang et al., 2020). Systems powered by AI deliver a tailored approach by examining student data, potentially transforming learning achievements, enhancing participation, and reducing rates of dropping out. Furthermore, AI shows potential for strengthening assessment procedures, guaranteeing prompt feedback, and facilitating more precise appraisals of the performance of students. As an illustration, the linguistic learning software *Duolingo* makes use of AI algorithms to evaluate interactions between users and generate immediate feedback on language assignments. The amalgamation of AI and education accommodates to a broad range of requirements for learning through personalized programs, AI-infused arcade games, and various other interactive aspects, thereby dispensing with the antiquated "one-size-fits-all" paradigm. The capacity of artificial intelligence (AI) to customize instruction according to each learner's pace and learning style, circumventing the drawbacks of conventional instructional techniques, is fundamentally how this technology transforms education.

Kelleher and Tierney (2018) claimed artificial intelligence (AI) algorithms can produce personalized educational plans for learners according to their distinctive skills, desires, and needs. As learners appear to remain motivated to learn when instructional materials are customized according to their needs, this personalized strategy can boost both educational outcomes and involvement. Additionally, incorporating AI with education can lighten the workload on instructors by permitting them to devote additional time to collaborating with students individually rather than carrying out extensive strategies. For example, assessment evaluation can be performed by AI, enabling teachers to concentrate on extra responsibilities (Mandernach, 2018). Additionally, tools fueled by AI can generate insightful information on student achievement which can be employed to advance teaching strategies and to enhance student learning outcomes.

### 2. AI in Education to Encourage Worldwide Knowledge Exchange:-

A multitude of valuable opportunities are available for individuals globally. They can actively participate in the transmission of knowledge and skills. This is all made possible through the integration of AI in education. This evolution is especially visible in the educational sector. Tools powered by AI are revolutionizing the learning methods and information distribution of individuals. Certainly! The Coursera platform is an eminent example. It highlights how AI-powered education promotes the sharing of knowledge across borders. A virtual learning platform called Coursera is in collaboration with esteemed universities. It also collaborates with organizations worldwide. Together, they offer a vast array of courses and specializations. Coursera uses artificial intelligence (AI) technologies. This integration provides a personalized educational experience to students. When students register for a course AI algorithms study their learning preferences. AI also studies behaviors and achievements. After collecting data,

the platform recommends more courses. It also recommends tasks and resources. These recommendations align with the preferences and aims of each learner.

### 3. Elevating Education with AI-Powered Interaction and Assistance:-

*Interactive Experiences:* Tools like ClassVR are employed to create an interactive learning experience. Virtual and augmented reality transport students to historical periods. It takes them to miniature realities and scientific simulations, captivating their curiosity. For example, physics experimentation becomes simulation based. Tasks like dissecting virtual creatures are given. Exploring the landscapes of ancient civilizations is digitized. Learners deepen their knowledge and curiosity.

*Conversational Artificial Intelligence Guides:* One such tool is IBM Watson Assistant for Education. It serves as a conversational AI (artificial intelligence) guide. This demonstrates the capabilities of the technology. The system functions as a virtual instructor the capabilities of conversational artificial intelligence (AI). Learners acquire swift, customized support across an assortment of courses. The artificial intelligence (AI) chatbot, for illustration, can provide contextual insights to students grappling through literature analysis, promoting autonomous learning, and understanding. Through fully immersive experiences and individualized instruction, this AI collaboration expands the standards for education. Horizons are broadened by virtual reality, and learners are empowered by conversational artificial intelligence (AI), strengthening participation and knowledge retention.

### 4. Intelligent Automation along with Content Innovations: The Impact of AI on Education

*Productivity through Task Automation:* Using artificial intelligence in classrooms as well as virtual learning environments automates imperative operations, relieving instructors from administrative encumbrance. The management of records is a simple task, the same applies to grading exams. It also extends to creating presentations and evaluating assignments. In some cases, there is this AI-driven application called Gradescope. It lessens the burden of grading, ensures uniformity, and saves time.

Artificial intelligence has become a critical tool. It supports educators and researchers in creating engaging educational content. It spurs the interest of students with rich visualizations. These include 2D and 3D models. AI streamlines the process of producing compact digitized instructions too. Gadget access to these guidelines is easy. Appinventiv's Gurushala is a prime example. It is an education platform that uses AI to provide educational content and interactive learning. The potential of AI in education transformation is demonstrated through its exploitation.

### 5. Artificial Intelligence Impact on Education, Why it's Dynamic:-

Focus is on Inclusiveness and Strategic Viewpoint. Expanding Accessibility and Strategic Perspective is a paramount focus. AI/ML-centered education applications characterize the prevalent generation. It's a significant symbol of AI's inclusion in education. AI has unlocked the Adaptable Accessibility of Information. Modern tech supplies multi-lingual aid functionality. It's made to help learners from varied linguistic backgrounds. They grapple with information due to language barriers. One instance is Babbel, a linguistic-learning application. It hooks up AI algorithms to personalize sessions. This happens while serving real-time language translations. Moreover, powered tools of artificial intelligence are present. Such tools have a name, in this case, Presentations Interpreter. They enhance accessibility by serving live translations. These happen through lectures being held on the internet. The benefits are for all, yet, particularly for those who can't hear and non-native language speakers.

*Enhancing Classroom Dynamics, Tactical Approaches:* AI's contribution to education involves strengthening classroom composition and streamlining distance learning. AI partners with instructors to optimize the process of instruction and learning, far away from displacing human engagement. As an illustration, the AI-powered tool ScribeSense examines the writing tendencies of learners to identify deficiencies in learning and offer prompt treatments. This is a concrete instance of how AI can be an important collaborator in education, addressing specific needs and fostering an additional personalized and successful educational setting by utilizing information insights.

### 6. Expanding The organization's Potential by Upskilling to Bridge the Skills disparity:-

Organizations are frequently struggling with an immense discrepancy between the expertise they need and the workforce's capabilities amid the ever-evolving technological world. The enactment of tactical upskilling was triggered by the skills gap. It is generally referred to as a flaw. These initiatives extend beyond the classroom. They provide regular training for existing workers. Organizations offer accessibility and also give inexpensive opportunities for skill advancement. This is done by deploying AI and ML-powered software applications. The strategy does not only enhance the technological proficiency of the workforce. It also encourages constant advancement and creativity. Adoption of AI in educational settings promotes learning and development (L&D). It does this by evaluating and streamlining the learning process. It is based on specific patterns of learning.

### 7. Decentralised and Secured Learning Platforms:-

The educational sector is adopting AI firmly. However, it frequently faces difficulties. These include the security of data and flexible access to information. Antiquated certification procedures can also pose a challenge. During these difficulties solutions based on decentralized AI can usher in technological advancement. This advancement is seen especially in education. In this regard, Appinventiv's Nova is of interest. It is a blockchain technology learning management system. Its design aims to address authenticity problems. These problems are frequently encountered in the education sector. This LMS is supported by blockchain technology and artificial intelligence. It delivers solutions. These solutions pertain to informational and data confidentiality. The system caters to billions of learners and educators.

**AI Transforming Exam Security:-** Exam interviews are being restructured by AI-driven tools. These tools detect suspicious behavior and report it to administrators. AI programs examine individuals. They use webcams, microphones, and web browsers by adopting Keystroke monitoring to identify any anomalies. There are some instances of AI in examinations: **Proctorio**: keeps an eye out for dishonesty during examinations conducted online. **ExamSoft**: Investigates patterns of response to uncover irregularities. **Pearson VUE's OnVUE**: Uses web cameras and microphones for observing those taking the tests. **Honorlock**: Ensures protected virtual examinations by authenticating and monitoring test-takers. Exam integrity and reliability are strengthened by incorporating AI, which additionally solves troubles and facilitates the educational process. AI is being utilized by EdTech companies and educational organizations to optimize their efficiency.

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## Disadvantages of AI in Education

Unquestionably, incorporating AI into education has an extensive list of crucial benefits. Nevertheless, it is essential to identify that there is an assortment of downsides that should be considered along with the advantages.

### 1. Over-Reliance upon Technology: A Growing Concern in Education

Utilizing artificial intelligence (AI) in education has multiple benefits and transforming the educational and learning processes. AI facilitates a personalized and productive strategy by streamlining responsibilities for instructors and optimizing learning pathways for learners. However, being overly dependent on AI poses a threat because it might stifle innovation and analytical thinking. While AI offers instantaneous solutions, it runs the possible danger of inhibiting the exploration of different approaches to problem-solving. We must strike an equilibrium, leveraging AI as a companion to human-guided training instead of as a replacement for humans. The equilibrium guarantees the most efficient utilization of AI whilst encouraging students' independence and creativity, which are crucial for educational and practical realities difficulties.

### 2. Difficulties of Adaptability and Equity in AI-Driven Educational System:

Personalised educational experiences are accessible via the incorporation of artificial intelligence (AI) in education, but equally pose substantial hurdles in terms of adaptability and equitableness. Discriminatory availability of AI resources is a crucial hurdle, especially in far-flung or deplorable places with scant access to efficient and secure internet access. Because of scarce possibilities for people not having the benefit of AI-driven learning, the digital gap could exacerbate already existing disparities in education. Another issue involves promoting multiple ways of learning, as artificial intelligence (AI) systems might encounter difficulties in successfully acclimating to specific needs. Artificial intelligence (AI) methods of learning could not be competent to adequately serve learners who have specific educational wants and needs, particularly students needing practical training or specialized techniques. To guarantee that AI-enhanced educational opportunities help every student fairly and do not exacerbate educational inequalities, meticulous planning, and comprehensive solutions are required.

### 3. The unbridgeable gulf of human connection in AI-driven education.

AI-driven education is productive, but it fails to incorporate the crucial human dimension. AI finds it challenging to comprehend and adapt to learners' feelings and emotions in contrast to human educators who provide humanity, compassion, and emotional assistance. For example, a teacher offers both emotional and academic assistance to a learner who is struggling with a complex mathematical difficulty. Contrarily, AI detects patterns but leaves out subtle emotional cues, alienating learners. Additionally, AI is unsuccessful in acquiring essential psychological and social abilities through interactions with humans. Ultimately, education is concerned more than merely imparting knowledge; it's about establishing an atmosphere of encouragement. A comprehensive and successful education requires carefully balancing AI effectiveness and the unchangeable human element.

### 4. The Complexities of Data Security and Privacy in AI-powered Education

The use of AI in educational settings is contingent upon detailed information about students which comprises academic achievement, behaviors, proclivities, and shortcomings. Progress prediction and personalized instruction are rendered by these data. There are nonetheless legitimate concerns despite these advantages. Privacy is one of the main problems. Privacy violations and the ambiguity that AI brings are major issues on the table. Adverse consequences of adopting ridesharing technology (Cheng et al., 2022). Data governance includes organizing, gathering, controlling, storing, using, archiving, and destroying data. Data governance is established by a specialized program, clear norms and procedures, and communication from management and organizational leadership. Generally speaking, the rules must provide the resources needed to maintain the general requirements, which include completeness, correctness, integrity, consistency, accessibility, security, and auditability (Owocet al., 2019). For big data analytics and artificial intelligence to be used effectively, the traits of each technology must be used. The individual possesses the expertise and critical thinking skills required to use thorough data analysis to support analysis and decision-making (Tong-n et al., 2022).

### 5. The potential decline in employment and job instability

Concerns about the employment stability of teachers including the growing complexity of their duties become evident by the incorporation of AI in the educational sector. *The threat of unemployment*; probably, certain occupations in the educational sector could eventually be displaced by AI as artificial intelligence advances its capacity to perform a variety of jobs, including administrative operations and specialised instructional roles. Similar worries concerning automation and artificial intelligence are popping up in all kinds of businesses, indicating that they are not limited to the education sector. The fundamental concern lies in the fact that if artificial intelligence (AI) systems have the capability of executing tasks that used to be the responsibility of instructors, such as evaluating papers or delivering instruction, it raises uncertainties regarding the future duties of human educators. As a result of this, teachers and other staff members may experience job instability along with possible displacements. As AI is incorporated into the

field of education, it poses an imminent risk that teachers will lose their employment because of advances in technology, which underlines the urgency of addressing these issues.

### 6. Navigating Financial challenges

After artificial intelligence is integrated into the educational process, there are certain fiscal problems that arise. Artificial Intelligence solutions had been designed by experienced professionals having considerable knowledge, which calls for finance for further investigation activities and compensating stakeholders who contributed to their projects. Economic limits strike out as a key disadvantage in this scenario, although AI does have downsides that might hinder its potential to improve outcomes in education.

Imagine, for as instance, that a group of investigators creates a sophisticated AI-driven instructional system with the goal of individualized learning. This kind of system needs to be developed, requiring significant investments in investigation, technological structures, and workforce development. Educational organizations could find it challenging to effectively take advantage of the beneficial effects of AI-enhanced learning, assuming they do not have sufficient funding, because of the budgetary restrictions.

### 7. Communication roadblocks

Although artificial intelligence (AI) can drastically transform learning, a substantial barrier stems from the possible disparity in communication among educators and learners if intelligent machines, instead of human beings, embark on freelance duties as educators in institutions. This phenomenon is brought on by the fact that robotics lacks the person-to-person communication abilities necessary for positive learning environments. The potential of powered by AI education is unambiguous, however, the constant interaction disconnect between computers and human beings displays serious obstacles that require to be resolved before it can be widely deployed. These challenges ought to be carefully resolved because AI still can transform instructional techniques.

### 8. Shrink Learners' Cognition Capacities

There are multiple drawbacks to using the use of AI in education. The deterioration of learners' cognitive abilities and their growing dependency on technologies come first, despite the cost of honing their capability to perform assignments on themselves. For example, learners would become addicted to these devices if artificial intelligence (AI) platforms were utilized frequently to facilitate problem-solving tasks. This could impede their capability to cultivate critical thinking and problem-solving techniques.

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## CONCLUSION

Integrating AI in the educational sector has enormous potential to enable individualized instruction with greater results, however, at the same time poses serious obstacles that should be carefully assessed. Although AI might improve teaching and data-driven conclusions, there's certainly a chance that it will also be utilized to circumvent and hinder authentic learning practices. It has become indispensable that educational projects develop fundamental human competencies including inventiveness, thinking critically, as well as problem-solving abilities Furthermore, it is extremely crucial to overcome the technological disparity by enabling equal opportunities for technologies along with cultivating educators on how to properly implement artificial intelligence (AI). New studies ought to concentrate on AI-driven educational environments that develop human potential besides analyzing the ways in which they impact educational achievements, drive, and moral dilemmas. For a broad, equitable, and productive educational environment, it becomes crucial to strike an equilibrium between AI's possible advantages as well as the safeguarding of human relationships and expertise.

## References

Ayala-Pazmino, Mario. (2023). Artificial Intelligence in Education: Exploring the Potential Benefits and Risks. 593 *Digital Publisher CEIT*.8.892 899.10.33386/593dp.2023.3.1827.

<https://www.researchgate.net/publication/>

Alam, A. (2021). Possibilities and Apprehensions in the Landscape of Artificial Intelligence in Education. In 2021 International Conference on Computational Intelligence and Computing Applications (ICCICA), pp. 1-8.IEEE

[https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrived on Jan 06, 2025].

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: AReview. Ieee Access, 8, 75264-75278.

Cheng, X., Su, L., Luo, X., Benitez, J., & Cai, S. (2022). The Good, the Bad,andthe Ugly: Impact of Analytics and Artificial Intelligence-Enabled Personal Information Collection on Privacy and Participation in Ridesharing. *European Journal of Information Systems*, 31(3), 339-363

[https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrieved on Jan 06 2025].

Gunkel, D. J., (2012) "Communication and Artificial Intelligence: Opportunities and Challenges for the 21st Century", communication +1 1(1). doi: <https://doi.org/10.7275/R5QJ7F7R>

- 
- Hwang, G. J. (2014). Definition, Framework and Research Issues of Smart Learning Environments A Context-Aware Ubiquitous Learning Perspective. *Smart Learning Environments*, 1(1), No.4, pp. 1-14.
- Hwang, G. J., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, Challenges, Roles and Research Issues of Artificial Intelligence in Education. *Computers and Education: Artificial Intelligence*, 1, 100001 [https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrieved on Jan 06 2025].
- Kelleher, C., & Tierney, B. (2018). Artificial intelligence in education: Applications and prospects. *AI Magazine*, 39(3), 45-49.
- Mitchell, M. (2019). *Artificial Intelligence: A Guide for Thinking Humans*. Penguin UK
- Mandernach, B. J. (2018). Effective grading practices in the online classroom: A faculty perspective. *Journal of Educators Online*, 15(1), 1-22.
- Ouyang, F., & Jiao, P. (2021). Artificial Intelligence in Education: The Three Paradigms. *Computers and Education: Artificial Intelligence*, 2, 100020. [https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrieved on Jan 06, 2025].
- Roll, I., & Wylie, R. (2016). Evolution and Revolution in Artificial Intelligence in Education. *International Journal of Artificial Intelligence in education*, 26(2), 582 [https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrieved on Jan 06, 2025].
- Shabbir, J., & Anwer, T. (2018). Artificial Intelligence and Its Role in Near Future. arXiv preprint arXiv:1804.01396.
- Tong-On, P., Siripipathanakul, S., & Phayaphrom, B. (2021). The implementation of business intelligence using data analytics and its effects towards on performance in the hotel industry in Thailand. *International Journal of Behavioral Analytics*, 1(2), 1- 16 [https://www.researchgate.net/publication/373126618\\_Challenges\\_and\\_Benefits\\_of\\_7\\_ways\\_Artificial\\_Intelligence\\_in\\_Education\\_Sector](https://www.researchgate.net/publication/373126618_Challenges_and_Benefits_of_7_ways_Artificial_Intelligence_in_Education_Sector) [retrieved on Jan 06, 2025].
- <https://sayainstitute.org/2023/07/disadvantages-of-artificial-intelligence-in-education/#>
- <https://www.unesco.org/en/digital-education/artificial-intelligence>
- <https://timesofindia.indiatimes.com/readersblog/newtech/artificial-intelligence-in-education-39512/>