

# Artificial Intelligence Implementation in Education Processes

Dina Darwish  
*Editor*

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## Preface

Currently, numerous issues for enhancing teaching and learning remain unaddressed. Educators pursue technology-driven methods that are secure, efficient, and scalable to meet these aims. Educators naturally question whether the swift technological advancements in daily life could be beneficial. Similar to everyone else, educators utilise AI-driven services in their daily routines, including voice assistants in their residences, tools for grammar correction, sentence completion, and essay writing, as well as automated travel planning applications on their mobile devices. A multitude of educators is currently investigating freshly emerging AI tools. Educators recognise the potential of AI-driven technologies, such as speech recognition, to enhance support for students with disabilities, multilingual learners, and others who could gain from increased adaptability and personalisation in educational digital tools. They are investigating how AI can facilitate the composition or enhancement of lessons, along with their methodology for sourcing, selecting, and modifying materials for instructional usage. Educators are cognisant of emerging threats. Beneficial and potent functionalities may potentially provide novel data privacy and security vulnerabilities. Educators acknowledge that AI can autonomously generate output that is unsuitable or erroneous. They are apprehensive that the associations or automations generated by AI may exacerbate undesirable biases.

Although it appeared to have appeared out of nowhere, artificial intelligence (AI) was really created over a period of many years, just like so many other technologies that have had a significant impact on the world. In today's world, artificial intelligence is pervasive and has the potential to revolutionize education. By employing AI, educators are able to personalize learning experiences to meet the specific requirements of each student, so making education more efficient and interesting. In addition, technologies that are enabled by artificial intelligence help with administrative work, which streamlines operations and frees up teachers to concentrate on teaching. Educators and school administrators are currently utilizing tools driven by artificial intelligence, and applications dependent on AI in the field of education.

The benefits of AI in education include fostering innovation, condensing current materials, among others. The following section will explore the advantages and disadvantages of AI in educational institutions, emphasising its potential to transform the learning environment. Here is a concise overview of some benefits of using AI in education.

- ***It can be utilised to customise education.*** AI can assist in customising content to meet the specific needs and learning styles of individual students, utilising AI-driven analytics that provide insights into student performance and learning trends. Thus, AI enhances student engagement and motivation.
- ***It can furnish students with prompt feedback.*** AI provides students with immediate and comprehensive feedback on their assignments, enabling them to identify their strengths and faults. This feedback improves comprehension and educational results, guiding teachers on future course priorities.
- ***It can be utilised to generate and enhance content.*** AI-powered platforms enable the creation of lessons, activities, evaluations, discussion prompts, and presentations by inputting a brief prompt including keywords.
- ***It may yield more inclusive instruction.*** AI possesses robust technologies that provide previously unattainable resources accessible to students with unique needs. Technological tools providing text-to-speech, visual recognition, speech recognition, and additional functionalities can assist educators in modifying resources to ensure equitable learning opportunities for all students.
- ***It can facilitate enhanced access to resources.*** Educators can utilise numerous AI-driven tools to improve and augment classroom learning. Examples include Canva Magic Write, which assists in brainstorming, outlining, and lesson planning; Curipod, which allows educators to swiftly develop interactive lessons; Eduaide, offering over 100 resource types for the creation of high-quality instructional materials; and Quizzizz, utilised for designing quizzes that generate personalised learning pathways based on individual student responses.
- ***It can enhance the comprehensibility of abstract concepts.*** Image-generating AI systems like Picsart and Visme can transform intricate concepts into more accessible content.
- ***It can be utilised to manage administrative responsibilities.*** AI can be utilised to optimise administrative functions including grading, scheduling, parent communication, and student record management. This enables educators to focus on your primary expertise; teaching. It provides increased direct engagement with kids and ensures that no individual is overlooked.
- ***It can cultivate critical thinking.*** The emergence and increasing application of AI in educational settings prompts discussions about critical thinking and ethical implications. Students exhibit a natural curiosity in AI. The profound talks may aid in their growth and development as thinkers and learners.

### ***The Obstacles and Constraints of Artificial Intelligence in Education***

Despite the numerous benefits that AI presents to educators, learners, and administrators, it also poses certain obstacles and disadvantages. The subsequent list enumerates prevalent concerns that affect educators.

- ***Concerns Regarding Privacy and Security.*** Privacy hazards have been a worry since the inception of AI. Individuals are apprehensive regarding the collection and utilisation of their personal data, as well as their awareness and control over its application. Numerous individuals express apprehensions over the security of their data storage and its protection against potential breaches. Additional concerns encompass the exposure of private and sensitive information to unauthorised individuals, the propagation of incorrect or misleading information, and the growing accessibility of personal data by others. Generally, dangers are associated with data collecting, data processing, data distribution, and intrusion into an individual's personal space, choices, or actions.
- ***Possible Bias in AI Algorithms.*** Research indicates considerable bias in GPT (generative pre-trained transformers; e.g., ChatGPT) towards non-native English speakers. One study indicates that more than fifty percent of non-native English writing samples were erroneously categorised as AI-generated, but the classification accuracy for native English speakers was practically flawless. A contributing factor to the issue is that GPT detectors are designed to identify text that is more literary and intricate as being more "human." Consequently, authors who do not employ such terminology are more prone to being classified as utilising AI-generated content and may be unfairly marked for AI plagiarism. Students who do not speak English may be unjustly accused of academic dishonesty, thus jeopardising their educational trajectory and harming their mental well-being. In evaluating non-native English speakers, it is advisable to refrain from utilising GPT detectors as assessment instruments until these detectors undergo a more thorough study. They can be utilised more securely as educational tools, assisting students in enhancing their writing skills.
- ***Decreased Human Engagement.*** Increasing dependence on AI may diminish teacher-student interactions and connections, so undermining the social-emotional dimensions of learning. If those encounters decline, pupils' social skills and interpersonal development would be adversely affected. Educators must recognise and address the social and emotional needs of their students. Conversely, automating administrative activities like lesson planning, grading, and managing student data should liberate instructors' time, allowing them to cultivate relationships with students and enhance their social and emotional development. This practice has demonstrated numerous advantages, such as improved academic performance and increased college enrolment rates. A recent survey indicated that merely 22 percent of students—an unprecedented low—believe their professors endeavour to comprehend their lives

beyond the classroom. Educational institutions can leverage AI to enhance the interactions between educators and learners; but, they must exert deliberate effort to do this. It is a critical aspect to monitor and manage well.

- ***Significant Implementation Expenses.*** The expense of AI in education might significantly fluctuate based on the intended applications by educational institutions. Basic generative AI systems for lesson preparation can be as inexpensive as \$25 per month, whereas more extensive adaptive learning systems may cost tens of thousands of dollars. Implementing these extensive systems is similarly costly and exceeds the resources of numerous schools, particularly those in underprivileged neighbourhoods. Additionally, there are continuous expenses associated with system maintenance, updates, and staff training for effective utilisation.
- ***Scholarly Malfeasance.*** Cheating and plagiarism are, as noted, primary worries with AI expressed by educators. The utilisation of AI for completing assignments, examinations, or composing papers is inequitable to students who adhere to academic integrity, and it diminishes the educational experience for those who engage in dishonest practices. If students resort to cheating and shortcuts in their education, what type of citizens will they become upon completion of their studies? Protocols must be established to guarantee that AI is not employed unethically.
- ***Uncertainty and Erroneous Data.*** Artificial intelligence is contingent upon the quality of its underlying algorithms. If the underlying data is flawed or prejudiced, the resultant information will also be flawed or prejudiced. Students must have the ability to assess and critically analyse the material they encounter rather than merely accepting it at face value. A plethora of instructional resources is available online to assist them in their endeavour.

Generative AI provides educators, learners, and administrators with potent tools that can be effectively utilised in the educational sector. Comprehending the advantages and disadvantages of artificial intelligence in education is essential for the proper utilisation of these tools. Investigating the impact of AI on education, both advantageous and detrimental, assists administrators in formulating policies that improve student learning while mitigating possible disadvantages.

It can optimise administrative duties, allowing teachers to allocate more time to foster relationships and enhance students' social and emotional skills, customise learning experiences based on individual needs and learning styles, and enhance accessibility for students with disabilities. It assists researchers in gathering and analysing data to improve curriculum efficacy and identify areas for enhancement, while providing a diverse array of educational tools and platforms for students and educators alike.

However, it also has its drawbacks. Issues regarding AI in education encompass privacy and security concerns, algorithmic bias that may influence educational results, the risk of excessive dependence on technology detracting from teacher-student interactions, and the financial implications of deploying and sustaining AI technologies in educational institutions. Moreover, technology may be employed unethically in the absence of robust protections and monitoring systems, and its information is only as comprehensive and precisely representative as its algorithms permit.

Educators and administrators must evaluate the advantages and disadvantages of AI in education as they consider its application for themselves and their pupils. By evaluating the advantages and disadvantages of AI in the classroom, educators can guarantee that AI's incorporation facilitates significant learning experiences.

This book gives a solid foundation on using AI in education for people interested in knowing more information about this topic, and discusses several topics related to using AI in education.

Dina Darwish



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