



# Learning with Artificial Intelligence

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## Abstract

Everyone believes that education is important and that having a good education is essential to living a successful life. There are constantly many changes taking place in the world, from the style of instruction to the kind of curriculum, in an effort to enhance the educational system for students. The world is changing thanks to artificial intelligence, a burgeoning technology that is applied in practically every industry. Artificial intelligence has the potential to significantly alter the educational landscape.

New methods of teaching and learning are being developed for various contexts by artificial intelligence in education. Different institutions and universities around the world are now utilising AI. Teachers, students, parents, and of course educational institutions themselves now view education from a wholly new angle thanks to AI in education. The use of artificial intelligence (AI) in education does not mean that human-like robots will take the position of human teachers; rather, it means that the education system will become much more efficient and supportive of teachers and students. Numerous AI tools will be available in the educational system in the future, influencing how students will learn. In this essay, we'll talk about artificial intelligence's effects and applications in education.

Keyword: AIED(Artificial Intelligence in Education)

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## Introduction

Given how swiftly AI alters how humans learn, artificial intelligence in education has

gained popularity. Every child could benefit from artificial intelligence in the classroom. You must be aware of the advantages of AI for your child because it is already being

used in many schools around the nation. Artificial intelligence (AI) is the replication of human intelligence into a computer system such that it has the ability to think and behave like a person. Technology that enables a computer to think like a human being. To emulate human conduct, artificial intelligence is created. Education is only one of the many fields and industries where AI is used.

A few technologies that aid in skill development and assessment systems are examples of how AI has already been used in education. As AI-based educational solutions develop, there is hope that they will help close gaps in teaching and learning and free up schools and teachers to accomplish more than ever before. Teachers will have more time and freedom to teach understanding and adaptability thanks to AI's ability to promote efficiency, personalisation, and administrative work automation. These are distinctively human traits that robots lack. The future of AI in education envisions both machines and teachers combining their strengths to achieve the best results for pupils. Since today's kids will need to operate in a world where artificial intelligence is the norm in the future, it's critical that our The importance of exposing students to and utilising the technology in our educational institutions cannot be overstated because the students of today will need to work in a future when AI is a reality.

Individualised and differentiated instruction

For years, educators have prioritised adapting instruction to meet the unique requirements of each student, but AI will enable levels of differentiation that would be hard for instructors to achieve with 30 kids in each class. In order to provide learning, testing, and feedback to students from pre-K to college level that gives them the challenges they are ready for, identifies knowledge gaps, and redirects to new topics when necessary, a number of companies, including Content Technologies and Carnegie Learning, are currently developing intelligent instruction design and digital platforms that use AI. As AI becomes more advanced, it may be conceivable for a machine to read a student's face for signs that they are having difficulty understanding a concept and adjust a course accordingly. Although it is not yet possible, curriculum customization for each student's needs will be possible with AI-powered devices.

For all students, there is access

All students, even those who speak other languages or may have visual or auditory disabilities, can access global classrooms with the use of artificial intelligence systems. Presentation Translator is a free PowerPoint add-in that generates subtitles for the instructor's speaking in real time. This creates opportunities for kids who would miss class because of illness or who need instruction in a subject or at a different level than what is offered in their regular school. Between traditional grade levels and between schools, AI can assist in removing silos.

### Automate office procedures

A teacher devotes a lot of time to marking tests and homework. In addition to providing suggestions for how to fill in the gaps in learning, AI can step in and do these duties quickly. Machines are currently capable of grading multiple-choice exams, but they are extremely near to being able to evaluate written responses as well. AI takes over administrative responsibilities, freeing up more time for teachers to interact with each student. AI has enormous potential to improve the effectiveness of admissions and enrollment procedures. Tutoring and support outside the classroom

Ask any parent who has battled to teach their adolescent mathematics, and they will be incredibly enthusiastic about the possibility of AI to support their kids when they are having homework or test preparation difficulties. Thanks to artificial intelligence, tutoring and studying programmes are growing more sophisticated, and eventually they will be more accessible and able to accommodate different learning styles.

Additional AI applications for education are being created, such as AI mentors for students, improved smart content, and a new strategy for educators' professional growth through virtual international conferences. Artificial intelligence and machine learning may be adopted in education a little more slowly than other industries, but changes are already happening and will continue.

### **The Impact of AI Education**

The use of technology in education has always been significant, but it is now more common than ever because of the proliferation of smart devices and web-based curricula. Artificial intelligence is being applied in education in a wide variety of methods to aid students in their learning. Here are some AI-based technologies that are already having an impact on education and will have an even bigger one in the future:

#### Chatbots

One type of AI educational software that students may soon use is chatbots. These are being introduced into classrooms more frequently, where students use iPads or computers to speak with chatbots that are created to assist them in understanding particular subjects, like maths or reading comprehension. Chatbot tutors might be able to teach pupils more than simply new ideas; they might even be useful when analysis is required. The future of all technical roots is chatbots. It shortens the teachers' workload cycle. While parents are present, chatbots in the classroom might also take the place of email communication between teachers and parents.

#### Virtual Reality (VR)

Virtual reality is a newer advancement in education that is being used for everything from history lessons to arithmetic tutoring. People can explore and engage in virtual reality, a three-dimensional environment created by computers. In their classes, VR educators are incorporating experiential learning in novel ways that are actually

redefining what it means to be a student. Instilling a sense of community among pupils is easy with VR. While still separated by distance, they can safely communicate while they are in different classrooms but utilising the same virtual reality programme. Students can investigate topics that they might never get the chance to see or learn about in real life using virtual reality. Educators are in the same boat. There are a lot more appealing ways for teachers to instruct their students. Anyone who has used virtual reality (VR) would know that it seems considerably more immersive than watching anything on a screen or being in a computer-generated world. Just two advantages for students and teachers are greater involvement and thorough knowledge.

LMS, or learning management system

Keeping up with educational breakthroughs is one of the most crucial things to do in this technological age. The adoption of learning management systems is one of these breakthroughs. For the management of all online activities at a school, a learning management system offers a centralised, user-friendly solution. Although there are many uses for these tools, they are frequently employed to do the following:

- Assign coursework
- Communicate with students and parents
- Track student progress
- Generate reports on student performance

These systems make it possible to house all elements of a course in a single location, including lessons, assignments, tests, and grading. This implies that instructors are always free to offer input on any project or test. Without having to wait until the conclusion of the semester, students may view their marks right away. These LMS with AI software allow for the learning of a wide range of subjects. An AI-powered intelligent digital teacher can assist a learner by giving them the solution to their problem as well as assistance with their problems. Even a learning management system that can comprehend students' thoughts and improve their learning can be created with artificial intelligence. There are currently LMS systems that can assist teachers in content creation, assist parents in monitoring their child's development in the system, and assess students using an AI engine. In addition to helping parents better understand their child's growth and reducing the stress of instructors, this has helped teachers cut down on classroom management time. Both professors and students can benefit greatly from LMSs.

### **Robotics**

Over the past few years, there has been a surge in robotics and artificial intelligence in education. It is now being utilised in classrooms by both teachers and kids, which can be seen to increase student involvement and safety. Robotics in education is inevitable given the current state of AI development. Robots may be a fantastic learning tool for both students and teachers, providing a method to thoroughly

investigate a subject without growing bored. Robots can therefore give teachers an opportunity to spend more one-on-one time with kids who require extra assistance. They can also try out novel teaching techniques, which is important when attempting to engage various learner types. For kids, it's a chance to learn something new on their own without feeling under pressure to be the only one in the class or worry about being picked on by their classmates when they make mistakes. Robots can provide them with a setting where they won't feel bad if they don't understand anything right away. Robotics is essential for kids because it may show them that engineering is more than just solving mathematical equations or sketching on a piece of paper. They are able to see how their work turned out in the end. Robotics can be used by teachers to teach classes about current events or even arithmetic topics like fractions. Undoubtedly, technology will continue to play a crucial part in people's lives as it develops.

AIED emerged as a specialised field in the 1970s to encompass new technology in teaching and learning, particularly for higher education. In addition to the fundamental automated task, the primary goal of AIED is to provide learners with flexible, personalised, and interesting learning opportunities. Adaptive learning, smart classroom technology, pedagogical agents, and intelligent tutor systems are some of the prevalent themes in AIED. The graph below illustrates the connections between all of these trends:

### **Artificial intelligence in Education: Uses and Roles**

Use AI to automate fundamental tasks in schooling

Teachers spend a lot of time in the educational system on various tasks like grading homework assignments and assessments. These duties take a lot of time and effort, yet that time may be spent communicating with students, correcting their mistakes, introducing new material, and many other things. Artificial intelligence can be applied to reduce this time. Nearly all MCQ (Multiple Choice) and fill-in-the-blank types can have their grading systems automated with the use of AI tools, and they are getting very close to being able to grade written responses. Though it is becoming better every day, artificial intelligence is yet unable to fully replace human grading. By utilising AI, teachers may spend more time filling in the gaps in their classrooms and less time on these time-consuming chores.

Additional Support for students with AI tutor

Since teachers in universities have set hours, it is evident that they cannot be with students at all times when they are studying. However, as no student is intelligent enough to comprehend everything at once, they require additional assistance from someone in order to comprehend the study material. The AI tutors can offer this further assistance.

There are several AI-driven tutoring programmes available right now that can

assist pupils in learning the fundamentals of math, writing, and other topics. Students can learn the basics using these AI programmes, but they are not appropriate for learning advanced concepts in any field. Students still need a professor in order to learn such difficult subjects. But in the future, it's likely that AI may be able to assist students with more difficult issues that call for critical analysis and reasoning. AI-driven programmes that provide teachers and students with useful feedback. AI can provide feedback to teachers and students regarding the course's level of success in addition to assisting students in learning customised courses that are tailored to their needs. These AI algorithms based on feedback are currently being used by several online course providers to analyse student progress and notify professors of any serious performance issues. The student can receive the appropriate assistance thanks to these AI-driven solutions, and teachers can identify the areas in which their instruction needs to be improved. Giving pupils immediate feedback enables them to learn where they are making mistakes and how to improve.

Identifying areas for improvement in courses using AI

Finding the learning gaps in the educational system is really difficult. Teachers only have a limited amount of time to teach in the classroom, and they might not always be aware of the students' weaknesses or the subjects they are having trouble understanding. AI-driven programmes can assist the educational system in finding a

solution to this issue. For instance, the system notifies the teacher and sends future students a personalised message that provides suggestions to the correct answer when it is discovered that many students have submitted the incorrect response to a homework assignment. These kinds of programmes ensure that every student thoroughly comprehends the topics and fill in any learning gaps that may arise during the course of the lesson. With AI, students receive an immediate system produced response rather than having to wait for feedback from the instructor. This helps them learn a topic, remember their mistakes, and also how to do it correctly the next time. The function of the teacher could be altered by AI. Although teachers will always play a crucial part in the educational system, new technologies may alter this job and its requirements. As mentioned in the sections above, artificial intelligence can be used to automate a variety of functions, including reporting, grading, and aiding students as they study. In some situations, it may even replace the need for a real-world instructor. AI can be incorporated into a variety of instructional methods. AI systems can be configured to offer knowledge to students, serve as a forum for questions from students, and even replace teachers when it comes to imparting knowledge based on course materials. In these situations, AI might alter the teacher's facilitation function.

Use AI to tailor schooling

Artificial intelligence in education does not primarily seek to replace teachers in their entirety. Instead, it attempts to provide aid to

both teachers and pupils. Students can receive individualised instruction from AI systems. Each student can study in their own way, according to their comprehension and needs, with personalised instruction. Teachers can create a personalised study plan for each student by first assessing their needs. As artificial intelligence continues to advance, it's likely that machines could soon be able to read students' facial expressions as they learn topics, determine whether they are having any trouble understanding them, and modify their teaching methods accordingly.

### 3. Using AI to create smart content

There are three techniques to create intelligent material using AI:

a. Digital Lessons: Everything in today's society is going digital, including education.

With customising choices, e-books, study materials, bite-sized courses, and many other things made possible by AI, digital learning is becoming more and more popular in institutions.

b. Information Visualisation: It is significantly easier to grasp and remember information

when it is visualised rather than heard. With Artificial Intelligence, the study information

can be perceived in new ways of visualization, simulation, web-based study environment.

Updates to learning content: AI also assists in creating lesson content, keeping knowledge current, and adapting it to fit different learning trajectories.

### 3. Access to All

Universal access to study materials is one of the great applications of artificial intelligence in digital learning in education. With the aid of universal access, each student may learn wherever they are and whenever they want. Without having to wait for the instructor, students can explore topics anytime they wish to learn more. Additionally, students can access top-notch materials and courses from around the globe at their location alone without leaving their home.

### **Artificial intelligence in Education: Advantages and Disadvantages**

The benefits and drawbacks of AI in education are not as clear-cut, though. Each side has benefits and drawbacks, but both sides also have advantages. In an expanding number of industries, including education, AI is taking the place of people. Along with teaching, it involves grading papers, composing essays, and advising students on their next course of study. The use of artificial intelligence in education is currently a hotly debated issue. On whether or not to employ AI to educate students, opinions vary. Many claim that AI will displace teachers and eliminate the human component of education. AI in education, however, has a lot of benefits. Compared to humans, AI can assess essays and papers far more quickly. This will provide educators

more time to help pupils develop their critical analysis and thinking skills. This would also enable educators to concentrate on specific kids who might gain from their direction. Artificial intelligence (AI) can support human teachers by offering perceptions into students' learning preferences and delivering practical feedback for pupils who require more practise with particular subjects or abilities. AI is never worn out, never has mood swings, and just exists to further education.

### **Benefits of AI for Students**

#### **Learning Accessible 24/7**

Students can learn at any time or anywhere thanks to AI-driven digital learning. Each student is allowed to set their own timetable and is not restricted to a single location. According to their most productive times, everyone can make learning simpler and more successful.

#### **Improved Engagement**

The study is made more dynamic and interesting by personalised learning, bespoke challenges, and digital visualisation. Students who receive personalised instruction and have positive experiences with AI-driven programmes report feeling smarter and more in control because they are free to inquire about a wide range of topics outside of their course material. The interest of students in their studies is rising as a result of all of these factors and emerging AI technology.

#### **Reduced Stress**

Students no longer feel the strain of academics thanks to AI-driven programmes and personalised learning. When students have questions, AI-enabled virtual assistants respond with detailed explanations and assistance. Virtual assistants can help students overcome the challenges associated with traditional learning methods, which require them to ask questions in front of the entire class. This may cause some students to become hesitant. But these virtual assistants can't provide accurate responses to every query. They can be very beneficial for basic questions, nevertheless, as they can raise each learner's self-esteem and ease pressure.

### **Drawbacks of Artificial intelligence in the classroom**

In comparison to a human teacher, a robot could not be as effective. Technology could not always be successful in the classroom, which is a drawback of AI in education. The absence of feeling in AI. When the AI lectures them, ignores their questions, or otherwise ignores them, students don't feel that the AI is looking out for them. Professors are working to create AI technologies that enhance our lives in this burgeoning field, which is being researched at institutions all around the world. The pace of instruction can be changed based on how well each student is doing using artificial intelligence, which can also be utilised to offer students adaptable learning. On the other hand, some individuals worry about the effects of AI in a world where human interaction is dwindling.



## AI in Education: The Future

According to studies, there will be three key ways that AI will be used in education in the near future.

### Performance customization

As AI technology and computer capacity advance daily, it will be possible to design personalised courses by gathering and aggregating data. The instructor can track, measure, and monitor the learners' progress while also assisting them in their learning journey with the use of various innovative AI solutions, such as "Brightspace insights." It gives a holistic picture of a learner's learning trajectory across the platform.

### Bias in infringement

The educational system has always been hampered by human prejudice, which is equally a problem with AI tools. In the future, AI in education will develop new techniques that can objectively assess student work and administer exams without bias.

### Cooperative Assistance

A master's degree in their profession and a degree in a particular area of development are typically required of professors and teachers in colleges. However, the administrative job is frequently an ineffective attempt to improve relations with students. Future smart classrooms with AI aid that can offer teachers the support they need to perform at their highest level will be able to solve this challenge.

## Challenges

For both students and teachers, understanding how to use technology is a problem. In most situations, the issue is that teachers lack the training necessary to effectively utilise the new technology in their classes. They must therefore either figure it out on their own or find someone they already know. In order to give students an engaging educational experience, teachers need assistance in understanding how these technologies might be used.

## Conclusion

Artificial intelligence is becoming more and more prevalent in many areas of our lives. In the realm of education, AI has begun to make an impact, acting as a tool to assist both teachers and students in their learning processes. The application of AI in education is still not fully embraced by all colleges, and it will take time for this to happen. However, research indicates that AI will have a positive effect on the education industry in the near future. Although technology is currently changing the education sector, it has not yet demonstrated its true potential in education. In addition, while computer-based education can be very beneficial, it is unlikely to completely replace traditional classroom instruction. AI will help parents who are constantly worried about their kids' social lives. They can now more closely than ever before watch their child's internet activity thanks to AI technology. Schools employ software that examines data points, such as how well various pupils absorb material, and then

divides up the students into groups according to what each one needs. With the help of AI, students will have 24/7 access to instructors and lessons from any location. By offering individualised feedback on assignments, tests, and other educational materials based on AI algorithms, AI can be utilised as a tool in the classroom to direct students towards their objectives. Due to its ability to automate tedious chores, such as organising emails or retrieving lost items, artificial intelligence has the potential to make everyone's life easier.

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