

Impact of Artificial Intelligence on Education

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Abstract

Although the exact influence of AI on the future is still uncertain, one truth stands clear: AI is among the most crucial technologies of our time, actively shaping various sides of our daily existence, from online relationships to consumer spending patterns. But how will this innovation affect employment down the line? What outcomes can we expect? A lasting demographic of individuals unable to secure jobs due to automation? Economies where hyper-intelligent machines strive to dominate the globe? What transformations are taking place within society, and how can we reform and adapt our educational frameworks to align with the digital era? Research shows that by the mid-2030s, one-third of the workforce will face the threat of automation, affecting individuals with lower educational attainment (Vimal, 2022). Education holds the potential to redefine everything since human cognition will remain essential across all fields and levels. The focus should shift from “humans or machines” to “humans and machines collaborating within complex systems that foster industry and prosperity.”

Keywords: Artificial intelligence (AI), modern education (ME), computers, new skills, future occupations, natural language understanding (NLU)

INTRODUCTION

Education plays a vital role in helping society grow and improve. For a long time, the way people learn has been changing, especially with Modern technologies appearing. Most of us are familiar with the traditional way of learning, which takes place in classrooms with students sitting together. But now, because of the internet and digital tools, online education is becoming more popular and is slowly taking the place of traditional classrooms. Today’s education system has broken down the walls of a classroom, allowing people from all around the world to learn. Through online platforms and websites, educational content is shared with a wide range of students and teachers who are interested in learning using technology. Online learning is not limited by time, place, or the number of students, which makes it more appealing every day. As it keeps improving to keep exact standards, online education offers many benefits such as flexibility, lower costs, and access to a wide variety of learning materials [1].

In recent years, Artificial Intelligence (AI) has become a big part of our daily lives, changing many areas, especially education. The way education works has changed a lot because of AI, and it offers

new ways to improve how teaching and learning happen. It is important to look at how AI affects education today and how we can use this knowledge to make learning better for both students and teachers. To start, we will explain what AI is and what makes it special. AI refers to systems and tools that can act like humans in smart ways such as learning, thinking, and solving problems. These systems use algorithms and complex math to help machines learn and get better on their own. The main goal of AI is to give machines abilities that are usually seen in humans like intelligence [2].

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A key part of Artificial Intelligence is its ability to gain knowledge. Smart systems are made to learn from data and experiences, find patterns and trends, and get better at their tasks over time. This happens because of machine learning algorithms and artificial neural networks, which help machines understand information, find patterns, and make predictions or decisions based on that information [3].

Another important part of AI is reasoning. Intelligent systems can use the information they have to make smart decisions and solve difficult problems. They use rules and algorithms to look through data, find useful information, and produce satisfactory results or answers.

The ability to solve problems is a main strength of artificial intelligence. These systems are used to deal with various kinds of problems like math, logic, or information processing. They use certain methods and algorithms to find the best solutions or make decisions that fit their goals and limitations [4].

It's important to know that Artificial Intelligence can be grouped into two main types: narrow AI, which are systems made to do specific jobs, like recognizing voices or translating languages, and general AI, which are systems designed to have wide-ranging thinking abilities and can understand and solve problems in many different areas.

In simple terms, artificial intelligence is about creating systems and machines that can act like humans in smart ways. These systems use special rules and complicated math to learn from what they experience, make improvements, and become better at their tasks without needing constant help [5].

ARTIFICIAL INTELLIGENCE IN EDUCATION

Using artificial intelligence in education is becoming more popular. It shows that AI can offer many exciting chances to improve how students learn and helps reach modern educational goals. Let us look at some of the benefits AI might bring to teachers and students.

AI brings helpful tools and new ways to education by allowing personalized learning, giving fast feedback, and making grading more efficient. This means AI can be used in online learning platforms to create content and tasks that fit each student's needs and level of understanding. Learning management systems can use AI to give personalized suggestions, automatic feedback, and keep track of how students are doing. This helps learners get exactly the materials and resources they need. Virtual reality helps students work together and build teamwork skills, while social media platforms can help students connect with their teachers [6].

Besides that, artificial intelligence can help create teaching materials and digital helpers that can answer students' questions, explain things more clearly, and guide them as they learn. Because of this, students can get extra help, learn at their own speed, and receive prompt support to make their learning better [2].

In terms of testing and evaluation, AI can make many busy tasks easier for teachers. It can check student work, give helpful feedback, or even find cases of copying work. AI can also spot patterns in how students answer questions across different subjects. This helps teachers give fast and detailed feedback, support students in ways that fit their needs, and save time and money.

A big part of how AI helps education is its ability to change the way students learn based on what each one needs. By collecting and looking at data about how students are doing, AI can find where they are struggling and automatically change the material and teaching methods to help them succeed better. This way, each student can get a more personal and effective learning experience [7].

Another significant use of AI is in predicting how well students will do. By looking at data on their performance and behavior, AI can find patterns and trends. This helps to understand how each student is doing and what their chances of success or failure might be. This information helps teachers and schools make smart decisions and act early to support students who need it.

Also, using AI can help by taking over many tedious tasks those schools and universities usually manage by hand. These tasks include organizing classes, keeping track of attendance, grading papers, managing money and records, and managing substantial amounts of data. It also covers answering student questions, managing clubs and activities, and even running school facilities. AI can manage things, like water and energy use, controlling heating and cooling systems, and even helping with student transport. These tasks, which used to take a lot of time, can now be done automatically by AI, freeing up more time for important educational work [8].

Artificial intelligence brings many benefits to education, but it also comes with some challenges and worries when it has been used a lot. These worries include keeping personal information safe, less human interaction which can affect how students develop socially and emotionally, and the need for trust in the system. That means the system should be clear about how it makes decisions and gives suggestions.

I believe using AI in education has many good opportunities and benefits, even though there are some limits. AI can tailor learning to fit each student's needs, give quick feedback, and help with grading tasks. This can make teaching and learning more efficient and effective for both students and teachers. However, it is important to find a good balance between using technology and keeping the human parts of education [9].

TO THE OCCUPATIONS OF THE FUTURE

The impact of artificial intelligence on future jobs is certain and affects many areas. Automation, helping with decisions, creating new jobs, changing existing roles, and needing people to be flexible are all important things to think about. It is important to understand these changes and prepare for the challenges and opportunities that AI brings to the workplace. By keeping up with learning, improving skills, and growing personally, we can take advantage of what AI offers and adapts to the changing job market. We will look at the main ways work will change in the future and, most importantly, how education needs to change to fit these new developments.

One clear effect of using AI in jobs is automation, which reduces the need for human workers. AI can be trained to manage repetitive tasks and physical work, so people do not have to do these jobs anymore. For example, in manufacturing, robots and robot helpers have taken over many tasks that were once done by people. Many companies around the world now use robots to make their production more efficient. In fact, two years ago, it was predicted that by 2025, money spent on this area would increase more than twenty times – from 373 million dollars to 12.3 billion dollars. Also, the pandemic has made it even more urgent for manufacturers to deal with new challenges. As a result, the market for these robots is growing [10].

The second wide area where AI will make a significant difference is helping people make better decisions and work more effectively. AI can help experts by giving them up-to-date information and analysis. These technologies can quickly and correctly look at a lot of data. Because of this, they can offer personalized suggestions and solutions, which can help people make smarter choices in areas like healthcare, finance, or marketing. This means human experts can get more support in doing their jobs better and provide more efficient and exact services.

As AI keeps getting better, some jobs might become less important, but new job opportunities are also appearing. Creating and using AI systems needs experts in different areas like data experts,

programmers, and analysts. These people are important for building, running, and keeping AI systems working. So, technology can create new jobs in this field and related areas.

It is already clear that AI can completely replace some existing jobs, but it can also change them. For example, in healthcare, AI can take on tasks like looking at medical images or understanding patient data. This lets human doctors and nurses focus more on patient care and more important medical work, making their roles more valuable. So, jobs may change in a way where some tasks are handled by AI, allowing human workers to focus on more complex and meaningful work.

In this changing environment, people need to keep learning and adapting. Some jobs might disappear or be replaced by modern technologies. Therefore, it is important for workers to keep learning and improve their skills, especially in digital areas. This helps them adjust to modern technologies and find new job opportunities in the digital world. Aligning education with the changes in modern jobs is important for preparing the future workforce to meet the challenges and demands brought by technology and AI. Why is this important? We will give several reasons [11].

- *The Importance of Skills:* With AI changing jobs, there is a need for new kinds of skills and knowledge that have not been taught before. Because of this, education systems must find and provide up-to-date learning programs that prepare people for future work. Skills – like coding, understanding data, thinking creatively, solving problems, and working well with others – are becoming more important in today's world. These abilities should be taught through new learning methods to meet these growing needs.
- *Promoting Critical Thinking and Creativity:* AI brings both opportunities and challenges that require people to think critically and produce innovative ideas. Education should help students develop these skills through new and creative teaching and testing methods. By encouraging thinking in new ways, we can create individuals who can change with the times and produce fresh solutions in new job roles.
- *Adaptability and Ongoing Education:* Getting a degree or certification is not the end of learning. In the age of AI, it is important to keep learning to stay relevant and ready for jobs. Schools and colleges should support the idea of lifelong learning and provide ways for people in different fields to keep growing and retraining.
- *Cross-Disciplinary Approach:* Many jobs now require knowledge from different areas. For example, tech experts need to understand the social, ethical, and legal sides of AI. Schools should encourage teamwork across subjects and promote learning that brings together different areas to solve complex problems.
- *Cultivating Distinct Human Abilities:* As machines and AI take over some tasks, education must focus on developing human qualities that technology cannot easily copy.

These include communication, empathy, and creativity, thinking critically, and solving complex problems. Education should offer chances to improve these skills and help students get a balanced and complete learning experience [12].

In short, changing education to match future jobs is important to make sure the next generation of workers can manage the challenges and opportunities brought by modern technology and widespread use of AI. By focusing on skills, like problem-solving, thinking critically, being creative, being flexible, learning throughout life, working across different subjects, and developing unique human talents, education can really help people succeed in their careers.

TRANSFORMATIVE TRENDS AND FUTURE IMPLICATIONS

Artificial Intelligence (AI) has moved from being a future idea to a powerful force that is changing many areas, especially education. Using AI in schools and learning systems can improve how students learn, make managing schoolwork easier, and create personalized learning experiences for people all around the world. This blog looks at the current trends in AI within education and explores how technological changes might affect the future.

Current Trends in AI in Education

AI is being used in many ways in education. Here are some of the key trends:

- *Personalized Learning:* AI algorithms analyze students' learning habits, strengths, and weaknesses to tailor educational content to individual needs. Platforms – like DreamBox and Knewton – offer adaptive learning experiences, providing customized lessons that evolve as students' progress.

AI is being harnessed in several ways throughout the realm of education. Below are some of the most significant trends:

- *Tailored Learning:* AI systems evaluate students' learning behaviors, strengths, and challenges to customize educational material to fit individual requirements. Solutions – like DreamBox and Knewton – deliver adaptive learning journeys, offering personalized lessons that advance as students evolve.
- *Cognitive Tutoring Systems:* AI-enhanced tutoring solutions, including Carnegie Learning and Squirrel AI, provide individualized teaching and feedback to learners. These platforms can pinpoint where students struggle and suggest focused interventions to ease their improvement.
- *Automated Evaluation and Appraisal:* AI is revolutionizing the grading process by automating the evaluation of assignments and assessments. Programs like Gradescope utilize machine learning to grade written assignments, conserving educators' time and delivering consistent, impartial assessments.
- *Natural Language Understanding (NLU):* NLU technologies, including chatbots and virtual assistants, enhance communication between learners and instructors. AI-fueled platforms, such as Duolingo and Coursera, use NLU to engage with students, respond to their inquiries, and provide immediate help.
- *Data Insights:* AI-fueled data insight tools help educators in tracking student achievement, recognizing at-risk individuals, and crafting targeted intervention strategies. Solutions like BrightBytes and Civitas Learning examine educational data to deliver insights that can enhance teaching and learning results.

The incorporation of AI in education is revolutionizing how learners absorb knowledge and instructors deliver it. Here are some of the significant effects:

- *Elevated Learning Encounters:* AI offers interactive and captivating educational experiences through tailored content, smart tutoring, and groundbreaking technologies such as virtual and augmented reality.
- *Enhanced Accessibility:* AI-driven tools can cater to a variety of learning requirements, making education more inclusive. For instance, speech recognition software and AI-powered language translation tools support students with disabilities and those studying in foreign languages.
- *Streamlined Administration:* AI helps the automation of administrative duties like grading, scheduling, and attendance monitoring, enabling educators to devote more time to teaching and helping students.
- *Analytics-Based Decision Making:* AI empowers educators to make knowledgeable choices informed by real-time data insights. By recognizing student performance patterns, teachers can enact focused interventions and elevate educational results.

Future Implications of AI in Education

As artificial intelligence advances, its impact on the future of education is significant. Here are some probable future trends:

- *Lifelong Learning and Ongoing Education:* AI will enable continuous learning by offering customized, on-demand educational materials. Individuals will have the opportunity to enhance their skills and get new ones throughout their careers, adapting to the evolving job landscape.
- *Global Educational Equality:* AI has the capability to close educational disparities by delivering quality learning experiences to underserved and remote locations. AI-powered

platforms can provide scalable and cost-effective educational solutions to students around the globe.

- *Ethical and Privacy Issues:* As AI becomes increasingly woven into educational systems, tackling ethical dilemmas and safeguarding data privacy will be crucial. Crafting strong policies and practices to protect student data and encourage ethical AI deployment is vital.
- *Transforming Educator Roles:* The function of educators will transform as AI assumes more administrative and teaching responsibilities. Educators will transition into learning facilitators, emphasizing mentorship, critical analysis, and emotional intelligence development.
- *Cross-Disciplinary Learning:* AI will foster cross-disciplinary education by blending insights from diverse domains. Students will take part in project-based learning that incorporates science, technology, engineering, arts, and mathematics (STEAM), encouraging creativity and innovation.

SOME SPECIFIC EXAMPLES OF AI IN EDUCATION IN INDIA

Personalized Learning & Adaptive Platforms

- *BYJU'S and Embibe:* These platforms use AI to analyze student performance and suggest tailored content, creating customized learning experiences.
- *Intelligent Tutoring Systems (ITS):* These systems provide immediate feedback, hints, and guidance to students, making self-paced learning more accessible.
- *Jungroo Learning:* This platform helps educators understand and chart student journeys through an AI-powered adaptive engine.
- *PrepAI:* Teachers can use PrepAI to create unique assessments based on learning outcomes.
- *BrightClass, Century.tech, and Riid:* These AI-powered learning platforms use algorithms to tailor lessons and provide real-time feedback.

Supporting Teachers & Improving Efficiency

- *AI-powered Grading and Feedback Tools:* Tools like Gradescope can automate grading, detect plagiarism, and generate personalized feedback, reducing teachers' workload.
- *AI-Powered Chatbots:* These can provide students with personalized support and help them in overcoming learning difficulties.

Specific Examples of EdTech Startups

- *360Learning:* This platform uses AI to help create and share courses, leading to high completion and engagement rates.
- *Toppr:* This app uses AI to increase student engagement in lesson plans.

AI in Examinations

- *UPSC (Union Public Service Commission) Preparation:* AI apps can make UPSC preparation more efficient and adaptive.
- *GRE and GMAT:* AI have shown promise in preparing for these competitive exams.

Other Notable Examples

AI-Powered Apps for Visual Learning

Students can scan textbook passages with their smartphones, and AI-powered apps can generate 3D imagery to aid in visualization.

- *Language Learning:* Tools like Duolingo and Indian initiatives help students learn multiple languages, vital for a multilingual nation like India.
- *National Education Policy 2020 (NEP 2020):* Recognizes the potential of AI and recommends its integration into the education system.

CONCLUSIONS

The impact of AI on education is growing fast, bringing about substantial changes that improve how people learn and perform better in school. Looking ahead, the future of AI in education has a lot

of potential, offering a more personalized, easy-to-reach, and efficient way to learn. However, it is important to deal with ethical concerns and protect personal information to use AI in a fair and responsible way. AI is shaping the future of education, and its influence will last for many years. As teachers, students, and those in charge of education navigate this changing world, it is important to take advantage of the opportunities and deal with the challenges AI brings. This will help unlock its ability to make a real difference in education.

We believe AI will play a key role in the future of work in many ways, and the future of education is connected to it. By making learning more available and suited to each learner, AI has the potential to change education for the better. Even though classrooms may not be ready for robot teachers just yet, AI has a key role to play in making education better.

AI helps make learning more personalized, allowing content, the speed of learning, and teaching methods to be adjusted to fit each learner's needs and interests. AI systems can create custom learning plans that help develop each student's unique strengths and passions. Also, AI tools can improve how students interact with each other and with teachers, helping build skills like communication, teamwork, and negotiation.

AI can give students access to new tools and resources, like design programs or creative virtual assistants. These technologies can spark creativity and critical thinking, giving students chances to explore innovative ideas, build their imagination, and produce creative solutions to difficult problems. By personalizing learning, offering ongoing assessments, encouraging teamwork, promoting creativity and critical thinking, and helping develop problem-solving skills, AI can help create a new educational system that prepares students for life in a rapidly changing digital world.

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