

ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION

Mr. Sagar Shetage¹, Mr. Prashant Palkar², Mr. Digvijay Kumbhar³,
Mrs. Rutuja Ranmale⁴, Mrs. Shubhangi G. Bhandigare⁵

¹ Shahid Virpatni Laxmi Mahavidyalaya, Titave
E-mail: sagar.shetage@gmail.com

² Shahid Virpatni Laxmi Mahavidyalaya, Titave
E-Mail: palkarprashant22@gmail.com

³ Shahid Virpatni Laxmi Mahavidyalaya, Titave
E-Mail: digvijayk95@gmail.com

Abstract - The purpose of this study is to examine the role of artificial intelligence (AI) applications in education. In many ways, artificial intelligence applications offer a solution to today's exponentially increasing challenges in accessing education and learning. They play an important role in the development of social robots (SR), intelligent learning (SL), and intelligent tutoring systems (ITS), to name a few. The review shows that the education sector should also adopt the modern teaching methods and the necessary technology. Looking at the development, the organizations of the education sector must adopt AI technologies as a necessity of today and education. The study needs to be statistically verified for better understanding and generalization of the results in the future.

Keywords: Artificial Intelligence (AI), Higher education, automation, Machine learning, teaching, student attributes

1. INTRODUCTION

The future of higher education is inextricably linked to developments in new technologies and the computational capabilities of the new intelligent machines. In this area, advances in artificial intelligence are opening up new opportunities and challenges for teaching and learning in higher education that have the potential to fundamentally change the governance and internal architecture of higher education institutions. Because answers to the question "What is artificial intelligence?" have been shaped by philosophical positions since Aristotle, there is little agreement on a definitive definition of artificial intelligence. In this area, advances in artificial intelligence are opening up new opportunities and challenges for teaching and learning in higher education that have the potential to fundamentally change the governance and internal architecture of higher education institutions. The answers to the question "What is artificial intelligence?" have been informed by philosophical positions since Aristotle. Because answers to the question "What is artificial intelligence?" have been shaped by philosophical positions since Aristotle, there is little agreement on a definitive definition. Higher educational institutions play an important role in the development of a country. The economic and social development of individuals depends on two important factors, knowledge and learning. People with a high level of education are more likely to obtain high-skilled jobs and higher salaries, and thus have a greater chance of improving their standard of living. For people in developing countries, higher education is therefore more important because education enables people to live the lives they choose and lead more creative and productive lives. Good education and qualified students also lead to higher growth and improvements for the country as a whole, especially in developing countries.

In developing countries like India, higher education therefore has an even more important role to play,
152

which is why the learning process should be optimized.

2. What is artificial intelligence (AI)?

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition, and machine vision.

How does AI work?

As the hype around AI continues to grow, vendors are scrambling to promote the use of AI in their products and services. Often, what they call AI is just one component of the technology, such as machine learning. AI requires a foundation of specialized hardware and software to write and train machine learning algorithms. No single programming language is synonymous with AI, but Python, R, Java, C++, and Julia are popular among AI developers.

In general, AI systems work by taking in large amounts of labeled training data, analyzing the data for correlations and patterns, and using those patterns to make predictions about future states. In this way, a Chabot fed text examples can learn to have lifelike dialogs with humans, or an image recognition program can learn to identify and describe objects in images by reviewing millions of examples. New, rapidly improving generative AI techniques can produce realistic text, images, music, and other media.

AI programming focuses on cognitive capabilities that include:

Learning. This aspect of AI programming focuses on gathering data and creating rules for how to turn it into actionable information. The rules, called algorithms, give computing devices step-by-step instructions on how to complete a particular task.

Reasoning. This aspect of AI programming focuses on choosing the right algorithm to achieve a desired result.

Self-correction. This aspect of AI programming is used to continuously fine-tune the algorithms to ensure that they produce the most accurate results possible.

Creativity. This aspect of AI uses neural networks, rule-based systems, statistical methods, and other AI techniques to generate new images, new text, new music, and new ideas.

3. Artificial Intelligence (AI) in education

The use of AI applications in education can help our teachers increase their efficiency by relieving them of high-level intellectual tasks in teaching.

In the current scenario, the University Grant Commission (UGC) has also recommended the use of modern techniques, including hybrid methods.

It is clear that AI technology can bridge the quality gap in the education system and hence needs to be given due consideration. Artificial Intelligence can be used in the education sector in several ways to enhance the efficiency of the sector.

List of artificial intelligence in education

Grading Software

AI-powered grading software combines machine learning to create computational systems after collecting important data on metrics for grading assignments from papers graded by teachers/professors.

The tools are designed to understand and replicate the human grading process used by teachers. The combination of teacher input and AI can grade essays, papers and tests in seconds, even in different languages. They can be easily integrated into an existing virtual environment or cloud-based platform. They are handy when the number of papers is very high, so teachers can be kept busy with more valuable tasks instead of wasting hours grading.

Administrative tasks

Eliminate manual administrative tasks in schools, colleges, and universities, such as scheduling and rescheduling, attendance tracking, grading papers, finance, accounting, and record keeping. This streamlines regular, day-to-day tasks that no longer need to be performed by staff. AI tools can perform various functions such as

- Termination of truancy alerts
- Automatically generating report cards and other correspondence with parents
- Planning and scheduling meetings
- Automated routing of routine forms, enrollments and other paperwork to the correct department
- Reduction in time spent on progress reports
- Streamlining all other record keeping tasks.
- Teachers and professors can focus primarily on improving the quality of education rather than dealing with manual paperwork and reducing work pressure.

Voice assistants

Voice assistants are an engaging and convenient way to bring learning into the home while helping users plan learning calendars, hear coaching instructions on the go, and provide instant answers to basic student questions in class. Benefits of voice assistants in education include: Saving time efficiently for students and teachers

Providing collaborative learning opportunities

Personalized education within seconds

These AI-powered voice assistants can be used in apps on smartphones, even if they don't have smart speakers.

Personalized learning

AI tools can support learning through customized learning plans and tailor learning to the specific needs of individual learners. They identify gaps in knowledge and create instruction, tests, and feedback systems for learners from preschool to college. AI-powered software, games, and tools can set a strategy for students to learn at their own pace, in their own time frame, and according to their need for repeated practice. This machine-based classroom environment can help teachers customize individual lesson plans based on students' unique needs and contribute greatly to differentiated and adaptive learning that can provide a solid foundation for all types of learners.

For example, a personalized learning system could determine that a student is having difficulty with a particular concept in math. The system would then provide the student with additional resources and support, such as targeted practice problems or videos, to help them master the concept. As the student progresses, the system would continue to adjust instruction to meet his or her changing needs.

Smart content

Intelligent content can range from digital textbooks, guides, instructional snippets and videos to AI tools that create customized environments for educational organizations based on strategies and goals. Personalization in education is the global trend of the future, which can be achieved by identifying areas where AI tools can play a role. For example, schools can create AR /VR-based learning environments as well as accompanying web-based lessons. AI monitoring and assessment tools can optimize content for different learning styles and adapt to different learning curves. If many students give an incorrect answer, AI- and ML-powered algorithms can identify areas for improvement in the curriculum to close the gaps in poor or ineffective content and help teachers correct it.

Virtual learning environment

Using technologies from VR, students can connect directly to their mobile devices or laptops and access content interactively. Virtual learning environments can provide educational experiences for groups, provide advising services for students, and facilitate immersion in the world of learning

4. AI tools that educators and students can start off with to explore some of the applications of AI in education:

- 1. Knewton: An adaptive learning platform that can provide personalized course materials to students.**
- 2. Dialogflow: A Google-powered chatbot development platform that can help educators create their own chatbots for various educational purposes.**
- 3. Carnegie Learning: An AI-powered math education platform that can adapt to individual student needs and provide personalized instruction.**
- 4. Open edX Insights: A free, open-source learning analytics platform that can help educators track student progress and engagement.**
- 5. Google Cloud Speech-to-Text: A speech recognition API that can be used to develop voice-controlled educational applications.**
- 6. Classcraft: A gamified learning management system that can help educators engage students and promote positive behavior.**
- 7. OpenCV: An open-source computer vision library that can be used for a variety of educational purposes, such as robotics and digital art.**
- 8. Kahoot!: A game-based learning platform that can be used to create quizzes and other educational games.**

5. CONCLUSIONS

The main role of AI in education is to automate academic and administrative tasks, personalized learning, intelligent content, and anytime accessibility. Over time, AI has solved the problem of accessibility in various fields like health, environment, etc. India's potential for AI growth has made it inevitable for the country to integrate technology into education to benefit and better educate India's young people for the future.

REFERENCES

1. TechTarget. (n.d.). Artificial intelligence (AI). Retrieved from <https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence>
2. ClearIAS. (n.d.). Artificial Intelligence (AI) in Education. Retrieved from <https://www.clearias.com/ai-in-education/>
3. Jain, S., & Jain, R. (n.d.). Role of artificial intelligence in higher education - An empirical investigation. Neerja Modi School.
4. Ahmad, S. F., Rahmat, M. K., Mubarik, M. S., Alam, M. M., & Hyder, S. I. (n.d.). Artificial intelligence and its role in education. *Journal Name*, *Volume*(Issue), Page range.
5. West Agile Labs. (n.d.). 8 Applications of Artificial Intelligence in Education. Retrieved from <https://www.westagilelabs.com/blog/8-applications-of-artificial-intelligence-in-education/>