

THE INDIAN EDUCATION SECTOR AND ARTIFICIAL INTELLIGENCE

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ABSTRACT

The 21st century has been a generation of information and technologies, additionally proving it very much through the appearance of Artificial Intelligence (AI). Alexa, Siri, chat bots and so forth are the tools of AI. Artificial Intelligence (AI) has been also utilized in making choices in online shopping, mainly based on their past activities and understandings, Queries support systems of Telecommunication, Banks, Airways and so on are dealt with the AI. Similarly, in education area has also ended up one of the concerned subjects of AI. It is a computer software programme which is also known as machine learning system that can be able to think, behave, recognise faces, create objects and images. Many scientists of IT accept that AI is the future of next education system and those days are not far away when the entire educational activities, including teaching and learning processes rely on AI driven education system.

Keywords: Artificial Intelligence, Indian Education Sector, Potential Effectiveness & Challenge.

INTRODUCTION

The National strategy of India for artificial intelligence has been prepared by NITI Aayog in various fields. Artificial Intelligence (AI) practices and efforts give benefits to India in addressing society's needs in areas such as education, healthcare, agriculture, smart cities and infrastructure, including smart mobility and transportation. 21st century saw electronics becoming universally accepted in almost every manufactured product in the world. There will be incredible advantages in data collection, processing and in computation performance.

Artificial Intelligence (AI) have been transformed society and industries at large scale through automated tasks. The impact of AI in the Ed-tech market is growing quickly. As per a report by Business Today, 47 percent of tools of learning management will be converted into AI-enabled before the end of 2024. This thing will become possible due to widespread adoption of AI-powered technologies that enable innovative and effective learning solutions for the students.

The future of Indian Education systems has been technology oriented as it is considered seriously in the NEP-2020. Considering the vital aspects related with success of educational

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system of developed countries, policy creators have come to the conclusion that the education system must be renovated, reformed and modernized to make society ready to receive can lead it to the path of improvement as required. Admitting the fact, AI has been given due emphasis over the traditional means of technologies used in the education system. Along with AI, Code Language and 3-D Graphics are also given place in NEP-2020 by Ministry of Education, so that in future, fundamentals of education can be visualised as technology oriented. The technology based education system is considered to have probably shifted the entire education system as per the need. Like the MOOCs, a recent online, pre-recorded education programme has made significant impact on the education system particularly in covid-19 pandemic situation when the teachers/professors and students are restricted to attend the physical class in school/college. AI plays a vital role in catering to the needs of millions of students of different realms of education system if the education system is ready to involve or make use of AI in educational functions including the teaching and learning process. AI has been recognised worldwide as a promising and potential effective educational tool to be used for different purposes in the field of education.

Artificial Intelligence (AI): Meaning and Concept

Artificial Intelligence (AI) is a machine which is considered to have the ability to perform tasks and resolve certain issues and problems as a human being does. It will also be explained as a system of computer programme which can perform tasks where human intelligence is required, like resolving complicated problems, making choices and decisions, object deduction, images and face recognition and so on. In general, it is a machine-driven process that understands the languages, solves the problems, observes the environment, adapts to the situations and takes decisions for actions and so on.

Domains of Artificial Intelligence (AI)

- 1. Machine Learning:** Provide capability to Computers/Machines to learn without being explicitly programmed. Also, it is a science that involves machines in order to solve complex problems, analyse and interpret the data by processing itself.
- 2. Deep Learning:** It is also identified as Neuron Network. Deep learning recognizes complex patterns in images, text, sounds, and other data to produce accurate results and predictions. You can use deep learning methods to automate tasks that typically require human intelligence, like describing images or transcribing a sound file into text. The logics behind it are the face verification algorithm on Facebook and self-driving cars which follows the instruction like Siri and Alexa.
- 3. Robotics:** Its main focus is on the applications of robots. AI robots are just like artificial agents which work in a real world environment for generating results by taking some actions. Ameca, Sophia and Atlas are the best examples of humanoid Robots.
- 4. Expert Systems:** It is a domain of AI in which a machine learns with the ability of decision making of a human expert. It can use its logic to resolve complex problems. Expert System based on AI does not depend on the conventional programming system, rather on more advanced programme. It is used in information technology where fraud can be deducted, virus can be deducted and also manage medical and hospital records and so on.

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5. Fuzzy Logic: It is a computer system based approach where it works on the principle of degree of truth. Fuzzy Logic is the Boolean Logic. It has the utility in medical field in terms of resolving complex problems including decision making issues. Moreover, it is also useful in performing the task of automation in cars.

6. Natural Language Processing (NLP): Natural language processing (NLP) is one of the most important tasks in industry that uses machine learning concepts. NLP deals with the machines which will perform certain processes and understand the human speech/text, which we call Natural Languages. The Tasks like translation between languages, speech recognition, analysis of text and automatic text generation are place under the scope of NLP.

Indian Education System and Artificial intelligence (AI)

In education system, AI is at initial stage and has started scrolling slowly as the Ministry of Education has put promising emphasis on introducing Machine Language and AI in the education system of India so that the Indian education system can be reached at global level. However, Central Board of Secondary Education (CBSE), New Delhi, India has decided to incorporate AI in its school curriculum.

National Policy on ICT based teaching and learning in education where enhancement of ICT literacy and competency was given top priority for the teachers who are not aware of new technologies. Also, very few schools have functional electricity supply and computer systems with internet connection.

Applications of AI in Educational functions and practices

1. Opportunity for Personalised Learning: AI based teaching learning process comes with more suitable teaching and learning techniques and strategies and can adapt to the student's learning behaviour easily. In AI based learning, students will get learning experiences as per their requirements with audio and video materials.

2. Delivery of Quality Content: Preparation and delivery of smart content is the key subject in education as well as in research. AI based systems can create and deliver quality content in the forms of audio and video and also by turning the traditional text books into digital one.

3. Equality and Equity in Learning Opportunity: AI enabled education system can ensure equality and equity in learning opportunities to the learners. Skill based learning applications are being developed at global level wherein AI driven systems will bring classrooms at fingertips and can empower the learners to access the education as per their needs and abilities and may also get upgrade themselves with the trends of global education.

4. Interactive Teaching-Learning: AI enabled education systems will be more interactive as it provides individual opportunities of interaction. An Algorithm, a machine learning and AI driven programme, can follow the instructions of learners as many times as can be. This enables the learners to have clear their queries, solve doubts, understand the concepts and customise the contents with less effort.

5. Remote Learning: Remote learning is one of the major topics of AI based systems in education. With the help of AI, it has been possible to everyone who wishes to attend classes from home or from remote place as it can view the e-content in the forms of audio and visual

mode. AI can be a boon to numbers of rural learners who may be unable to attend the institutions/schools but can access the AI driven education system at their fingertips.

6. Assessment and Grading: AI can perform task of assessment as well as grading concurrently where teachers required numerus days to complete that task. AI driven system can do it by making audio and video streaming, recognise the images and faces as the human can do while writing their examinations/viva. So it can recognise and understand the actions of examinees, read the answer script and decides the grading with accuracy as per the performance and merits of the students.

07. Research Activities: AI will also be helpful in research activities through text, script, image, face and voice recognition ability.

8. Assistant to Differently Abled Learners: AI driven teaching learning process could meet out the needs of differently abled learners as it can map the each and every learner's needs and capacity by their faces, images and voice recognition that help them out individually in their teaching and learning matters.

9. Resources and Events Management: AI may be helpful in optimising the use of institutions' resources. It will organize files or records and keep and also furnish the records whenever required. In Events management, AI enabled robots may reduce the manual work of many staff at different points and times.

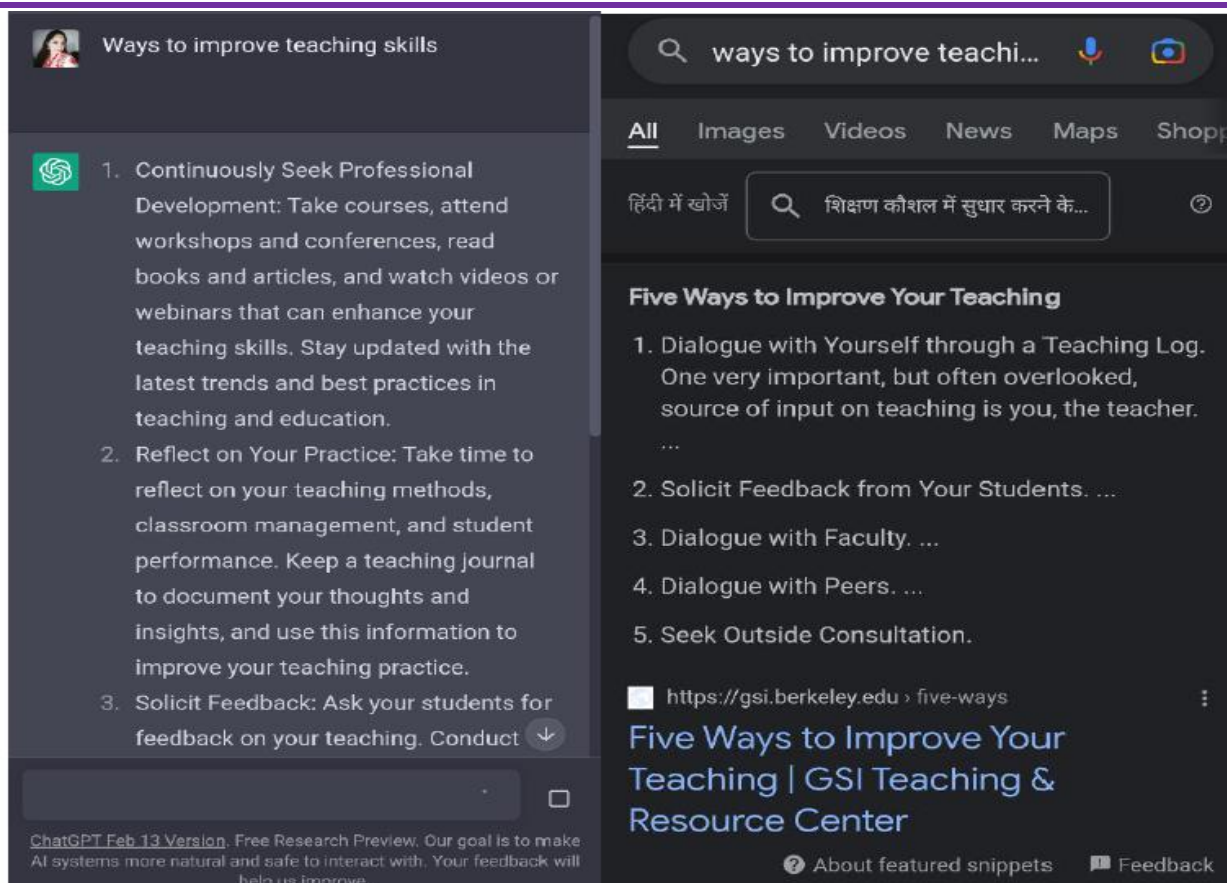
10. Training and Skills Development: Training and skill development programmes for the teachers and others staff members gives efficient output while using AI. As the AI enabled computer programme may read the instructions, recognise the faces and images of participants as the human being does. Skills development in teachers is possible by organizing the AI enabled training programme.

Apart from the above points, an AI enabled education system can also helpful in administrative tasks, data protection, ensure cyber security, ensure accuracy and accessibility, and also assist the teachers in many aspects.

Advantages of AI in Education

At present, young people spend a lot of time using their smartphones or tablets. This gives them a chance to study in their free time by using AI applications. AI helps students during their lectures by using Gesture Recognition Technology. Since AI becomes more sophisticated, the machine reads the facial expressions or gestures of the student so that they can learn easily.

AI can play a crucial role in improving the quality of teacher education also. One of the significant challenges in teacher education is ensuring that teachers have a strong foundation in the subject matter they teach. AI can provide teachers with access to high quality educational resources and learning materials that are tailored to their individual needs. AI can also help teachers identify knowledge gaps and provide feedback on areas where they need improvement. Teachers can seek the help of AI to improve their teaching skills. Below is a comparison between the search result for the statement “ways to improve teaching skills” on both Google and open AI ChatGPT are given below in Figure 1.



Disadvantages of AI in Education

Despite the huge opportunities AI offers, there are some potential risks in it. AI is likely to become either the best or the worst thing that might depend on humanity. AI could support teaching and learning, but new ethical implications and risks emerge with the development of AI applications in higher education. One such example is, in the past, due to corona virus pandemic situation, the budget was cut, so the management might think of replacing teachers with profitable automated AI-based solutions. If the usage of AI in education increases, there might be a chance that personal interactions get decreased and students become technology addicted and sometimes this may hurt the learners instead of helping them.

Challenges and Drawbacks

Ethical and Social Implications

The integration of AI in education system increases significant ethical and social consequences. For example, there are concerns about the potential bias in AI algorithms, which may perpetuate social inequalities. It also concerns about data privacy and security, as AI systems collect large amounts of data about students and teachers. There are concerns that if the process of writing essays gets automated then what would be the consequences with respect to originality and ethical values?

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Technical Challenges

There are also technical challenges associated with the implementation of AI in teacher education. For example, AI systems require significant computational resources, which may not be available in all educational settings. There are also challenges associated with the design and development of AI systems, including ensuring their accuracy, reliability, and validity.

Combating Plagiarism in Research

The open AI Chatbot sources like the ChatGPT help in text generation, but without any proper citation, if a researcher passes a text generated by AI without proper citing of the source or without the consent of the copyright holder, then this might lead them into legal dispute.

Lack of Explainability

AI operates effectively as a black-box-based system that does not have transparency which provides the reason behind any particular concept, classification and decision which is made by the system itself.

Lack of Contextual Awareness and inability to Learn

In certain given parameters and rules, AI-based systems perform very well. However, they still have major limitations in terms of making decisions where context plays a critical role. Unlike humans, AI –based systems cannot learn from their own environment.

CONCLUSION

Artificial Intelligence is viewed as a system of machine learning or computer programming that can do whatever a human can do. If any technology that has the capacity to cast catastrophic impact and bring change in the society of 21st century, we would name to the Artificial Intelligence. Recently, Artificial Intelligence has become one of the highly debate invited issues for the scientists, educationists, policy makers and other partners of education system. AI is considered to be the guardian of future education system at every level if it gets full coverage in implementation and application in the educational jurisdictions as it has the promising applications in education system with respect to teaching learning process, administrative tasks, managing resources and events, assessment and grading, equal opportunity in access to education, remote and proctored learning, curriculum up gradation, predictions about potential drop outs, inclusion oriented education system and so on. However, AI enabled education system is still in beginning stage. Strict restrictions of socially or religiously, students' capabilities, accurate policies on AI, necessary infrastructures, financial constraints and so on are the possible issues and challenges related to AI enabled education system. Moreover, functional and persistent electricity connection, better internet connectivity and well trained staff in AI programming is highly required for effective and desired results in the education system.



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