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Empowering Education System with Artificial Intelligence: Opportunities and Challenges

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ABSTRACT

Digital technologies have already become an integral part of our life. They change the way we are searching for information, how we communicate with each other, even how we behave with each other. This digital transformation applies to so many areas, including education (all levels). The main objective of this article is to identify prospective impact of artificial technologies to the imparting skills and to predict possible changes in educational landscape. In this article we considered customized educational content (videos, chats pdf etc), innovative teaching methods, technology enhanced assessment, communication between student and teacher. After the Covid -19 pandemic the significance and application of artificial intelligence practices in education sector increased all over the world. It makes possible the education to become interactive and effective in comparison to traditional tools of education. Application of Artificial intelligence in education creating new opportunities to empower students with needed skill so that they can excel in career. Chatbots, virtual reality, robots, metaverse, mobile applications creating a new era of education. Artificial intelligence will benefit students, teachers, parents and educational organizations altogether.

KEY WORDS

Artificial Intelligence, Innovative teaching methods, Education, Customized Educational Content.

INTRODUCTION

The process of using computers, software, hardware, devices and machines to mimic human perception, decision-making, and other processes to complete a task is known as Artificial intelligence. There are any ways to understand the nature of AI. Two basic types of AI include the AI which based on rules and the AI which based on machine learning. The rules based AI uses rules of decision making to produce or suggest a recommendation or a solution. An example of this is an intelligent tutor system, which can provide grammar and specific correction feedback to students.

Machine learning-based AI is much more powerful since the machines (computer oriented) can actually learn and become superior over time, particularly as they work with large, multilayered datasets. In education, machine learning-based AI tools can be used for a variety of tasks such as monitoring student activity and creating models that accurately predict student behavioral outcomes. Within AI, there is one more subfield which is natural language processing, which is the use of software to understand, predict, translate and record text content. Technique such as automated essay scoring uses natural language processing to grade written essays. There are AI systems based on voice recognition. Such systems are used in voice command tool as and Alexa and Siri . Experts have been exploring ways to use voice-based AI to diagnose reading and other academic issues. Nowadays the use of AI which is machine-based is already adopted in education. For example, several testing companies (ex. Pearson) use natural language processing for scoring essays. Massive online open courses allowing unlimited participation through the web, run by companies such as Coursera and Udemy, have also integrated AI scoring to analyze essays within their courses.

Nabiyev (2010) defines “AI as the ability of a computer-controlled device to perform tasks in a human-like manner”. Here human-like qualities include mental processes like reasoning, meaning making, generalization, and learning from past experiences. Norvig and Russell (2003) define AI as a Machine Intelligence, or Computational Intelligence. AI enables to execute normal and specific tasks for ex. playing games, solving mathematical theorems, writing content, giving speech, diagnosis diseases etc. Nilsson (2014) defines AI as an algorithmic construction to copy human intelligence. In other words AI is combination of machines, software, hardware and tools which work similar or more effective than human intelligence but we cannot deny the fact that AI is also a product of Human Intelligence.

The Potential Benefits and Uses of Artificial Intelligence in Education System

AI does not distract or keep away students from classroom but enhances the educational experience in many ways. Such as:

Personalization: AI systems adapt to each individual student’s learning needs and target according to their strengths and weakness.

Tutoring: AI systems analyses and observe student’s current style of learning and pre-existing abilities then deliver customized content pattern and support.

Grading: AI systems do grading not only objective answers but also on descriptive answers.

Meaningful and Real Time Feedback to students: With AI, students feel free to make mistakes which are an integral part of learning and then receive real time feedback to do necessary correction.

Free up time: With AI the education centres can reduce time of teachers from various tedious task and use that free up time for much productive execution of course.

Adaptive Learning: Used to teach students at entry level then gradually move next stage by completing the previous one so they can become proficient.

Assistive Learning: AI can enable students to access equitable education as per need, for example by reading content to a visually impaired student.

Early Childhood Education: AI is currently used to present interactive games which teaches and develops the basic ethical and academic skills in children.

Data and Learning Analysis: Nowadays AI used by faculties and education administrators to analyse and interpret educational data.

Scheduling: In educational institutions it helps administrators to schedule classes, courses and teachers to make and plan their daily, weekly, monthly and sessional curriculum schedules.

Facilities Management: AI is very effective at monitoring the current status of various facilities in educational institutions such as power, wifi, water and staff.

Overall School Management: Currently AI is used to manage schools, records of students, vehicles, IT, time tables and budget.

Content Writing: AI applications which convert voice into text are widely used.

Different aspects through which AI empowering education system include:

- Classroom/Behaviour Management
- Lesson Planning for classes
- Classroom Audio-Visual content
- Parent-Teacher Communication
- Language Learning
- Test Prep
- Assessment of test , exams and assignments
- Learning Management Systems
- Faculty Scheduling and Substitute faculty Management
- Plagiarism Detection and removal
- Exam Integrity
- Chatbots for Enrolment and Retention of students
- Learning Management Systems
- Recording of Faculty Lectures
- Enhanced Online Discussion Boards
- Analysing Student Success Metrics
- Academic Research
- Virtual reality/ animation
- Connected Campuses

CHALLENGES AHEAD

Along with these benefits, there are other major concerns. One major and important issue is privacy. How do these educational tools protect user privacy? How do educational institutions gain consent of both students and parents when introducing them? Should that data would be shared with researchers, companies and other external groups? Another issue is related with human experience of education .in other words AI cannot replace teachers. Experts also point out drawbacks of Artificial intelligence; it will reduce the cognitive ability of both teachers and students. Too much dependence on technology will create negative impacts also. The digital burden of content will create unnecessary pressure on students. We have to make AI supplement to teachers not the replacement of teachers. Excessive use AI should not be imposed on teachers and students.

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