



# Artificial Intelligence and Machine Learning in Education: Challenges and Possibilities

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## Abstract:

Artificial Intelligence and Machine Learning are seen as one of the most important developments in the recent times. In education also the researches related to use of Artificial Intelligence(AI) and machine learning in education is growing. This paper explores some of the areas where AI and machine learning would be used in learning. It highlights some of the challenges and debates created by AI powered developments like ChatGPT. Providing individualization opportunities to opportunities to create barrier free environment for learners with disabilities are some of the opportunities created by AI that are discussed.

Recently some of the Universities and colleges banned use of one of the very popular applications using Artificial Intelligence. The general purpose conversation chatbot, ChatGPT developed by open AI, has created such extreme reactions within 6 months of its launch. According to some of the teachers of the university, the students used it to submit their assignments frequently. The ability of the application to generate unique responses to questions that are application based has made things easier for those seeking readymade responses.

Such actions may be an indication towards things to come in future, it will change the way learning tasks are organized, instructional designs are developed and will give rise to new debates in academia.

Forcing learners not to use developments in technology may be debatable but there are many ways in which such developments can create opportunities for more exploration based higher order thinking based learning.

Rapid changes in technology in last two decades have paved the way for paradigm shift in access to technology and awareness to use it. High speed internet, mobile technologies, artificial Intelligence, data analytics, big data are now part of human life at every point.

There is a shift in understanding related to learning goals at every level with more flexibility, freedom, and different expectations from learners. There is a shift in learning towards outcome based learning and emphasis on assessment to be in sync with learning outcomes (Mukhopadhyay,2017) and to be more formative in nature. (Collins & Halverson, 2010; Shute, 2011). Inclusive education and individual learning styles are equally important in education. With increased access to technology to teachers and students classroom environment has changed. In the pandemic due to covid-19 it has shown how access to technology can bring classrooms to home of the students. Although, it remained mainly bound to be used for group interactions, it has made one more step towards making learning experience more individualized. Focus of education at many places had already shifted towards Individualization and one to one tutoring (VanLehn, 2011Wylle and Roll,2016).

It is very common these days that when we type about a specific product online we start getting advertisements related to that product on every site And if our security features on system are not appropriate we may start receiving calls which have complete details related to what exactly we intend to search with details we may have not thought about. This type of digital foot printing and data analytics are very common in many areas now. This phenomenon surrounding information footprints is referred to as ‘datafication’ (Mayer-Schönberger & Cukier, 2014) There are definitely lot of ethical concern related to this but with proper procedures and norms in place it can prove to be a great tool for addressing many concerns in education. Data analysis should move across individual tutoring systems and evaluate students’ skills for the 21st Century (Woolf et al. 2013).

This availability of big data and exponential growth of technology has brought AI into forefront after many decades of being oblivion.

The field of Machine Learning seeks to answer the question “How can we build computer systems that automatically improve with experience, and what are the fundamental laws that govern all learning processes?”

Machine learning tools are concerned with endowing programs with the ability to “learn” and adapt (Shai and Shai,2014), generalising from examples (Pedro, D., 2012) and as science (and art) of programming computers(Aurelien, G. ,2017). And if we understand machine learning, we can say that it is effort to achieve Artificial Intelligence (AI)

Artificial intelligence is developing day by day to the level that it would respond to a children with high level of intelligence and interpretation of emotional cues given by them.

Some of the areas where Artifical Intelligence is applied in Education are in

- \*Addressing individualization of education;
- \*providing access to learning opportunities for children with disabilities
- \* helping people to collaborate
- \*getting deeper information and assessment about individuals learning
- \*personalizing the learning experience for the learner

\*tutoring individuals

\* assessing and giving feedback at individual level

To be able to use AI-enabled technologies effectively, teachers would also need assimilate new competencies (Luckin et al., 2016). Ability to learn new ways to handle information and give feedback, develop pedagogy which is in sync with AI based learning environment and developing baseline information about learners are few of them. New type of learning environment would need engagement and motivation of teachers to make contribution to this developing scenario of AI enabled learning environment.

The competencies among teachers to not just use these developments for their own instructional design but also to create opportunities for learners to create their own individual pathways is a must. The applications like ChatGPT are giving opportunities for the learners to get more refined answers to questions that are not just knowledge based but are beyond the obvious ideas. As teachers we have multiple options in such situations. It depends on what is our predisposition towards technological advancements but also towards the individuals we are going to teach. How we include such applications would pave the way for development of new pedagogical designs. They would also help in giving more time to higher order thinking skills of the learners as it would address many knowledge related tasks.

We may choose to analyse the analysis done by such applications and find the gaps in them. Again, it would require active participation from the teachers. The analysis would help the learners to reflect, discuss, critically analyse and create as well. Thus the mindset of teachers to use AI in appropriate situations and with appropriate group of learners is very important. AI would also help in individualization of learning, thus its important that the teacher is aware about its application in schools for different students.

The data gathered by the applications may be useful in guiding the teachers in decision making as well. Thus, its imperative that the students and teachers collaborate for the benefit of students learning. The technological advancements would be rapid changes in AI with tools getting more accurate, they would also facilitate the learning of children with disabilities. The combination of different facilities available online, we cannot just address the barrier to learning but also facilitate the opportunities of developing designs of learning that would be more apt for all the learners in an inclusive setup.

AI powered software would be helpful in creating personalized learning experiences for the learners. The possibilities of developing an interface that would help in individualization of learning experiences would be beneficial to all the learners. So ultimately, our resistance towards change may be an initial reaction towards it but would not be very far that we would be using AI in schools and colleges very frequently.

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