Journal of Neonatal Surgery
ISSN (Online): 2226 -0439
Vol. 14, Issue 20s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

The Future of Education and Artificial Intelligence

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Cite this paper as Dr. Gagandeep Kaur, (2025) The Future of Education and Artificial Intelligence. *Journal of Neonatal Surgery*, 14 (20s), 924-927.

ABSTRACT:
The definition of AI is "automation based on associations." Two key developments in AI occur when computers automate reasoning based on associations in data (or associations inferred from expert knowledge), which elevates computing beyond traditional edtech.
First, from gathering data to finding patterns in it; second, from giving students access to educational resources to making judgements about teaching and other procedures related to education automatically. The range of tasks that can be assigned to a computer system increases significantly with the addition of pattern recognition and decision automation. The process of creating an AI system could result in biased decisions being made automatically and biased patterns being identified. As a result, educational systems need to control how AI is used. This paper outlines potential applications of artificial intelligence (AI) in education, identifies impending difficulties, and formulates suggestions to direct future policy development.

Keywords: AI, applications, formulates, pattern, recognition

1. Growing Interest in Artificial Intelligence in Education

Many of the goals set forward to improve teaching and learning are not being reached today. Teachers are looking for scalable, safe, and effective ways to fulfil these concerns with the help of technology. Educators naturally ponder if the swift advancements in technology in daily life could be beneficial. Like everyone else, educators make use of AI-powered services in their daily lives. Examples include automated travel planning on their phones, voice assistants in their homes, and tools that can write essays, fix grammar, and complete sentences.

Since AI tools are only now available to the general public, many educators are actively investigating them1. Teachers see potential to leverage AI-powered features like speech recognition to improve the support provided to multilingual students, students with impairments, and other learners who could use more customisation and adaptability from digital learning tools. They are investigating how AI may help them write or enhance classes, as well as how they locate, choose, and modify materials for their lessons. Teachers are also informed of the latest hazards. Strong, practical features may come with additional security and privacy threats. Teachers are aware that AI is capable of producing incorrect or unsuitable results on its own. They are concerned that unintentional biases could be amplified by associations or automations produced by AI. They have seen that pupils are now able to display other people's work as their own in novel ways. They are cognizant of "teachable moments" and instructional techniques that a human educator may address but which AI models miss or misinterpret. They are concerned about how equitable the recommendations made by an algorithm would be. The worries of educators are numerous. It is the duty of all educators to use the positive effects of AI integration in edtech to further educational goals while simultaneously guarding against potential negative effects.
The Department collaborates extensively with stakeholders in education to create edtech guidelines. Educational leaders—teachers, professors, support workers, and other educators—researchers, legislators, financiers, advocates, technology developers, members of the community and organisations, and, most importantly, students and their families/caregivers are among these stakeholders. Recently, the Department has observed a rapid increase in interest in and worry about AI through its interactions with constituents.

For instance, a 2021 field scan revealed that developers of various technology systems—for parent-teacher communication, student information, classroom education, school administration, and more—expect to integrate AI capabilities into their systems. More than 700 people attended a series of four listening sessions held in June and August of 2022, and it became evident that the constituents want to get hands- on and collaborate in order to take action now in order to get ahead of the anticipated rise of AI in education technology. The public learned about new generative AI chatbots in late 2022 and early 2023, and they started investigating how AI could be utilised to compose essays, make lesson plans, generate photos, and build customised tasks for Through speeches at conferences, in the news, and on social media, the Department gained additional knowledge regarding the advantages and disadvantages of chatbots with AI

capabilities. Despite this, as AI-enabled systems are developing quickly, this article will not concentrate on a particular AI tool, service, or announcement. Lastly, the Department shaped the conclusions and suggestions in this research by utilising its internal knowledge in educational policy as well as its connections with policy specialists in AI.

2. Three Arguments for Immediate AI Education

First, AI might make it possible to accomplish educational aims more effectively, more broadly, and more affordably. It is a policy priority to address the various incomplete learning that pupils have as a result of the pandemic, and AI may make learning resources more adaptive to the requirements and strengths of individual students. Enhancing teaching positions is a top priority, and AI may be able to help teachers more by way of automated assistants or other technologies. When teachers run out of time, AI may also allow them to provide more support to specific kids.

Priority should be given to creating resources that take into account the knowledge and experiences that students bring to their education—their cultural and communal assets. Artificial intelligence may make it possible for curriculum materials to be more locally tailored. AI has the potential to improve educational services, as demonstrated by voice assistants, mapping tools, shopping recommendations, essay writing skills, and other commonplace applications.

Second, apprehension about possible future hazards and awareness of system-level concerns give rise to urgency and importance. For instance, students can see increased monitoring. While the Department vehemently denies the notion that AI may replace teachers, some educators are concerned that they might be supplanted. People are aware of instances of algorithmic prejudice discriminating, such as voice recognition software that struggles to recognise accents from different regions or exam monitoring software that might unjustly flag some student groups for disciplinary action.

AI may be used in invisible and infrastructure-related ways, raising questions about trust and transparency. AI frequently appears in new applications with a magical quality, but educators and procurement regulations demand that edtech demonstrate its effectiveness. Artificial Intelligence may yield seemingly genuine knowledge that is, in fact, unreliable or unfounded in reality. Most importantly, AI poses new risks beyond the well-known ones related to data security and privacy. These risks include the possibility of scaling automations and pattern detectors that lead to "algorithmic discrimination" (i.e., systematic unfairness in the resources or learning opportunities recommended to certain student populations).

Third, the scope of potential unforeseen or unintentional repercussions makes things urgent. Teachers may find unintended repercussions when AI makes it possible for judgements to be automatically made at scale in the classroom. To give a basic example, achievement inequalities could increase if AI adapts by speeding the curriculum for some students and slowing it for other kids (based on insufficient evidence, flawed theories, or biassed assumptions about learning). The quality of the available data may occasionally lead to unexpected outcomes. .. One may presume, for instance, that an AI-powered teacher hiring system is more objective than one that scores resumes by hand. However, the AI system may deprioritize applicants who could add talent and diversity to a school's teaching staff if it is dependent on shoddy past data.

3. Moving Towards AI-Related Education Policies

AI in addition to a rise in ethical studies, encompassing questions of justice and openness. Naturally, as more issues are identified, more research is being done on subjects like ethics. There will be ethical issues in teaching as well. The study discovered a startling interest in the quantity of legislative ideas that particularly incorporate AI in 25 different countries.

A number of executive orders have been issued in the US with the aim of guaranteeing that AI is fair and reliable. The White House Office of Science and Technology Policy has also unveiled a Blueprint for an AI Bill of Rights (Blueprint)4, which outlines guidelines and procedures to help accomplish this objective. These programmes will direct the application of AI in all spheres of society, in conjunction with other AI- related policy initiatives taking place in the legislative and executive departments.

4. Realisation: AI Systems Allow for Novel Types of Communication

Computational processes can now support more natural types of engagement, like speaking to an assistant, and can even create plans or recommendations thanks to AI models. The ability of AI-enabled educational systems to facilitate more organic interactions during teaching and learning will make them desirable. There are few methods for teachers and students to engage with edtech on traditional edtech sites. Instructors and pupils can select answers to multiple-choice questions or from a menu. They might type succinct responses.

They can use touch gestures or move objects around the screen. Teachers and students can access text, images, and multimedia outputs from the computer. Despite the versatility of various input and output formats, this type of interaction is unique to human-computer interaction and should not be confused with interpersonal communication. AI will probably make computer interactions more like human-to-human interactions. An AI assistant may converse with a teacher and return speech. A section of a drawing created by a student may be highlighted by the computer.

Furthermore, there is a growing range of automated operations that AI systems can perform. Present-day personalisation technologies have the ability to automatically modify the learning sessions' trajectory, pace, cues, and sequence. Future

actions could take the form of an AI tool or system that assists students with their homework or a teaching assistant that lightens a teacher's workload by suggesting lesson plans that meet the demands of the teacher and are comparable to prior lesson plans the teacher has appreciated. Furthermore, in a small group of students working on a collaborative task, an AI-enabled helper might show up as an extra "partner". A tool with AI capabilities could also assist educators in managing intricate lesson plans. A tool could assist teachers, for instance, in coordinating the flow of students from a large class discussion into smaller groups and ensuring that each group has the supplies necessary to get to work.

5. An Obstacle: Applying Systems Thinking to AI in Education

Participants in our listening session reminded us that as artificial intelligence (AI) penetrates the educational system, it will inevitably find its way into areas or components of the system that are now broken. AI must be employed considerably more carefully in situations where the environment of the system is unstable or unpredictable, as it is undoubtedly not a solution for malfunctioning systems.

Since AI systems and tools do not entirely correspond with learning goals, as was previously discussed, educational environments must be designed to place AI in a way that allows educators and other adults to use these resources effectively for teaching and learning. The ITS example demonstrated how AI may improve the efficacy of math problem-solving instruction, and a comprehensive curriculum could involve teaching roles emphasising mathematical practices like modelling and argumentation. Additionally, small- group work is probably still going to be vital. As students work on answering a real-world difficulty, they may work in small groups to apply mathematics to forecast or justify. Understanding how learning can be culturally responsive and sustainable is now the "right place" for people, not AI, as AI is still far from being prepared to link learning to the distinctive qualities in a student's culture and family.

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