**[AI in education](https://www.dawn.com/news/1807043/ai-in-education)**

[Faisal Bari](https://www.dawn.com/authors/568/faisal-bari) Published January 19, 2024

The writer is a senior research fellow at the Institute of Development and Economic Alternatives, and an associate professor of economics at Lums.

Listen to article

INVESTMENTS in artificial intelligence are massive ($94 billion in 2021 alone). They will continue as people see profit-making potential in them. We have all heard the rhetoric that AI is going to revolutionise many areas and have a major impact on jobs in several sectors.

Where it might increase marginal productivity (output per worker), it will automate jobs and thus replace workers. This is already happening in some spaces.

AI is expected to have a large impact on education too. There were already over 30 multimillion-dollar-funded AI-in-education corporations in 2022; some analysts expect AI in the education market to be worth more than $20bn in less than five years.

But the same apprehensions surface in this sector too. Where AI can help create more pathways for personalised and lifelong learning, it will also automate a lot of processes. Teachers fear they might be ‘replaced’ by AI systems eventually.

These apprehensions are a bit premature. AI is still developing and it is hard to predict all that it will be able to eventually accomplish. Although there are early indications that some teacher tasks can be automated, there is also a perception that certain functions that teachers perform, and that are relevant to socialisation and the development of deeper, more contextualised learning, won’t be easy to automate. The future being unknown, let us see how technology develops and is deployed.

Pakistan is not at the frontier of AI use in education. For now, its most common application is seen in students using GPT-3 to do their assignments or assessments and for writing essays. Professors are using AI-based systems to detect AI-generated assignments/ assessments. The main concern so far is the increase in the incidence of cheating.

If artificial intelligence delivers on its promise, it will change the education sector significantly.

Submitting someone else’s work as one’s own is cheating and hurts the learning process. Students, instead of trying to understand a topic, submit something they might not even understand. The struggle is not to stop students from using AI, but to convince them to use it for understanding concepts and deepening their learning instead of cheating.

This is not a major issue. There are programmes that detect cheating and many professors use these. The cat-and-mouse game between programmes that allow students to produce work without detection and programmes that allow professors to detect cheating will continue. Even before GPT, we had issues of plagiarism.

What are more interesting, but have not come to Pakistan in any significant manner yet, are intelligent tutoring systems. ITS allow a person-based introduction of information and then personalised feedback to students and the monitoring of progress by students as well as teachers (dashboards). They open up doors for increasing outreach, reducing the cost per student and allowing more student-specific learning opportunities.

Pakistan, with some 23 million out-of-school children, faces significant issues regarding the quality of school education, and limited and low enrolments at undergraduate levels. It could really benefit from ITS but it is a distant prospect.

We need good internet connectivity for this: we need students to have computers and tablets at home; we need teachers who are tech-savvy and are not afraid of what ITS could do. We need ITS that are much better than where they are right now. They still have a long way to go before they start delivering well on the promise of personalisation and customisation at low prices.

Existing ITS are better able to work in mathematics and physics, are more geared towards specific task or skill learning, and more suited to preparation for specific examinations. A lot of development still needs to take place before it is possible to see them being used for educating out-of-school children or ensuring improved learning for millions of children.

There are also AI-assisted applications that allow language translation and/ or mathematics learning. However, it is not clear if they assist student learning or undermine it by taking away the need for learning concepts and other things, very much like calculators did with simple multiplication and division tasks.

Other AI-based educational programmes are being developed in areas like formative assessments, dialogue-based tutoring systems, chatbots, learning network orchestrators, AI-assisted virtual reality or games, and so on. But in most of these areas, we do not have commercial applications yet.

We will only be able to assess viability and efficacy once commercial applications are available and ‘cheap’ enough to be deployed in Pakistan’s education market. And we will only be able to talk of what teacher-displacing impact they are going to lead to when we are closer to that point.

For the moment, most of these are interesting and promising possibilities from the point of view of opportunities to enhance student learning. But their future impact is as yet unclear.

At the same time, there are many legitimate concerns about AI in education. Apart from its impact on teaching jobs, increased student surveillance, data collection, usage and sharing raise legitimate ethical and legal concerns about confidentiality and safety. As more commercial applications become available, these concerns will need to be addressed as well.

AI has a lot of potential in education. It can, in principle, allow us to reach more children, ensure quality and do it at a much lower cost than the current schooling model. If it delivers on its promise, it will change the education sector significantly and many teacher-related tasks will become automated.

But we are far from there right now. It is not even clear if it can deliver on all these promises. We have only seen GPT-3 so far, and that is not a major game-changer. Given the potential and promise, for the moment, it seems that an attitude of curiosity, rather than fear, makes more sense.

*The writer is a senior research fellow at the Institute of Development and Economic Alternatives, and an associate professor of economics at Lums.*

*Published in Dawn, January 19th, 2024*