

How AI might transform Bangladesh's education landscape

An international study by IDC found that between 2023 and 2024, generative AI adoption surged across sectors, with education among the fastest growing. Usage jumped from 55% to 75%, and for every dollar invested, institutions saw an average return of 3.7 times in value.

SADID HASAN

For Bangladesh, Artificial Intelligence (AI) can revolutionise education for its millions of students. It holds the key to overcoming longstanding challenges and unlocking their full potential by personalising learning, boosting inclusivity, and preparing the next generation for the future. Emerging AI technologies such as adaptive learning platforms, intelligent tutoring systems, and predictive analytics can bridge gaps in access and quality, especially across underserved regions.

Globally, momentum is accelerating: an international study by IDC found that between 2023 and 2024, generative AI adoption surged across sectors, with education among the fastest growing. Usage jumped from 55% to 75%, and for every dollar invested, institutions saw an average return of 3.7 times in value. These numbers signal that AI in education has started delivering real impact.

PERSONALISING LEARNING FOR EVERY STUDENT

One of the most powerful benefits of AI in education is personalisation, as AI can tailor learning to individual student needs.

Adaptive learning platforms: AI-driven platforms can analyse a student's performance in real time and adjust the content accordingly. Such platforms can instantly tailor materials to address each learner's needs. For example, if a student needs more help with English grammar but excels in mathematics, an AI tutor could allocate more time to English and skip ahead in mathematics.

personalised learning at scale.

AUTOMATING THE BURDEN OF ADMINISTRATION

Beyond direct teaching and learning, AI offers relief in another crucial area: all those administrative tasks that consume teachers' and schools' time.

Automated grading and evaluation: Marking exams and assignments by hand is time-consuming and prone to inconsistencies. AI-based grading systems can drastically reduce this load. Already, machine learning models can grade multiple-choice quizzes instantly and even evaluate written answers or essays with reasonable accuracy by analysing content and language structure. AI-based grading can improve accuracy in evaluating assignments and exams, minimising human errors caused by increasing workload and fatigue, while speeding up feedback to students. In Bangladesh, where public exam results often come months after the exams, automated grading could return results within days or even hours.

Smart scheduling and resource management: Scheduling classes, exams, and teachers' timetables is like a giant puzzle. Many schools in Bangladesh still do this manually, which can lead to errors or suboptimal use of resources. AI can juggle these variables much more effectively. An AI scheduler could ensure that a scarce science lab is allocated optimally across classes, or that two courses needing the same projector are not booked at the same time.

Attendance and student tracking: In many schools, teachers still take



AI-GENERATED IMAGE

on existing infrastructures. It is also critical to plan for maintenance – software updates, hardware repairs, and technical support. Many ICT projects fail not at launch but later, when equipment breaks or software issues arise and there is no support available. Training local technicians and allocating maintenance funds will be important to keep AI systems running in schools year after year.

CHARTING THE WAY FORWARD

So, how can Bangladesh turn the potential of AI in education into reality? The journey will likely be gradual and experimental, but momentum is building. Below are some concrete steps and recommendations derived from global best practices:

Start with pilot programmes: Identify a representative mix of schools – for example, a few urban schools and a few rural schools across various regions – and introduce AI learning tools on a pilot basis. This could be as straightforward as providing tablets loaded with an adaptive mathematics app or a tutor chatbot to a Year 6 class, plus training one teacher in each school to integrate it into their teaching. Monitor results for a semester: Did student engagement improve? How were test scores? Gather feedback from teachers, students, and parents. These pilots will provide local data on what works and what does not, guiding larger rollouts. Bangladesh can also learn from successful pilots in other countries to help inform and design similar programmes.

Public-private partnerships: Leverage the expertise of both sectors. The government can set goals and provide scale, while private (or international) partners can provide technology and know-how. For example, edtech startups in Bangladesh could be incentivised (through grants or awards) to develop AI-driven educational content aligned with national curricula. Telecom companies might collaborate to zero-rate educational data (making access to AI learning apps free of data charges for users, as was done for some educational sites during the pandemic).

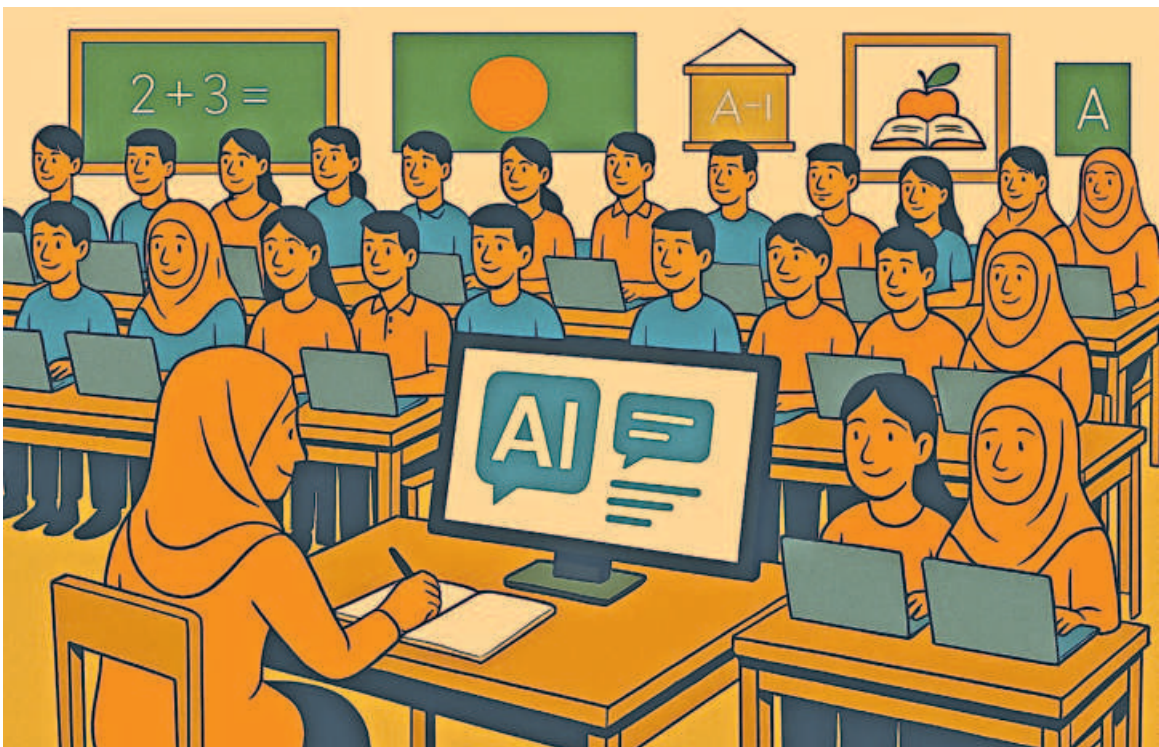
Teacher engagement and upskilling: Teachers are the key stakeholders. The government and training institutes should introduce AI modules in teacher training programmes. Active teachers could undergo workshops demonstrating how AI tools can assist in lesson planning, providing differentiated assignments, or tracking student progress. One approach is to create a network of "AI in Education champions" – tech-savvy Bangladeshi teachers who can pilot the AI tools and then mentor others.

Localised content and research: Encourage development of AI that speaks to Bangladesh's context. This might mean continued funding of research projects at universities on Bangla NLP (natural language processing) for education, or creating large open datasets of Bangla educational materials for AI training. There is already significant progress with training Bangla large language models. Such models can read and understand Bangla textbooks, empowering a host of applications from intelligent tutoring to automated essay grading in Bangla.

Infrastructure investment: The government's ongoing efforts should be expanded with a focus on connectivity and devices. Consider equipping schools with low-cost laptops or tablets. Community-based solutions such as mobile learning labs (buses with computers that travel to villages) could also introduce AI learning to hard-to-reach areas. Meanwhile, continued expansion of internet access will directly support any online AI tools.

Policy and curriculum reform: The education authorities should develop a clear "AI in Education" roadmap. This could outline targets (e.g., "By 2027, all secondary schools will use at least one AI-based tool in teaching or administration"), standards (approved platforms, data guidelines), oversight, and maintenance mechanisms. Including computational thinking and AI basics in the student curriculum is also important; not only will students use AI, but they should also learn how it works. Bangladesh could introduce elective courses on AI at secondary and higher-secondary levels, or integrate topics such as logic, data science, and coding at earlier stages to build foundational skills. This ensures students are not just consumers of AI but future creators as well. Broader awareness and early involvement in AI is also encouraged through participation in global AI competitions organised for high-school students. For example, the recent success of Bangladeshi students in the International Olympiad in AI (IOAI) is showing a promising AI-enabled future for Bangladesh.

Sadid Hasan, PhD, is the AI Lead at Microsoft.



Envisioned AI-enabled Classroom in Bangladesh (AI-generated image)

Khan Academy, a global education non-profit, recently integrated an AI tutor named "Khanmigo" into its platform, which can interact with students one-on-one, guiding them through problems with Socratic hints rather than simply giving answers. Such personalised support was once impossible to deliver to millions of users simultaneously, but recent progress in AI makes it feasible.

The curriculum becomes dynamic, moulding itself to the student rather than forcing the student to keep up. This kind of adaptation is like having a personal tutor for every child, a game-changer in large classrooms where providing individual attention is challenging for teachers due to diverse learning needs.

Self-paced, mastery-based learning: In Bangladesh, it is common for students to memorise just enough to pass exams, then fall behind when foundational concepts are not fully grasped. AI-powered learning apps encourage a different approach. Students can progress at their own pace, revisiting concepts they have not yet mastered and moving forward only when they feel ready. This mastery learning model, supported by instant AI feedback, can improve comprehension and retention.

Engagement through interactivity: AI tutors and chatbots can make learning more engaging by conversing with students. Imagine an HSC candidate in Dhaka preparing for exams by chatting with an AI bot (in Bangla or English) that quizzes them, answers questions, and provides hints. The conversational style can reduce the intimidation factor of complex topics and subjects. This also frees up teachers' time by letting AI handle practice Q&A, while they can focus on higher-level guidance and motivational support.

Real-world examples illustrate these benefits. Khan Academy, a global education non-profit, recently integrated an AI tutor named "Khanmigo" into its platform, which can interact with students one-on-one, guiding them through problems with Socratic hints rather than simply giving answers. Such personalised support was once impossible to deliver to millions of users simultaneously, but recent progress in AI makes it feasible. Bangladesh already has popular e-learning platforms (like 10 Minute School and Shikho). By incorporating AI tutors similar to Khanmigo, these platforms could dramatically enhance

attendance by calling names or maintaining registers. AI vision technology offers a modern solution: facial recognition cameras can log students as present when they walk into class. Such systems are already in use in some countries. They not only save class time, but also alert staff to absence patterns automatically. As an example, an AI camera at the school gate could flag if a particular student has missed three days in a week, prompting outreach. While this raises some privacy concerns (which we shall discuss later), it illustrates how AI can handle routine monitoring. For Bangladesh, where keeping students in school is as important as enrolling them, early warning systems for absenteeism could help reduce dropout rates, which remain a persistent issue, especially at the secondary level.

MAKING EDUCATION MORE INCLUSIVE AND ACCESSIBLE
In Bangladesh, ensuring inclusive education that reaches all students regardless of their background or abilities is both a priority and a challenge. Here too, AI can play a transformative role by removing barriers related to language, disability, and learning difficulties.

Supporting diverse learning needs: Students with disabilities or special needs often do not receive adequate support due to limited resources and trained personnel. AI tools can help bridge this gap. For example, AI-driven software can convert textbooks into audio or Braille for visually impaired students, or use speech recognition to help hearing-impaired students by converting teacher lectures into real-time text captions. An AI tutor can also be patient and repetitive in ways a human teacher might struggle with, which is particularly useful for students with autism or attention disorders.

Language translation and multicultural learning: Bangladesh's primary medium of instruction is Bangla, but many higher education institutes use English, and there are

also ethnic minority languages in some regions. AI-powered translation can break language barriers in real time by translating key phrases or lesson content into the student's preferred language. When students need to learn English (crucial for global competitiveness), AI can assist again with translation and pronunciation.

Reaching remote and underprivileged learners: One of Bangladesh's major challenges is the urban-rural divide in education quality. Top schools in Dhaka or Chattogram boast good teachers and resources, whereas rural schools might suffer from teacher shortages and outdated materials. AI, coupled with internet connectivity, can help democratise access. E-learning platforms infused with AI tutors can reach any village with connectivity. Even offline, if provided on inexpensive devices, AI educational software can benefit students in off-grid areas (for example, through pre-loaded solar-powered tablets running adaptive learning programmes).

Gender and inclusivity: AI technology can also help increase female students' access to education in conservative communities. If parents are reluctant to send girls to distant schools, AI-powered remote learning can bring education to them. Similarly, adult women who missed schooling could use AI learning apps for second chance education at home, with AI personalising a curriculum to their pace and level.

In essence, AI can act as a force multiplier for inclusivity, providing each student with what they specifically need.

CHALLENGES ON THE ROAD TO AI-EMPOWERED EDUCATION

For all its promise, integrating AI into Bangladesh's education system is not without obstacles. While AI offers immense benefits, its adoption invites thoughtful consideration of data privacy, security, algorithmic bias, and fairness to ensure responsible use. Bangladesh must approach the AI-in-education revolution with eyes wide open, addressing key challenges to ensure technology truly helps rather than harms. Here are the major challenges and considerations:

Data privacy and security: AI systems in education will manage sensitive student data, including personal details and academic performance. Ensuring the protection of this data is critical. Schools and edtech providers must adopt robust data encryption, secure storage solutions, and transparent consent policies. Bangladesh currently lacks specific data protection laws for the education sector. Developing comprehensive guidelines aligned with global standards such as GDPR will help build trust in AI tools among stakeholders.

Bias and fairness of AI: Algorithms can unintentionally reflect biases present in their training data.

For example, a mathematics tutor AI trained primarily on English language content may underperform in Bangla. Predictive models might also unfairly assess rural students based on historical data trends, potentially reinforcing educational disparities. To ensure fairness, AI systems must be regularly audited and trained on diverse, locally relevant datasets. Monitoring outcomes is essential to guarantee equitable treatment across gender, region, and socioeconomic backgrounds.

Teacher training and acceptance: Successful AI integration in education depends on teacher involvement. Many educators may feel uncomfortable, fearing job displacement or lacking the skills to use AI effectively. Tailored training programmes are essential to equip teachers with both digital and AI literacy, in addition to involving teachers extensively in developing educational strategies for integrating AI into classrooms.

Infrastructure and digital divide: Bangladesh faces significant infrastructure challenges that hinder equitable AI adoption in education. While urban schools may have access to computer labs and high-speed internet, rural schools may lack basic resources such as electricity and functioning computers. Addressing this divide requires substantial investment in infrastructure, including solar power for off-grid schools, expanded 4G/5G internet coverage through public-private partnerships, and affordable devices.

Ethical use and critical thinking: Another consideration is how to prevent misuse of AI by students. The latest powerful AI tools such as Copilots or ChatGPT can write essays or solve problems, which could lead to over-reliance on AI or reduce students' own practice. Educators will need strategies to integrate AI in a way that enhances learning, not shortcuts it. For example, assignments might shift to more oral presentations or interviews, project work, or AI-assisted research where students must critique or improve AI outputs, thereby developing higher-order thinking.

Cost and sustainability: Introducing AI solutions is not cheap. While there may be free or open-source software available, robust AI platforms or enterprise solutions may carry licensing costs or require custom development for targeted benefits. Bangladesh's education budget is limited, and there are competing priorities (building schools, hiring and training teachers, etc.). Any AI intervention must be cost-effective and sustainable. This could mean starting with open-source or subsidised tools, seeking public-private partnerships (for instance, tech companies piloting solutions in government schools), or piggybacking

