EMERGING TECHNOLOGY TRENDS IN EDUCATION

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Abstract:
Technologyhas changed everything in our lives. This is also true in the field of education, where it has twisted the very fabric of traditional learning and extended to us new and more evolved learning methodologies like 3Dprinting, Artificial Intelligence, Augmented and Virtual Reality, Big Data Analytics and Cloud Computing & Storage. Many Indian startups, Business houses, Non-government and Government interventions into the field of education have made their way into the new technology trends emerging in the education to make it more effective and innovative.

Keywords: *3D printing, Artificial Intelligence, Augmented and Virtual Reality, Big Data Analytics and Cloud Computing & Storage*

Technology's transformative nature is like that of an excited particle that alters the status quo of any physical space it enters. It has changed everything in our lives – what we thought we knew, what we were accustomed to – and has helped us explore new dimensions to achieve our objectives more effectively and efficiently. This is also true in the field of education, where it has twisted the very fabric of traditional learning and extended to us new and more evolved learning methodologies.

A little glimpse into the dynamic digital world is indicative of how technology has given a whole new meaning to education, which is discussed below: -

1. 3D Printing –

3D printing is a process whereby a 3D design is turned into a real object. First, software is used to slice the 3D design into layers, and then the design is printed layer by layer on a 3D printer. A 3D printer works by "printing" objects–but instead of using ink, it uses more substantive materials–plastics, metal, rubber, and the like. It scans an object–or takes an existing scan of an object–and slices it into layers it can then convert into a physical object. The result is a product that while not as intricate, durable, or functional

as the real-world equivalent, is otherwise a real thing that didn't exist 30 seconds before it is printed.

MBD is the first publishing house to bring progressive education technology solutions to students in India. This is for the first time that 3D printers are introduced to the K-12 education system. Presently the reach is limited to schools in metros.

Though 3D printing is an expensive technology hence government intervention is there in order to introduce such facilities in every school. In recent times, MHRD & other ministries have launched schemes like ATL (Atal Tinkering Labs), which provides fund to 500+ schools to set up such labs which will empower the students to tinker with futuristic technology as 3D printing.

2. Artificial Intelligence

Artificial Intelligence (AI) is when computers get smart enough to create knowledge for future generation computer systems to learn and build on the accrued knowledge. One probably doesn't know this, but they are already using AI through *Apple's Siri* or *Google Now*. AI algorithms are designed to recognize speech, give you real-time updates on traffic conditions, make recommendations on what to read or watch, or play a chess game with you. *IBM's Watson*, *Google Deep Learning*, and *Microsoft's Cortana* are also the emerging AI systems that are slowly changing the technology landscape.

Aiming to make school students well-versed in technologies shaping the future, the Central Board of Secondary Education (CBSE) has decided to introduce artificial intelligence as a skill subject in classes 8, 9 and 10. The idea to introduce AI in school subject germinated from the session held at NITI Aayog.

3. Augmented & Virtual Reality

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory. Augmented and Virtual reality alters one's ongoing perception of a real world environment, whereas virtual reality completely replaces the user's real world environment with a simulated one.

Delhi-based startup Smartivity, began creating DIY kits for students based on science, technology, engineering and math (STEM) learning at a maker space, and then got into augmented reality. Their startup, "Smartivity", founded in January 2015, made a beginning with AR colouring sheets. Drawings of Dinosaurs and giraffes come to life on being coloured.

A child can tap on a section and the character will walk to that point. They can hear what it sounds like, read more about the character and participate in quizzes. Available in 80 cities across 1,500 stores and online, Smartivity's products are focused on smart and immersive learning. The company also raised funds from "S Chand" Publishing and will be working with them to create academic content.

4. Big Data Analytics

Large sets of data analyzed using computers are termed big data analytics. Generally, the purpose is to find connections and patterns in the vast amount of data which can then be related to the functioning of complex systems or human behavior. It is a process involving the analysis and processing of small or large amounts of complex or varied data by means of scientific or research-based principles, theories or hypothesis. Data analytics is now essential in every industry including education that offers a service to the public.

The Akshaya Patra Foundation turned to big data analytics to find a way to deliver the mid-day meal to Government and Government-aided schools across the country in a cost effective manner. They were taking 34 routes to deliver food to Government schools in Bangalore and each route costs us an average of Rs. 60,000 a month.

However, using data analytics to study the number of vehicles used, the time and fuel consumed on each route, it was found that the number of routes could be reduced by five, resulting in the Foundation saving Rs.3 lakh.

Akshaya Patra uses big data to streamline raising and allocating funds, forecasting trends and planning campaigns to further the cause of providing food for education to underprivileged children in India. The team at the organization took a close look at how much it would cost to raise donations through different mediums like tele-funding, internet funding and high net-worth individuals. Using big data analytics, the organization found that less expensive mediums like the internet and telephone resulted in more funds. They have been able to increase funds obtained by liaising over the internet and telephone to 17 per cent of our total funds, up from the 4 per cent it used to account for two years ago.

Aiding Akshaya Patra in finding the most optimum routes to transport food to the schools, the Indian Institute of Management Bangalore (IIM-B) used its data analytics lab to help the NGO free of cost.

5. Cloud Computing and Storage

Cloud storage is a cloud computing model in which data is stored on remote servers accessed from the internet, or "cloud." It is maintained, operated and managed by a cloud storage

service provider on a storage server that is built on virtualization techniques. Cloud storage is a model of computer data storage in which the digital data is stored in logical pools. The physical storage spans multiple servers (sometimes in multiple locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running. People and organizations buy or lease storage capacity from the providers to store user, organization, or application data.

With an aim to transform education with the use of technology, Microsoft India has launched Edu-Cloud, a cloud computing-based offering that will enhance digital learning and teaching in schools and higher education institutions. Sri Chaitanya Schools is one of the first K-12 education networks to adopt Microsoft India's Edu-Cloud for its teachers and students in 80 schools. Teachers and students of Sri Chaitanya Schools use 14,000 Windows-powered tablets to access rich, interactive and relevant content from the Microsoft cloud to make learning and teaching more engaging and productive. With Edu-Cloud, students of Sri Chaitanya Schools have access to digital content and free access to Office 365 from Microsoft on their Windows-powered tablets. Using the cloud, students and teachers can communicate better, collaborate, create, access and consume content. In addition, students and teachers have access to eDvelop, a Learning Management Solution from Mobiliya, a Microsoft partner.

Summing Up

The pace of technological advancement in education is accelerating rapidly. This is changing the way students learn, replacing traditional teaching methods and resources with digital course materials and virtual gaming, and giving access to these via mobile devices. To cope with the changes, learning

spaces are being redesigned and smart cards are being used to manage attendance. Perhaps the biggest change, however, is in the use

of AI, where machines are now being programmed to teach humans.

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