INDRANI BOSE

R OTE LEARNING, TEACHERS delivering boring lectures to a disinterested classroom, a common curriculum for all, and a tedious examination system that thrives on mechanical replication of memory... This has been the reality of education so far. While most of this remains true even today, technology might just be bringing some modicum of change.

A connected classroom, with access to the internet, a projector and sound system, have swept the education landscape, especially in urban areas, making learning more engaging and entertaining. Not all students have access to a great museum, or good libraries. The smart class and the internet give them access to all this, and more, as they watch videos on various subjects, take virtual tours of places of interest and watch lectures and demonstrations on key academic concepts.

And, the tech revolution is not restricted to the classroom. Scores of apps have mushroomed that promise easy and engaging learning for all ages, and going by the fact that the app companies like Byju's have become big names just goes on to show how popular these apps are with children.

But is the going really so great? What about costs, the extra burden on both parents and children, and digital addiction?

Teachers' talk

Educators believe that because of the rapid advancement of education technology, children are able to think outside the box and innovate. Ameeta Mohan, principal of Amity International School, Pushp Vihar, Delhi, says, "Our smart classrooms have ensured that there is more to a class than teachers' lectures. There are videos and labs that work well to boost a child's retention power." The Amity Group of schools also has Amitranet, wherein both students and parents can view attendance, homework, a calendar that will notify them about upcoming events and holidays, a photo gallery of events that have taken place and the report card with assessment details, among other things.

Suncity School, Gurgaon, has launched a pilot project for Grade VII, the clicker, which is a student response system that makes learning interactive. Under the system, a teacher prepares a quiz or presentation that is put on board and every child is given a clicker in hand with which she can select the correct answer. At the end of the exercise, the system gives you correct answers and also reflects who all answered it incorrectly. "You have a public opinion, and almost immediately you get to know how many students have understood because the graph will give you an accurate view. Approximately 200 students take this quiz in Grade VII. Once we see how successful the project is, we will take it to other classes," says Deepa Gandhi, the IT in-charge in Suncity School.

The school makes good use of smart-class technology in cross-cultural exchanges too. For instance a teacher in Gurgaon gives a virtual field tour to children in Vietnam, where they get to know through Skype about the era of dinosaurs, the evolution of civilised man or drift to space with spacecraft and astronauts.

Interestingly, schools are using edu-tech to engage students in social service too. At Suncity, teachers and students of Grade V and VI conducted a training session for drivers, nannies and housekeeping staff on using the internet, ATMs, Paytm, etc. They were taught about debit and credit card security issues, safe use of social media sites like Facebook, how to use step verification to protect their privacy on the net, how to use word documents and also send messages. Similarly, students of Springdales School, Pusa Road, Delhi, built an app that helps connect orphans with the elderly — an effort to fulfill emotional and care needs of both the groups.

Nidhi Tiwari, IT in-charge at Springdales, says, "Ours is a very tech-savvy institution; all teachers are IT-trained and are comfortable with technology. It is the vision of the school that we should use technology in a beautiful manner," says Tiwari. At Springdales, edutech is used to make learning more interesting, creative, hands-free and simpler. Pramada Lele, who heads the Atal Tinkering Lab at Springdales, says there is no prescribed syllabus as such and the school introduces concepts to students, who then try to develop and execute projects based on the concepts.

Mohan of Amity recalls a rainwater harvesting project that her students undertook. "Some children came up with a harvesting machine in robotics to help farmers. Some students also devised a plan with technology to help the physically disabled."

But then, what is the role of a teacher here? According to Mohan, the teacher acts as a facilitator in these experiments and by mixing boisterous students with the introverts, she tries to create a balanced group for conducting experiments and creating things. That being said, Mohan firmly believes that technology cannot replace teachers. "Google is not sufficient," says Mohan, adding that technology can empower not only students, but teachers as well.

A recent HP India report indicates that parents are willing to splurge on learning apps. According to the report, 64% of respondent parents in India believe that experiential learning lengthens the amount of time their child reads, 63% believe that digital learning is more effective in fuelling their kids' creative thinking and 57% believe that experiential learning enables better comprehension

"Technology is a tool, it cannot overpower us, because ultimately the whole humanising process is through a teacher. And technology is a tool that assists the teacher. If we keep that in focus, there is no insecurity," says Ameeta Watlal, principal of Springdales School, Pusa Road, adding, "Classrooms are about perceptual learning, experiential and discovery-based learning. So why not have a tool that helps you in that discovery?"

Kamala V Mukunda, author of What Did You Ask At School Today, believes that educational technology can do good in the hands of a creative teacher. "For example, computer tutors allow a child to go through an individualised path of learning a complex procedure like solving linear equations. The tutor would know the typical ways that children understand or misunderstand such a topic, and would incorporate clever problems to expose and then correct these. Additionally, they are conducting a number of drills and perhaps in a fun way, like a game-like environment. A good teacher would have done the same, but would be somewhat limited in her ability to give one-on-one time to each child."

Students' report

Parth Sharma, a Class X student in Suncity School, Gurgaon, is a classic example of how interactive learning scores over a one-dimensional approach. Gogoi's junior, Aadi Mittar of Grade VII, often takes the help of Byju's in case he has any doubts after classes in school.

Some students use edutech to satisfy their curiosity too. Take Hiya from Springdales School for example. Hiya, who is in Grade XII, likes to learn a few things that may not be offered in the school curriculum for art history. "I don't have a particular avenue to study that but the course on art history on Khan Academy is elaborate and I really enjoy it."

But edutech doesn't seem to hold appeal for everyone. Take Apoorva (Grade VIII) from Springdales, for example. Both her parents are physics teachers and she learns from them. "My mother clears my doubts, and sometimes when mom wants me to learn something which is at a higher level, I go to my teachers to clear doubts," she says. Interestingly, even while studying Ger-

man, Apoorva prefers to do it herself and avoids language-learning apps like Duolingo.

Apoorva's senior, Geetansh Arora from Grade X, also agrees that the traditional method of physical teaching has been more beneficial for him. "There was a time when teachers weren't catching up with apps like Byju's. But now teachers and the school have upgraded really well. They have surpassed apps like Byju's and Khan Academy and are helping understand concepts better than these apps." Arora gives the example of visual communication and says, "When Byju's was launched in 2016, it had an edge, but I find teachers today as equipped with PowerPoint presentations and videos."

Arora also dismisses the need to attend tuition classes. He says, "The concept of a tuition class seems alien to me. If you pay enough attention in class, it is enough." Arora reasons that tuition centres are like schools at home. "If room, how do you expect a tuition class to do it?" he asks. Arora's senior Ritvick Khanna also is not keen on attending tuition classes. "I tried tuition classes for about two-three days. I realised it's just a scam, and doesn't really do anything for me," Khanna says.

However, Khanna disagrees with Arora on learning apps and says, "I understand more via a learning app than a teacher." For him, these apps have worked 'fantastically'. "It worked so nicely that I didn't open my textbooks. I studied from whatever material was available online as I had taken a subscription," he said. He claims that in Grade XI, he just watched YouTube videos the night before his exam to pass comfortably. In Grade VI, Khanna used Meritnation and in Grade X he took a subscription of an Indian start-up called DronStudy. Also, he prefers video lessons on Unacademy and YouTube rather than his NCERT books.

Abhinav Sood, who is in Grade VI in Suncity, feels that in his school technology plays a very big role. "We have a smartboard and teachers use it frequently. Sometimes we watch educational videos and in computer class we use systems to understand a theory better. I feel I am very dependent on it for studying. There are some drawbacks, though, if you are studying at home on your laptop, as you can get distracted by pop-ups on your screen. So we have to learn to control that."

Aditya Kathari, a student of Grade IX from Suncity, says, "We study in school via PowerPoint presentations and various other tech platforms. It has helped us in many ways. Earlier, we used to copy our homework, nowadays we get our assignments straight on our laptops, which we directly print and work on."

But how are parents reacting to this revolution? The mother of Viditveer Singh Yadav (who studies in Grade XII in Amity, Pushp Vihar), Priyanka Yadav, is of the opinion that simply studying from books doesn't help anymore. "So the more technology we use, the better is the understanding," she feels.

However, parents and teachers are often worried about students' web footprints. "I keep tabs on his browsing, but I feel he is able to cope

with stress during exams better thanks to edutech," she says.

Komal Verma, mother of Aditya Raj Verma (a Grade VII student in Amity) agrees with Yadav and says education technology is useful because of its flexibility. "Teachers are not available 24x7, technology is useful because a student can always fall back on it if she has any doubts."

Where do apps score

The point that each and every student in a class has a different pace of learning has come up time and again. And it is difficult for a teacher to personalise her teaching for each student, as she has to cater to multiple students in a limited period. This is where learning apps come in.

Byju's is trying to pioneer personalised learning based on the style of learning of every student. The app merges videos, interactions and teacher lectures to bring concepts to life. media and technology, Byju's is creating a new segment of self-paced learners, where parents take up supporting roles. The app recently launched the Disney — an early learn app for K-3 (for Grades I, II and III). The company also offers content in Hindi to reach those in smaller towns and cities, and regional languages are on the cards. Byju Raveendran, founder and CEO of Byju's, raises an interesting point about how in the conventional classroom learning system, access to high-quality education and personalisation of learning have always been an issue. Raveendran says, "In the present system, children are still getting trained to solve questions and not ask questions. To date, learning happens because of the fear of exams, and not for the love of it."

Videos have been an intrinsic part of the edutech space. However, Toppr, an adaptive learning platform for students from Grades V-XII, believes that videos cannot be the primary form of learning.

This is because in the absence of skilled teachers, videos are an easy knowledge distribution medium. However, videos only touch the tip of the iceberg when it comes to solving problems in Indian education. "While these make a good teacher accessible to any student, the communication is still one-way, and the learning experience is passive," says Zishaan Hayath, CEO & co-founder of Toppr.

So far, students at Toppr have practiced about 350 million questions, cleared three million doubts and taken over four million tests. A majority of Toppr users opt for the STEM courses (physics, chemistry, biology and maths) and between Grades VII and XII. When it comes to boards, CBSE and ICSE are the most popular in the app. Toppr uses machine learning and advanced algorithms to personalise learning, instead of a one-size-fits-all approach. The platform leverages a bank of 1.5 million proprietary

learning pieces, which it claims is 10 times larger than its competitors. "Our internet and crowd-sourced expert community has helped us build a vast educational content which comes at a fraction of the cost of conventional models," says Hayath. The app has a doubts service that provides instant response to students 24x7 through 'Doubts on Chat', a chat app in which students can upload a photo of their doubt. Using artificial intelligence and machine learning, the app suggests similar questions with solutions. If a particular query still remains unaddressed through this method, Toppr's community of teachers solves it live for the student.

Learning apps are not just catering to students in school. Simplilearn, a certification training provider based in San Francisco, California, and Bengaluru, has been witnessing a positive traction for courses like data science and business intelligence, AI and machine learning, cloud computing and DevOps.

Ironically, while the world believes that AI might replace human workforce, Simplilearn sensed a demand for skilled workforce and new job categories in AI and ML sectors. According to recent industry reports, AI architect, data scientist, AI ethicist and AI product manager will become of the most popular AI courses. At Simplilearn, most learners are working professionals in the process of upskilling themselves in order to meet new job demands and explore new career avenues. In fact, young engineering graduates are also taking up skilling courses prior to applying for jobs or before placement season begins, thereby giving them a competitive edge.

Challenges remain

But all good things come at a price. The courses at Toppr start from ₹36,000 and go up to ₹70,000. The courses at Byju's start from ₹5,000 and go up to ₹80,000. This creates a challenge for learning apps to cater to students who come from financially weaker backgrounds. According to Byju's, 60% of their users are from regions outside the metros.

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To counter financial worries, Toppr, which claims to have eight million students, has scholarship programmes for children coming from weaker economic backgrounds. There is also a Toppr Fellowship Programme in schools across the country. Through this programme, several students receive scholarships and many other benefits like free counselling sessions, aptitude tests and even health check-ups.

For Wattal of Springdales, the biggest challenge in edutech is teachers' complacency. "There should be no death by PowerPoint and teachers shouldn't become lackadaisical and keep using the same presentations in class year after year," she says.

Wattal lays emphasis on the importance of the whiteboard and says "when you are moving with technology, the children need to have something to go back to, and the whiteboard is for that."

In order to curb complacency and avoid making a teacher nothing but a technician, Springdales has faculty meetings every year where it is ensured that there is no repetition of content.

However, teachers have to continuously ensure that the digital tools don't end up being just an impressive prop in the classroom. Each child having her own tablet rather than a regular notebook has its merits — she can take notes or record them or take photographs of the notes on the board and save this for future reference. "But who is supposed to ensure that she will go back to this and make sense of it all?" asks author Makunda. She is also sceptical about using WiFi in classroom. "Research shows that it is simply too distracting, even for college students. So in schools it would be a mistake to connect children's tablets to the internet as a default."

Also, let's not forget about digital addiction and increased screen time. Makunda feels that parents and children will have to come to some sort of agreement that allows for a limited time spent with all screens put together, and this is for parents too, in the sense that parents need to put down their devices and be more available to their kids.

Similarly, the human bond between a child and teacher cannot be dismissed, which is difficult for an AI or technology, in general, to replicate. Grade XII student Shreya Ghosh from Amity says, "Little things like eye contact or interaction with teacher play a major role in learning. Also, when one is sitting in a classroom surrounded by other students, there is a social interaction as well, as opposed to being isolated and learning online."

The debate on pros and cons of edu-apps and technology-driven school tools is still wide open. As urban India embraces the smart class, there is a need to making the new revolution affordable and accessible. There is also a need to check impact on students, taking care to avoid enhanced screen time and subsequent isolation.

How smart
is smart learning?

Edutech is here to stay, but questions linger on its impact and use. Has it empowered students, or made them slaves of the screen?

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