

Learning with Technology

Smart classrooms make education more accessible and interactive

Technology adoption in the education sector is on the rise. The deployment of information and communication technology (ICT) across schools and colleges is moving beyond traditional set-ups to a broader system for disseminating information and interacting with students, faculty and staff members. The cloud is emerging as a key technology solution that promises to change the way students learn. IT heads of key educational institutions talk about the emerging ICT trends in the sector, the level of technology adoption and key challenges...

How have the technology requirements of the education sector changed over time?

Dr Abhay Bansal

The education and training segments in India have witnessed some key advancements in recent times. The country is attaining eminence in terms of cerebral assets with numerous global IT and telecom companies setting up their innovation centres here. The government and several private universities have undertaken initiatives to enhance the distance education market, besides focusing on new education techniques such as e-learning and m-learning.

Dipak Biswal

Internet penetration in the country has increased dramatically in the past few years. This has changed the way an individual interacts with technology. The field of education is no exception. From offline

education software, students are now moving towards online software hosted on the cloud. The mobile industry has also grown manyfold in recent years, as a result of which tech giants are now focusing on a “mobile first approach” for users. Smartphones provide access to digital content anytime, anywhere. At Meritnation too, we have witnessed high levels of engagement from users on mobile phones as opposed to what we used to see from users on desktops. Further, the increase in internet speeds/bandwidth has allowed education technology companies to offer more engaging multimedia content seamlessly over the internet.

Debashish Kumar

Technology is a powerful tool that can support and transform education in many ways, from making it easier for teachers to create instructional materials to enabling

new ways for people to learn and work together. The increasing use of technology is changing the manner in which basic processes in education are carried out. Technology has made education more accessible and flexible in terms of interaction between teachers and students, online tests and assessments, and access to online content, bringing in significant reductions in the cost of accessing education. Today, almost all evaluated components are being prepared and submitted online. This has greatly increased the dependence of students on email and online drives. Therefore, the availability of network services is a high priority in XLRI.

Ramasamy Shanker

Compared to the classrooms of 15-20 years back, today’s classrooms function in a significantly different way. The present classroom houses various technologies ranging from flat panel displays to tablets, laptops and smartphones, all connected to a single app. No one uses a solitary desktop computer any more. The current generation is tech-savvy and seems to have become more independent with the use of technology. Although textbooks have a place in every classroom, the reality is that students are now more likely to be found using a tablet or a smartphone for ex-



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changing notes or browsing information on the internet. With the evolution of online education, students are now able to access assignments or even attend interactive sessions with teachers through different software and apps.

What is the telecom and IT blueprint of your organisation? What are the ongoing and future initiatives?

Dr Abhay Bansal

At Amity University, we aim to enable everyone who is a part of the Amity universe to access the complete range of teaching and learning resources through computing and telecommunication technologies. We have smart classrooms and development facilities such as advanced research centres and computer laboratories for students, faculty and staff. We continuously strengthen our prevailing information systems through cloud computing and online sharing of resources. The Amity Learning Management System is fully functional to support teaching and learning initiatives for a better interface and flow of learning materials to students.

Dipak Biswal

We have data centres at multiple locations. Some of these centres act as a back-up to provide a seamless experience to our students, in the event of a failure of one of our data centres. We have also developed smart alert systems that notify our team during any technological emergency. This enables our team to quickly switch the website away from the server that is creating issues. Also, all user data is encrypted, thereby ensuring the security and privacy of user data.

Debashish Kumar

At XLRI, the IT strategies include providing smart classrooms and study areas, student/faculty/staff development facilities, and fully equipped research and computer laboratories. Further, we are enhancing our existing information systems and developing new services. We are planning to incorporate cloud computing and online sharing of resources with top global universities. We have also taken measures to ensure the safety of our computers and

“Advanced technologies will remain popular as learning tools, as these facilitate remote learning and play a significant role in bridging education inequalities.”

Dr Abhay Bansal

prevent unauthorised access or damage to them using wireless networks.

Ramasamy Shanker

While content and curriculum play a major role in educational institutions, it is also imperative that the institute brings together the complex offerings in a useful package for its students. We are moving towards cloud-based applications to optimise our network infrastructure and technology deployment costs. We are also in the process of recording classroom lectures to move towards the new technology trend of flipped classrooms.

What are your views and plans on the deployment of new technologies such as the cloud, internet of things (IoT) and big data analytics in the education sector?

Dr Abhay Bansal

At Amity, we are utilising a mix of cloud-based, mobile and desktop apps. To meet the upcoming technology needs, we are planning to enable different learning styles that oscillate between personal and group learning via idea generation and faculty training. Outdated physical learning spaces will be changed to accommodate the essentials of technology and learning inclinations like video-enabled classrooms to benefit participants in remote locations.

“Live classes coupled with virtual reality are going to replace traditional classrooms.”

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I strongly believe that these technologies will take digital learning to the next level. We were the first company in the Indian education space to establish a full cloud-based platform to serve digital learning content way back in 2009. Big data will help companies to precisely identify students’ conceptual gaps and provide remedial solutions. While artificial intelligence (AI) will provide self-help to students, the role of a teacher cannot be overlooked. There are a lot of students who do not get access to good teachers due to geographical limitations. Meritnation aims to actualise the concept of “classroom without boundaries” by providing live classes over the internet, thereby negating the limitations posed by physical distances. Yet another powerful technology that is still in its early stages is virtual reality (VR). We learn best from our experiences, yet most of the current form of learning is not experiential. Once VR as a technology evolves and becomes accessible to the masses, the possibilities of the learning landscape will become limitless.

Debashish Kumar

The education sector can greatly benefit from the deployment of the cloud. Almost every student makes use of a smartphone to connect to academic resources through various networks. Hence, it is imperative that the college makes its resources available to students over the cloud. IoT can be used in resource management in academia. For instance, checking out books in the library can be made automatic and much faster. In contrast to the universal utility of the cloud, data analytics will find use in the evaluation and selection of students during the admission phase as well as in research.

Ramasamy Shanker

We have an enterprise resource planning (ERP) solution called Great Lakes iON, which uses IT as a service for the education sector. It covers the admissions process as well as the 360 degree student life cycle on campus. Our Digital Campus System has a learning exchange module, which can be used to download course content. This also takes care of our online examination module, wherein the results can be generated

instantaneously. The entire campus, from the staff to the students, is using this ERP. All our requirements – biometric attendance, feedback system, timetables, class allotment, publishing of grades – are catered to by the ERP.

What are the challenges faced while managing the existing IT/telecom infrastructure and deploying new technologies?

Dr Abhay Bansal

Technology progresses swiftly and the decision to implement/incorporate new technology is the real challenge. It needs to be decided which of the new technologies will work in the best interest of the organisation. At Amity, we are in the process of shifting to advanced technologies like cloud computing, on-demand services, IoT, virtualisation and software-as-a-service for setting up and managing the overall IT infrastructure.

Dipak Biswal

We have been working on our own platform to provide live classes and have successfully connected students across India and the Gulf with the best teachers. This was not an easy task to achieve, given the variation in internet speeds in different cities across India. Creating a platform that provides live video streaming over lower bandwidth was a challenge for us. We needed to manage the video quality while maintaining it in real time. We have integrated WebRTC, the latest technology for live video streaming provided by Google, for our live streaming platform. We made a lot of iterations in the code to optimise and support multiple browsers as well as low bandwidths. We now have a fairly stable platform, which helps us deliver hundreds of hours of live classes every week.

Debashish Kumar

Institutions typically face challenges in terms of scaling up their IT infrastructure. While IT infrastructure continues to be a critical element, the costs associated with managing IT assets with the required service levels and as per the latest technology are too high. There is a need for an IT infrastructure that offers reliability, round-

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the-clock availability, remote manageability and optimum scalability. One of the key challenges faced by XLRI’s IT department while deploying solutions is the lack of a single solution that works for everybody.

Ramasamy Shanker

The biggest challenge we face while adopting a new technology is the updation of IT infrastructure every now and then, as the changes are rapid and dynamic. Further, as IT is a support function, we need to justify the investment and return on investments. Technologies such as the cloud and IoT make the overall IT infrastructure very costly and scaling up to meet the requirements becomes very challenging.

What are the key technology trends that will shape the education sector going forward?

Dr Abhay Bansal

Technology, and the role it is projected to play, is high on the agenda of educationalists. The sector is also experiencing speedy transformation, owing to the influence of new technologies. Advanced technologies will remain popular as learning tools for students and educationalists, as these facilitate remote learning and play a significant

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role in bridging education inequalities.

Dipak Biswal

With the increase in bandwidth and internet speeds, rich multimedia (including 360° videos) will take the space of a regular video in self-learning modules. Processing power is also going to increase in the coming years. This will help in better handling of larger chunks of data to provide valuable insights and reports to students. Also, live classes coupled with VR are going to replace traditional classrooms, wherein a student sitting anywhere in the world can get the experience of being present in a class without being physically present there. These technologies will change the way our students currently study and learn.

Debashish Kumar

- Mobile: Almost all students own a mobile phone and use it to access their official email and other college resources. A successful education system should make academic material available online.
- Cloud: As educational institutions cannot restrict their students from accessing academic material from within their network, it makes sense to give them more mobility by making college resources available on the cloud. Cloud-based infrastructure will also allow colleges to reduce costs and purchase resources only as required.

Ramasamy Shanker

Augmented reality, gamification, personalisation and flipped classrooms are some of the key technology trends. The education industry is one of the biggest gainers of augmented reality in terms of offering adaptive learning environments to users. It helps learners to access environments with action-based functionalities in real life using GPS tracking facilities, giving them a more interactive experience. Meanwhile, experts say that integrating gamification with education can boost learners’ motivation by increasing the recall rate by up to 90 per cent. Further, with the help of big data and insights derived from it, learning will become more personal than ever, addressing the requirements of each individual rather than groups. ▲