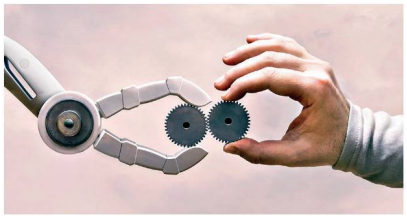
How tech disruptions changed the face of Engg education

On-campus plus online education may soon become a reality, writes Ranjan Bose

The onset of the pandemic has affected all walks of life, including the higher education space. The effects of the pandemic also forced the Engineering education community to ask some hard questions, including those related to the present and the future of Engineering education in the post-Covid era. Most Engineering institutes have responded to the pandemic by transitioning to an online mode of education, and these tech disruptions have transformed the face of engineering education. Learning is a social process and happens through interactions. One of the most significant impacts of the pandemic is the restriction it imposes on human interactions. It is well-understood that education, Engineering or otherwise, happens both inside and outside classrooms. The modern Engineering curriculum also has a fair component of collaborative project work, where students often learn to work in teams. The series of lockdowns and social distancing norms have substantially reduced this interaction-based learning.

Online teaching platforms

One of the most visible changes in the method of delivery of Engineering education is the use of online teaching platforms. The teachers deliver lectures online, and the students can listen to these in an interactive mode. The quality of this mode of online education is dependent on several factors, including the features of the online platform, the quality of the access device, a conducive learning environment at the student's end etc. Some institutes have initiated schemes to financially support economically challenged students to procure better access devices and pay for a larger bandwidth.



Job interviews held online provides flexibility to students

Stressful transition

The transition to the online mode of education has been stressful both for students and teachers. The conduct of evaluations in a fair manner is another associated challenge. Several institutes have adopted technological solutions for conducting exams that use artificial intelligence (AI) to detect unfair practices. In the near future, there is a need to look at assessing online learning in different ways, not just by the standard evaluation methods.

Simulations can help

Labs form an integral part of Engineering education. Some institutes are experimenting with virtual labs, which are primarily simulation-based online sets of experiments. While these virtual labs may not let the students 'smell-the-solder', they do provide the necessary background material, and the flexibility to conduct the basic lab experiments, via simulations, from anywhere and at any time as required.

E-books as resources

The library system in Engineering colleges has also responded to the new normal. Many libraries have resorted to stocking up on e-books and online resources. Research-led universities were already tuned to the usage of online research papers and journals. Research conferences/workshops have also migrated to the online mode without compromising the quality and quantity of online research papers.

Flipped internships

The remaining cogs in the wheel of an Engineering institute, the internships and placements, have also undergone transmutation. Companies are now experimenting with 'flipped-internships' where students carry out internship assignments from home. The job interviews are also held online, which provides more flexibility to both the students and the companies. An upward trend in taking up entrepreneurial ventures in colleges is also evident.

Events in virtual mode

Many institutions have initiated online programmes to compensate for the lack of social interactions among Engineering students, for example, e-yoga, e-birthday celebrations etc. Student mentorship programmes in virtual mode have been strengthened to handle the increased stress levels.

Meaningful connections

How the Engineering education ecosystem has adapted to the new normal during the pandemic using information and communication technology is a living example of how tech disruptions can help connect people meaningfully. The process for the change has already been set in motion. It is as much about identifying the current and future challenges as it is about developing innovative solutions. Blended 'on-campus plus online education' may soon become a reality. Further, tech interventions are needed to make personalised online learning more adaptive, interactive, and immersive.

Sustainable reforms

The challenge for educators and policymakers is to ensure that the Engineering students of tomorrow graduate with not only a 'degree' but also the requisite skill sets to make a meaningful impact at their future workplace. This is indeed the time to lay the foundation of long-term educational reforms and address the burgeoning digital divide among Engineering students.

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