

ROLE OF ICT IN HIGHER EDUCATION: OPPORTUNITIES & CHALLENGES

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Abstract

India has emerged as a powerhouse in the global ICT arena. ICT in turn has enhanced human life in multiple ways. Yet the current adoption of ICT as an enabler & catalyst of higher education in India remains sporadic & tentative, except in the obvious area of tertiary ICT training & education by itself. The adoption in the areas of basic sciences, arts, economic & social studies is beset with problems of appreciation of and access to technology, lack of regulatory vision & will, absence of a platforms thinking, absence of contextually relevant pedagogical innovation, fractured & fossilized coursework landscape, emphasis on part of both educationists and students on rote learning instead of fostering genuine curiosity & self-directed learning, entry barriers to private entrepreneurship in the field of education, and not the least the general lack of reliable broadband access.

On the other hand promising green shoots are visible in the increasing popularity of global platforms like Coursera, Khan Academy & EdX, the advent of online and online assisted "coaching institutes", the emergence of NSE listed corporates like Educomp & Everonn, marquee public-private joint endeavors in areas of continuing & non-degree executive education, and launch of Swayam, India's homegrown MOOC platform.

This paper describes the aforementioned barriers to wider adoption of ICT in higher education in India and by surveying the emerging trends postulates effective strategies to catalyze wider adoption & foster a deeper impact of ICT in higher education.

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Introduction

The system of education at the tertiary level is vast and full of contrasts, with quality standards ranging from world-class to dysfunctional. At independence, there were 25 universities and 700 colleges enrolling approximately 200,000 students. By 2005 there were 234 universities, 95 deemed universities, 17,625 colleges and 13 institutions of national importance enrolling almost 10.5 million students. Today we have more than 700 universities and more than 35,000 affiliated colleges enrolling more than 20 million students, besides the structure of degree-granting institutions is cumbersome primarily due to “affiliation” and funding sources. By 2030, India will be amongst the youngest nations in the world. With nearly 140 million people in the college-going age group, one in every four graduates in the world will be a product of the Indian higher education system. By 2030, the already existing challenges for Indian higher education –access, equity and quality – will only be greatly exacerbated unless we significantly transform our higher education model.

An aspect of the Indian education system that is causing a huge concern, is its inability to keep up with modern times and prepare youngsters for future requirements. Our educational institutions hardly seem to reflect and leverage on what is happening at peer institutions, leave alone the larger society. Over a period of time, this phenomenon (of not having an outside-in view) seems to have become acceptable in the Indian education system. Many of our leading institutions are at best islands of excellence. In effect, one of the largest education sectors in the world, seems to be time-warped in its format and content.

Several international bodies, with a special emphasis on UNESCO, have drawn attention to the impact which the ICT may have in the renovation of the structures within the educational systems well as on the methodologies of teaching-learning. India should seize the opportunity to ride the technology wave since it offers many distinct advantages. Technology has multiple points where it can impact and change the face of Indian education. The massive increase in the availability of ‘knowledge’ online and the mass expansion of access to university education in developed and developing markets means a fundamental change in the role of universities as originators and keepers of knowledge. Reach, Faculty, curriculum, assessment and certification are some of the key elements technology could help address effectively.

Reach & Faculty

The first among them is reach. 70% of India is categorized as rural - primarily due to infrastructure and therefore there is the need for reaching out to millions who are spread out across inaccessible rural hinterland. Access to universities has

traditionally been dominated by a modest proportion of society even in developed markets — 20-30% of post-secondary students — and a very narrow proportion of society in emerging markets, typically the elite

Digital infrastructure can be effectively deployed. This can be seen by the unprecedented penetration of mobile telephones. The physical requirements can be limited and can be non-linear in their capability to expand. If our education system transforms itself to be available in digital formats, and thereby lends itself to grow with digital infrastructure, reach may not be as insurmountable.

The commitment to the teaching profession seems to be waning as quality talent is usually attracted to corporate jobs which typically are better paymasters. For example, even India's premier engineering institutes, IITs, suffer from around 41 percent shortage in faculty. Technology creates 'super faculty' where a good teacher can reach out to thousands of students as against a few tens in the traditional format. Technology can be effective in addressing the large scale that is required for the Indian education sector. Be it the simultaneous access to millions of students or continuity in terms of engagement across formats, technology can be a big enabler for students.

Curriculum Development

While content is often talked about, it should be looked at as a part of the curriculum and not in isolation. Conversion of content, primarily into books, research articles and even classroom sessions has been mostly successful, and they have been done keeping in mind the fundamental shift required in this new format of learning. We need a digital curriculum and not just digital content. Given India's size and diversity in terms of geography, culture and language, the issue of access could be addressed with digitization.

Conventional teaching has emphasized content. For many years courses have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary settings need to favor curricula that promote competency and performance.

Moves from content-centered curricula to competency-based curricula are associated with moves away from teacher-centered forms of delivery to student-centered forms. Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning. In the past students have become very comfortable to learning through traditional transmission modes. Students have been trained to let others present to them the information that forms the curriculum. The growing use of ICT as an instructional

medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process.

For example, the adoption of flipped classroom concepts could revolutionize the way learning happens in the classrooms with flip teaching, the students study themselves initially, either using video lessons prepared by the teacher or third parties. Students collaborate online and apply the knowledge by solving problems and doing practical work in the classrooms. Teachers act as guides rather than someone who gives 'lectures' that students receive passively. The so-called Massive Open Online Courses (MOOCs) are another example of the search for new models.

Some of these models will decline and fail, others will create very substantial economic & social value. The flipped classroom is an easy model to get wrong. Although the idea is straightforward, an effective flip requires careful preparation and out-of-class and in-class elements must be carefully integrated for students to understand the model and be motivated to prepare for class.

The current digital curriculum in India is substandard and little effort or notice is being paid in developing e-learning material. International collaboration which can highlight and combine leading practices is essential to raise the existing quality. The costs associated with the development of high-quality technology-facilitated learning materials are quite high. It is more than a matter of repackaging existing materials and large-scale reengineering has been found to be necessary with associated large-scale costs.

Assessment and certification

An integral part of education is the need for assessing learning outcomes which help determine the quality of education, and many a times this can be also a critical input to the next stage. It is a key part of any education system. Technology can make it possible to have teachers and assessors as distinct entities, enabling them to scale up in what they are doing.

Today, in India, around 14 million students in higher education appear for approximately 200 million examinations at various levels, each year. As the number of students taking entrance examinations is growing substantially each year, conducting them at such a large scale is proving to be a challenge for the authorities. Hence, increasingly over the last few years, one has seen the growing presence of test assessment companies in the education space who help conduct and manage the entrance examinations. Here, technology plays a critical role as online assessment helps simplify the lengthy examination process and can be faster, more efficient, accurate and fair. Using technology to conduct examinations also helps authorities to curb cheating and any sort of other malpractices. Automating the examination process

can also result in reducing dependency on the university administration and staff which not only helps them cut costs but also lower manpower requirements.

Behavioral Aspects of ICT penetration in higher education

Today's students see their educational futures built almost entirely around technology. They are restless with the traditional forms of learning in higher education and are eager to incorporate the electronic tools (smartphones, pads, etc.) that have become ever-present in their lives into their education. Students entering college today want to design their own curricula and find ways to learn in their own style. These students crave personalization and expect convenience

Students, for their part, have been known to complain about the loss of face-to-face lectures, particularly if they feel the assigned video lectures are available to anyone online. Students with this perspective may not immediately appreciate the value of a technology-centric hands-on portion of the model, wondering what their tuition brings them that they could not have gotten by surfing the web. Those who see themselves as attending class to hear lectures may feel it is safe to skip a class that focuses on activities. Finally, even where students embrace the model, their equipment and access might not always support the rapid delivery of video.

Inside the classroom, technology may be a disruptive innovation in ways not intended. Pervasive multi-tasking between laptops, smart-phone and other technologies in the classroom often distracts students. Faculty, teachers and administrators, have to recognize that effective use of technology in the classroom requires additional ways to keep content meaningful. Increased use of new technologies in the classroom is also often associated with a rise in plagiarism and cheating. There are instances of discourteous behavior among students operating in the online environment, perhaps due to the relative anonymity of the online environment.

Platform & System Challenges

Although technology is has a largely positive impact on campuses, there remain several challenges to adoption. The biggest of these may well be IT costs. Entrenched organizational cultures may be another hurdle, as academic faculty members accustomed to traditional modes of instruction may be disinclined to change.

There is also the challenge of ensuring that university infrastructure and operations are in place to support the adoption of technology on campus. The administrators will need to weigh carefully how budget funds are spent, decide what emerging technologies show the most promise, and determine how best to support these technological advances while avoiding the ever-present risk of obsolescence.

There is a need to take appropriate measures to equip the stakeholders for adequate and optimum application of the latest advances in educational technology. A judicious admixture of time-tested and newer technologies in teaching-learning should be emphasized to make learning an enjoyable and memorable experience. It also becomes mandatory for the faculty as well as learners to be well versed with technology so as to facilitate and guide learning through technology. Therefore Incorporation of need-based basic information technology training as a part of the core curriculum should be pondered upon.

A number of other issues have emerged from the uptake of technology whose impacts have yet to be fully explored. These include changes to the makeup of the teacher pool, changes to the profile of who are the learners in our courses and paramount in all of this, changes in the costing and economics of course delivery.

Conclusion

Digital technologies will not cause the disappearance of the campus-based university. Campuses will still exist as places of teaching and learning, research, community engagement, and varied forms of the student experience — assuming universities can deliver a rich, on-campus experience. But digital technologies will transform the way education is delivered and supported, for example through applications that enable real-time student feedback, and the way education is accessed in remote and regional areas — both in the developed and developing world. While ICTs may not have had a large impact to date, their use will grow to play a significant role in many aspects of the design, development and delivery of educational programs in the coming years. The various influences that have been discussed provide examples of an agent that has the capacity to influence education at all levels and hence to be an agent supporting and encouraging considerable change.

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