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**Digitalization of higher education in India - A
technological revolution**

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Abstract

In a developing country like India Higher education is very important for human growth and human development. Higher education in India has experienced phenomenal expansion since independence. While digitization is ushering in a new era of transparency, efficiency and accountability, its proliferation in the field of education has brought about disruptive changes with a potential to radically alter the conventional landscape. The traditional education system was based on the concept of 'knowledge transfer' - the age old guru shishya parampara - which established a clear teacher taught relationship. However, the digital media and the internet have ushered in a democracy of knowledge where education has become a collaborative, self-driven enterprise. Today there are tools available to transform learning from an academic exercise to an engaging experience in imaginative and experiential learning. Pervasive and persistent technologies have today redefined the conventional role of the teacher. There have been initiatives to introduce technology into the realm of education, but those have been sporadic and unrelated.

Keywords: Higher Education, Technology, Digitilization of Education, Government Intiatives, Ministry of HRD

Introduction

“Knowledge is power. Information is liberating. Education is the premise of progress, in every society, in every family.”

Kofi Annan

“The use of technology coupled with bold decisions can help India leapfrog into inclusive growth and improve the quality of health and education.”

Bill Gates

Indian higher education system is the third largest in the world, next to the United States and China. In future, India will be one of the largest education hubs. The ‘Right to Education Act’ which stipulates compulsory and free education to all children within the age groups of 6-14 years, has brought about a revolution in the education system of the country with statistics revealing a staggering enrolment in schools over the past few years.

With the advent of technology and its surging acceptability in society at large, there is a huge scope to take education to the remotest part of the country, for enhancing awareness and improving understanding. But, the education field in India is mired in tradition, ideology and incumbent interests ^[1].

There’s no denying that the Internet has dramatically changed the state of education over the past years. Digitization has transformed the education sector and modern classrooms with smart boards, virtual classroom and E-text books have taken over blackboards, chalks and

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dusters [2]. The 21st century has been rightly termed as the digital era. Internet is bringing a substantial change in our lives as we are dependent on the usage of technology to even complete simple tasks. Many of us don't even remember the world that existed before digital technology emerged. It is easy to connect to the internet from any place in the world [3].

The modes of teaching in higher education have drastically changed in last 15 years. While some old guards still stay with the old "Chalk and Talk" technology, it is very rare that in these days professors do not use some modern technology in class-room delivery. Abundant information on any subject is available on such sources as "YouTube", "Face book", "Wikipedia" and "Google". The online education therefore has added new options of teaching, has created a wide variety of new courses, and has increased the enrollment in many academic institutions [4].

According to a report by the Internet and Mobile Association of India titled "Internet in India 2017", the number of internet users in India is expected to reach 500 million by June 2018. The number of Internet users stood at 481 million in December 2017, an increase of 11.34% over December 2016. Digital technology is everywhere and it has changed the world in more than one way [5].

Digital revolution in India's education sector started with management colleges like the Indian Institutes of Management. From providing computer labs to fully computerized libraries, the institutes gradually initiated digital practices. Laptops became common in institutes and among the students studying business management courses. Eventually it forayed in other domains of education too. Exams were no longer limited to pen and paper as it was replaced by computerized exams. Power point presentations were accepted as projects submitted by students. It was soon realized that learning no longer revolved around the ability to just read, write and crunch numbers. According to world economic forum the demand for technology and computational thinking skills will grow by about a fifth by 2025. These technologies will create 2.1 million jobs by 2020, which will require knowledge in computing. That is why it is important to incorporate digitization in the learning process which will help students in critical thinking, innovation, collaboration and problem solving. Along with primary syllabus, the curriculum should also focus on technology, innovation, general skills and business management [6].

Studies on digitization of higher education are of prime interest to policy makers, educationists and leaders. Studies based specifically on the internationalization and digitization in the Higher Education sector have been performed in numerous regions of the world: Alamri (2011) in Saudi Arabia, Liu and Dai (2012) and Chen and Huang (2013) and Mitra (2010) in India, which shows the importance given by researchers and reflects the respective nation's keenness to digitize [7].

Government initiatives in the field of digitization of education

Prime Minister Narendra Modi's emphasis on the Digital India Campaign looks to increase the scope of technology across the country and also has helped transform the education system in the country. The campaign aims to ensure better connectivity and maximise the potential of India's much talked about demographic dividend. India is at

the cusp of the next growth revolution. The series of education provisions in the 2016-17 Budget provides an exact picture about the present Government's future plans for education. The Government is planning to establish a new agency — Higher Education Financing Agency to oversee the infrastructural developments in Higher Education. At the same time, owing to standardization of training, a new regulatory body's establishment has also been on the agenda. In addition to supporting online courses, the next step of the Government in the direction of digitalization is the creation of an online register for report cards and degrees [8].

Concerning State investments, the higher education continues to enjoy priority, but public education, particularly technical training, will also benefit, as the allocation of financial sources makes clear. Other than the Government, various private organisations are also supporting India's digital initiatives for education. Software major Microsoft, working with Atal Tinkering Labs across 25 schools in the country to empower students and teachers with technology skills, is also pushing for the use of cloud computing for creating an efficient digital lab experience [9]. India as a nation is on a growth path in education sector and digitization is supporting the collective efforts of public and private sector to realize the dream of becoming the education hub of the world. Along with other States of India, educationally backward States are also focusing on improving the education scenario. The two States – Bihar and Chhattisgarh are adopting the digital educational practices rapidly. Bihar which may be considered as the educational hub for Eastern and North-Eastern India, Chhattisgarh is gradually gaining popularity as the educational destination for Central India. Educationists opine that the two States are leveraging the technology to improve the education sector from primary to higher level [10].

The National Mission on Education through Information and Communication Technology (NMEICT) Scheme meanwhile aims to leverage the potential of ICT for teaching and learning processes. The Mission has two major components - content generation and providing connectivity along with provision for access devices to the institutions and learners. Under the NMEICT Mission connectivity to 419 Universities/ University level Institutions and 25000+ colleges and polytechnics in the country has been envisaged to be provided [11].

A report titled "India E-Learning Market Outlook to FY2018 – Increasing Technology Adoption to Drive Future Growth" estimates that Indian e-learning market will grow at CAGR of 17.4% over the period FY2013 to FY2018. Indians are among the most aggressive users of the massively open online courses (MOOCs). In March 2014, of the 2.9 million registered users of Coursera, more than 250,000 were from India. The Indian registrations are second only to those from the USA.

Ministry of Human Resource Development Initiatives [12]

National Convention on Digital initiatives held in Vigyan Bhawan, New Delhi on 9th July, 2017. During the Convention, a 17- Point Action Plan has been adopted to be implemented by December 2017. The action Plan has been forward by the Ministry of HRD. The path breaking initiatives like Swayam and Swayam Prabha (DTH Channels) have provided huge opportunity for improving

educational standards, their potential is yet to be fully utilized. The progress in implementation of this digital Action Plan, especially in the context of adopting SWAYAM and SWAYAM Prabha on a blended mode for improving the standards of teaching /learning process^[13].

The key initiatives taken by the government include SWAYAM, SWAYAM Prabha, National Digital Library, e-Shodh Sindhu, FOSSEE and Virtual Lab.

Swayam

With the use of information and communication technology (ICT), SWAYAM is designed to provide one integrated platform and portal for online courses to cover all higher education subjects and skill sector courses. More than 28 lakhs learners so far have been enrolled in 1000+ MOOCs courses that run through SWAYAM. Foreign universities can also offer their courses on SWAYAM platform and the examinations can be done through SWAYAM following SWAYAM guidelines.

Swayam Prabha

As one of the key initiatives by the government, SWAYAM Prabha is designed to provide 32 high quality educational channels through DTH (Direct to Home) across the length and breadth of the country on 24X7 basis.

National Digital Library

It is another initiative of the government to develop a framework of virtual repository of learning resources with a single-window search facility. So far, about 1.5 crore e-books and documents are available on NDL, contributed by 160 content contributors and over 30 lakh users from 9 thousand educational institutions were registered on the NDL.

e-Shodh Sindhu

This project of the government aims at providing access to quality electronic resources including full-text, bibliographic and factual databases to academic institutions at a lower rate of subscription. The MHRD has designed this project by merging three consortia initiatives such as UGC-Infonet Digital Library Consortium, NLIST and INDEST-AICTE Consortium.

Fossee

Designed by the MHRD, the Free and Open Source Software for Education (FOSSEE) project aims at promoting use of open source software in educational institutions to improve the quality of education, reducing dependency on proprietary software. This project is part of the National Mission on Education through Information and Communication Technology (ICT) and MHRD.

Virtual Lab

An initiative taken by the MHRD under the National Mission on Education through Information and Communication Technology, the Virtual Lab aims at providing remote-access to laboratories in various disciplines of Science and Engineering for students at all levels from under-graduate to research. This project also plans to develop a complete Learning Management System where students can avail various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation.

Pros and cons of digital education

Advantages of digital education^[14]

- With digital education, classroom teachings have become more fun and interactive. Children tend to be more attentive. They are not only listening but also viewing it on the screen which makes their learning all the more effective. Here, sounds and visuals go hand-in-hand which is easy for the child to grasp.
- Interactive online presentations or practical sessions in educational content through interactive screen time help the students to pay more attention to details which enable them to complete their activities on their own. With the use of interactive modules such as videos, and presentations as a medium of learning, students get to understand complicated concepts with ease. It has helped in increasing their interest and curiosity level.
- Using tabs, laptops or notepads, instead of pens and pencils, motivates children to complete their tasks quickly.
- The digital classrooms have helped increase student attention; teachers maintain that there has been a reduction in absenteeism and school dropouts. It has also improved student familiarity and comfort with technology. The digitally interactive environment encourages even shy or hesitant students to participate better in classroom discussions.
- Active online screen time helps students develop language skills. By reading eBooks or accessing study materials online, they learn new words and expand their vocabulary.
- Many a times, a student hesitates to ask a question to his teacher in classroom training. But with digital education, even if he does not understand anything at one go, he can attend the recorded sessions to clear his doubts. Technology enables a student to learn at his own pace.
- The best thing about digital education is that it is user-friendly. You can very well access your curriculum wherever you are. You can learn on the go. Even if you miss certain classes, you can access the class notes and download files from the school website.
- Online study materials are easily available. Even if the entire education system is not digitalized, yet students can leverage the power of digital content depending upon their capabilities. So students, can access exclusive online study modules of various subjects, which help them to enhance their knowledge even without a teacher.
- With online education, students can even further connect with distant counsellors and faculty to seek guidance or resolve queries.

Disadvantages of digital education for children^[15]

- It is expensive. That is why we see that most International schools and schools that have digital education are far more expensive than the regular schools.
- To have digital education means, you need to have a proper infrastructure not only at schools but also at homes, particularly affordable broadband.
- Online learning requires much better management and rigid schedules, whereas in traditional classroom training, everything is as per a fixed schedule.

- Getting all answers on the net easily also reduces the children's own creative abilities.
- This may lead to poor study habits and can develop in children a lazy attitude. Digital education can also make children forget the basic way of studying. Even for simple problems and homework, they are used to seeking help from the net.
- Parents usually condemn digital education as going online does not mean that children are only looking for study materials as there are many things which are restricted for children to watch.

Conclusion

In conclusion, we can point out that digitalization has helped transmit education faster, more efficiently and at a lower cost, but the challenges for its future delivery are unspecified and somewhat unpredicted. It will be interesting to see how we tackle these challenges in futures. The success or failure of higher education system is dependent upon our effective answers to these challenges. Some may doubt that the digital reforms may live up to their promises or not but, they certainly prove that India and its States have recognised the challenges of the 21st century, the power of knowledge, information, and innovation, and accordingly radical reforms are taking place in the country. The successful creation of knowledge-based society would carry great opportunities for India, while its failure could push the nation towards not just an economic but a political crisis as well.

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