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E-Education Platforms: Emerging Tools for Content Delivery

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Abstract

Indian higher education system is one of the third largest systems in the world. This system is spread over 993 Universities and 39931 Colleges. One of the several important features of Indian higher education is the enrolment of 10.62% of students in distance education mode from among the total enrolments in higher education. The unprecedented success of information and communication technologies (ICT) has found their reach within the classroom as well. Several tools of ICT are now used to deliver the contents to distant users. In a situation like a lockdown, wherein there was no face-to-face contact between teacher and students, tools of ICT came as a boon to continue the education. Several tools of the ICT are in use ushering communication between the users across the continents. Although several tools of the ICT are developed continuously for specific purposes, a comprehensive update on important tools is a must in our opinion for each and every student of higher education. These tools will not only be helpful in their education but also be of greater use in exploring several avenues shaping their career in higher education.

Introduction:

The introduction of tools of information and communication technology (ICT) in the field of education in India in the year 2004 was a landmark decision (Sarkar, 2012; Toro & Joshi, 2012). Since then, various steps have been taken by the government of India (GOI) to boost the use of ICT in classroom teaching (Singh & Sharma, 2013; Amit, 2020). Boundaries of primary, secondary, and tertiary education no longer exist. If one were to believe the recent report "Online education in India: 2021", a magnificent growth of several folds is expected in times to come (Shukla & Chavan, 2019; Dhage & Ghadge, 2019). The delivery of online education materials has become a reality now (Dutta, 2020). Various reasons are cited for easy acceptance of online methods of teaching and learning, convenience, flexibility, and availability of a variety of material are a few important factors for its success (Nambiar, 2020; Bisht *et al.*, 2020; Serneels & Dercon, 2021; Kukreja *et al.*, 2021). The quality of the contents, easy access on laptops and mobiles is another reason for its universal acceptance (Moudgalya, 2020).

Online content delivery in higher education has toppled all expectations. The market size of merely 33

million US dollars in 2016 is now expected to become a market of 184 million US dollars in 2021 (Dey & Dey, 2021). Going by statistical data released by MHRD through an All India Survey on Higher Education (AISHE, 2019), only 23 percent of the eligible population enter the institutions of higher education. It indicates the presence of a gap between the total eligible population and the population which exists in the classroom (Singh, 2018). To increase GER even by 1% will require mega overhauling of the system which will include both logistics as well as human resources. To rejuvenate higher education in the country various booster programs have been initiated. Rashtriya Uchchatar Shiksha Abhiyan (RUSA), National Mission on Education through Information and Communication Technology (NMEICT), Education Quality Upgradation and Inclusion Programme (EQUIP), Scheme for Promotion of Academic and Research Collaboration (SPARC), Prime Minister's Research Fellowship (PMRF) and Higher Education Financing Agency (HEFA) to name a few. The Ministry of Human Resource Development is now the ministry of education to bring primary education to tertiary education under one umbrella (Jena, 2020).

One of the several aims of the policymakers for higher

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Online Platforms for e-content delivery

S. No	Name of the Platform	Details of the platform and its URL	Interactive insignia of the platform
1	SWAYAM	SWAYAM stands for "Study Webs of Active-Learning for Young Aspiring Minds". This is an Indian Massive open online course (MOOC) platform. SWAYAM is an initiative launched by the Ministry of Human Resource Development, Government of India under Digital India to give a coordinated stage and free entry to web courses, covering all advanced education, High School and skill sector courses. www.swayam.gov.in	
2	MOOC	MOOC is an online course aimed at unlimited participation and open access. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses. On its platform, it has diverse courses ranges from basic to some of specialized courses as well. www.mooc.org	
3	SWAYAM PRABHA	SWAYAM PRABHA is a unique e-learning DTH channel subscription to enhance the learning of students through edutainment. An e-classes platform basically telecast educational programmes 24x7 for the students to make their stay at home period constructive during the nationwide lockdown. www.swayamprabha.gov.in	
4	NATIONAL DIGITAL LIBRARY OF INDIA (NDLI)	The National Digital Library of India (NDLI) is an all-digital library that stores information (metadata) about different types of digital contents including books, articles, videos, audios, thesis and other educational materials relevant for users from varying educational levels and capabilities. It provides a single-window search facility so that learners can retrieve the right resources with the least effort in minimum time. NDLI has been designed to benefit all kinds of users like students (of all levels), teachers, researchers, librarians, library users, professionals, differently-abled users and all other lifelong learners. www.ndl.iitkgp.ac.in	
5	VIRTUAL LABS	This is an MHRD initiative to provide remote-access to Labs in various disciplines of Science and Engineering. Students at the undergraduate level, postgraduate level as well as to research scholars can take its benefit. This would help them in learning basic and advanced concepts through remote experimentation. www.vlab.co.in	
6	E-YANTRA	E-YANTRA is an initiative by IIT Bombay that aims to spread education in embedded systems and Robotics. This initiative is sponsored by the Ministry of Human Resource Development through the National Mission on Education through ICT (NMEICT). www.e-yantra.org	
7	FOSSEE	FOSSEE (Free/Libre and Open Source Software for Education) project promotes the use of FOSS tools to improve the quality of education in our country, reduce dependency on proprietary software in educational institutions. FOSSEE project is part of the National Mission on Education through Information and Communication Technology (ICT). www.fossee.in	
9	E-PG PATHSHALA	PG Pathshala is a portal under which high quality, curriculum-based, interactive content in different subjects across all disciplines of social sciences, arts, fine arts & humanities, natural & mathematical sciences, linguistics and languages is being developed. www.epgp.inflibnet.ac.in	
10	SHODH-GANGA	Shodhganga Provides a platform for research scholars to deposit their Ph.D. thesis and make it available to the entire scholarly community through open access. www.shodhganga.inflibnet.ac.in	
11	E-SHODH	Archival access to more than 7,200+ core and peer-reviewed journals and a number of bibliographic, citation and factual databases is provided through this initiative of MHRD. www.ess.inflibnet.ac.in	

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12.	SPOKEN TUTORIAL	Spoken Tutorial is self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning, can learn from any place, at any time and in a language of their choice. End-of-Course Online tests and certificates are available for those who wish to test their expertise in particular software. www.spoken-tutorial.org
13.	SAMARTH	Samarth is An Open Source, Scalable and Evolutionary Process Automation Engine for Universities and Higher Education Institutions. www.sakshat.ac.in
14.	SHODH SHUDHHI	Shodh Shuddhi is plagiarism detector software in dissertation and theses deposited to any university/ Institution since September 01, 2019. www.shodhshuddhi.inflibnet.ac.in
15.	GYAN DARSHAN	DD Gyan Darshan 1 is a state-owned television channel broadcast from Doordarshan, Kendra, IGNOU. It is an educational media initiative of MHRD with the Ministry of Information and Broadcasting, Prasar Bharati and ISRO as the nodal agency of IGNOU. www.ignouonline.ac.in
16.	UGC INFLIBNET	INFLIBNET is an acronym of Information and Library Network. Its main focus is to make available all the scholarly contents to academicians and researchers across India. State-of-the-art and cutting edge technologies are utilized for promoting information resources and the development of human resources. It also acts as facilitators between various stakeholders of the education. www.inflibnet.ac.in
17.	NPTEL	National Programme on Technology Enhanced Learning was established in 2003. NPTEL has the largest repository of various types of courses including management. It offers online courses of various durations, certificates for completing the courses are also provided by participating IITs or the industries. www.nptel.ac.in
18.	e-Kalpa	E-Kalp is Creating a digital learning environment for design, an MHRD initiative that aims to provide a platform for design studies. In the year 2015, the name of the project is renamed as "D source". Various case studies on design project are available for anyone to use in their project. This initiative of MHRD has revolutionized the way design studies are being perceived and pursued as a career. www.mhrd.gov.in
19.	NAD	National academic repository is a national system for keeping safe all the documents in digital format. Anyone with suitable credentials can access the documents and verify the authenticity of the documents. Gone are the days, although albeit slowly, when collecting, maintaining and presenting in the physical format of the certificates was a cumbersome job. www.nad.ndml.in
20.	GIAN	Global initiatives of an academic network, an acronym for a unique programme crafted by MHRD to tap the potential of scientists/ academics and entrepreneurs for benefits of the higher education sector of the country. networking is aimed at reforming in quality of education and elevating India's scientific and technological acumen to a global level. www.gian.iitkgp.ac.in
21.	IMPRINT	Impacting research innovation and technology is a PAN IIT+IISC joint initiatives, help in empowering, embolden the nation for inclusive growth. Socially relevant research has an overarching vision through IMPRINT. www.impring-india.org

education is to increase the gross enrolment ratio (GER). From being merely 1.5 % in 1960-1961, it has now reached the level of 26.3% in 2018-2019. (Aithal & Aithal, 2020) The global average of GER is at the level of 36.1% in 2019. These initiatives aim to give an edge over the old style of functioning in higher education. The quantity and quality of programs as measured by fitness for purpose should allow growing if the stakeholders continue to believe the various educational programs as meeting their needs and expectations (Gupta, 2020).

The Indian education system, since its inception, has pretty much believed in traditional methods where one can imagine classrooms made up of brick-and-mortar. The traffic of students enter the school every morning and spend specified time to get educated and complete their learning process (Wadhwa & Khatak, 2020) Education fraternity can no longer remain immune to the development happening in all other fields. In India, every other thing is going online and so is education. Much has already been said and reported in various annual reports about the current status of education in India; the phenomenon of e-education is a new entity for general higher educational institutions (Govindrajan & Srivastava, 2020). Barring the exception of some of the elite institutions both in government and private sectors, the rest of the higher education institutions are yet to fully understand and imbibe the idea of e-education itself. A flurry of papers is in circulation about the use of information and communication technology tools for ushering the technological advance. Most of the reports list the issues of primary and secondary education with an emphasis on equity and quality, touching on the issues of availability of infrastructure, availability of teachers, students, etc. Issues such as how to attract students to the schools are also delved into details and curative and suggestive measures have been suggested (Devgun, 2013).

The purpose of the present article is to give information about the availability of the online platform for teaching and learning. Its basic concepts, availability, and specific use of the tools are listed. Although the list of such tools is quite long and it is not possible to present and comprehend the list, we, therefore, have restricted ourselves from presenting only the details of the platform and basic information for the tools used especially for higher education classes.

Issues and Challenges in Using E-Education Platforms

A clear understanding of any technology is a must for harnessing the potential it holds. E-education platforms for providing delivery of e-contents and their use for research purposes have gained prime importance among its users. However, there are certain issues and concerns which need to be addressed for making the use of E-education platforms more relevant and in tune with

present-day demand. Here are some of the key challenges related to the use of the E-Education platform

1. The information is in an ever-increasing fashion. Constant update of the contents is required to keep pace with digital growth.
2. Providing infrastructure for using high-end technology is a humongous challenge particularly in areas where even basic facilities don't exist.
3. There is a need to inculcate the sense of using the technology for a larger benefit. Also, developing quality e-content is a major challenge.
4. The interconnectedness of various pedagogical approaches given the new model of E-education is challenging.
5. Continuous development of new tools will be a major requirement to protect the current platform from becoming obsolete.

Conclusion:

To bridge the gap, arisen due to pandemics like COVID-19, several innovative steps have been taken by Government of India to provide continuous access to quality education. While during the pandemic important initiatives like the PM evidya app have been started in an initiative to uniform all efforts concerning digital education. Digital classroom, ICT enabled labs, E-content repository, online admission, E-books, E-learning portals; various mobile applications are some of the efforts from the long list of initiatives.

Over the past few years, digital technology has played a pivotal role in helping transform education and its positive impact is being felt by the students, teacher as well as parents. The education sector exemplifies how technology is playing the role of a force multiplier as various e-learning initiatives have helped in imparting education to students throughout the country. The COVID-19 pandemic threw up a big challenge and the Indian education system tried its best to adapt to the situation. The importance of e-learning has been understood even more clearly now and the adaptation of technology must continue with the learning needs of the students with equity for the long run. Although in India, education has been delivered in both online and offline mode, it shall be the endeavor of all stakeholders in the field of education to ensure that no student is left behind, for want of affordability and accessibility to quality education.

Tools of information and communication technologies have allowed users to participate in an ever-changing world. Tools of ICT can be used for searching, exploring, analyzing, and exchanging any information without any discrimination. ICT allows quick access to ideas and experiences from people across the continents.

Mooted as one of the important ingredients in quality education, is equity in education. It means equal access to quality learning materials. A situation like COVID-19 has led people to think of an out-of-the-box solution for providing seamless delivery modules. There had been several wonderful and inspiring initiatives taken by

TECHNOSCIENCE ARTICLE

several stakeholders. Over the past few years, several lessons have been learned and various capacities have been built. We sincerely hope that this short communication will help all positive learners to identify the gaps that exist in the system, scope and possibilities of expansion, and introduction of new modes of digital education with the final aim of ensuring that no student is left behind.

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