Online Education – A Review

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Abstract

Online education has become the need of this hour as ICT has been playing an active role in performing many activities online. This paper explores the availability of online content for use of students, teachers, researchers and others at school and higher education and categorize them so that people are aware of its availability, its usage so that people can join them and take benefit out of them. Various web portals providing online education under the initiatives of Government of India at school, higher education, are explored. The growth of online education in India, its market potential are analyze through various surveys and found that a large number of courses offered online under various portals in different disciplines of education.

Introduction

The computer age in India was started soon after the independence especially in the areas of Defense and Space Research. Since then the digitalization has come a long way in India especially since early 90s.

The Internet and Mobile services under Telecom Authority of India has expanded in last few years tremendously and made it possible for users to use Internet and Mobile Applications in online education. With the increasing usage of Internet, the online education has taken a significant growth. The Government of India has taken many initiatives like Digital India missions to take technology to common man even in remote places so that they acquire digital skills and become more confident with the use of digital applications in their day to day life. In education sector, online learning and trainings are being imparted using ICT.

Online education has been providing courses both short term and long term in almost every field of education in wide range. Institutions like BYJU, Vedantu, Educart, EduPristine and many other start-up companies have been emerging in this field. Online education is also offered from various institutions like NIOS, IGNOU, SMU etc and in many regional languages by few institutions. The online programmes are available for differently abled persons also using assistive technologies. Based on the percentage of online content varies, online programmes are fully online while others a mix of (real time) synchronous and pre-recorded lectures (asynchronous) activities and assessments.

I.   Online Education market size in India

Online education has played an important role in developing Indian education industry in terms of more money and technology innovation. It has been providing a medium to learn for Anyone Anywhere Anytime with nominal charges or free of cost. Also, the learners can choose any course of their choice instead of compulsion of studying courses as a part of entire programme. Though researches reveal that success rate in both face-to-face and online education is almost same as per researches.

Due to wide Internet as well as Mobile phone reach and fast access, online education has become a platform for students to develop skills by sitting at home and free of cost to some extent. The innovators and investors are keeping eye on India as it is a growing the country

has more potential to grow. Major Beneficiaries of online education are Students, Teachers, Researchers and Employers.

Few of the Institutions and Universities associated with online education are Indian Institute of Management (IIM) Bangalore, National Programme on Technology Enhanced Learning (NPTEL), Indira Gandhi National Open University (IGNOU), Sikkim Manipal University (SMU), MIT Pune, Pondicherry University, Tata Trusts and Khan Academy, Vidyanidhi Education Society and Amity University Online in various field at different levels.

Observations from surveys and reports

- As per the report of Google and report from KPMG for 2016-2021, the online education sector in India is estimated to grow at an annual growth rate of 52% from around $250 million in 2016 to $1.96 billion by the year 2021 with 1.57 million paid online education users to 9.6 million by 2021.
- In another report from Research and Market www.researchandmarket.org, the online education market in India to grow at a CAGR of about 20.02% during the period 2017-21. The organization claims that the projection is based on in-depth market analysis in the input from industry expert.
- Government education policies also encourage Indian online education market to have positive vision in education industry. In India, more than 370 million Internet users have been helping to grow online education. The present e-learning market in India is about 3 billion.
- The survey revealed that India is third largest market of online education after the leading USA and China .
- In 2015, the e-learning market size was valued over $165 billion and assumed to grow at over 5% from 2016 to 2023 which supposed to exceed to $ 240 billion.
- Technavio's market research predicted, India online education market is growing at CAGR of about 19% by 2020.
- According to CourseEra, world's largest provider of online education, 1.3 million students were from India out of its total registered 19 million students.
- A study revealed that there was a significant growth from 2 to 4 times in online searches for education, mobile devices, content consumption on YouTube especially from 6 metro cities.

II.   Government Initiatives

The Ministry of Human Resource Development (MHRD) of Government of India has been taking various initiatives time to time by formulating strategies and framing policies for launching online education schemes, web portals, facilitating infrastructure and training manpower to take the advantages of schemes to citizens across the country. However, University Grants Commission (UGC), All India Council for Technical Education (AICTE) and National Accreditation Centre (NEC) are involved in framing policies and their implementation with MHRD throughout the country. MHRD also encouraging manpower to equip with latest ICT practices prevailing across the globe and form a talent pool.

Online education trends in many areas but mostly covered the categories of School education, Higher education, Trainings and Business industry.

The major education institutions and Universities offering online education through short-term and long-term programmes are NPTEL, MIT, EDUCAUSE, IGNOU, Amity International University, Sikkim Manipal University etc. The Ministry of Human Resource Development (MHRD), Government of India also facilitates online education to its citizens through its Websites and Web Portals like SAKSHAT, eGyankosh (digital content of all graduate and under-graduate programmes), Swayam Prabha and Swayam. The private

institutions are also involved in imparting online education of various duration. The major education missions are:

NMEICT

National Mission on Education through Information and Communication Technology (NME-ICT) launched in 2009 by MHRD to extend the potential of ICT and make its usage in teaching and learning process to the learners of higher education institutions from anywhere 24x7. It is viewed in terms of enhancing gross enrolment ratio (GER) and quality of higher education. The aim is to provide educational content to all eligible and willing learners in India emphasizing on content and connectivity. The three cardinal principles of Education Policy viz., access, equity and quality are followed.

Under NME-ICT mission 'to train 10,000 teachers', IIT Kharagpur and IIT Bombay are partner institutions to train the teachers to improve the teaching skills of engineering colleges teachers in engineering and science subjects throughout the country. Two 2-weeks ISTE training, live lectures by IIT faculty, participating teachers have to attend tutorial and lab sessions at a remote centre.

Digital India Mission   www.digitalindia.gov.in

The objective of this program is to digitally empower every citizen of the country and transform the society. This way Government's digital services, policies and schemes will reach to common man. Under this initiative, citizens can acquire digital skills and use the Networking, e-commerce, Mobile Applications over Internet.

The Government initiatives for online education in higher education sector can be viewed under following areas:

1. Technology Infrastructure

Technology is the backbone of online education. Various Network Infrastructure Initiatives taken time to time are as below:

(i) NICNET www.nic.in : Set up by National Informatics Centre (NIC) in 1976 involved in satellite based network communication for providing file transfer, remote access, email, data broadcast, e-governance services etc. across the nation.

(ii) ERNET www.ernet.in : Education and Research Network was established in 1986 involving premier institutions. It has major contribution in bringing Internet to India. The other services are hosting education websites, providing high speed data network applications, educational content, academic and research work etc.

(iii) Digital Library INFLIBNET www.epgp.inflibnet.ac.in

Information and Library Network is an inter university centre of UGC in 1991. The e-PG Pathshala portal is launched under NMIECT mission to provide curriculum based quality e-content in more than 70 subjects being executed by UGC. Digital Library INFLIBNET(Information and Library Network).

(iv)   Funded by UGC, the UGC-INFONET Digital Library Consortium was launched in 2003, providing internet connectivity to universities and accessible for online books, journals, bibliographic databases from publishers and aggregators in various disciplines to schools and universities at low cost. Quantum and Nano computing.

(v) EDUSAT : EDUSAT is the first Indian communication satellite launched in 2004 for providing interactive satellite based distance classroom education through video lectures, video on demand and interactive video classrooms from school education to higher education.

(vi) NKN : National Knowledge Network (NKN) came in existence in 2006 is a dedicated network for sharing knowledge connecting all public research and higher educational network. It facilitates the sharing of high performance computing facilities, digital libraries, virtual laboratories, virtual classrooms and large databases.www.nkn.gov.in

(vii)   Cloud Computing : National Informatics Centre   (NIC) is providing the cloud services under the umbrella of "Meghraj". It is an internet based technology which enables to share technological resources, infrastructure, platforms, software services, storage, digital information from anywhere using browser to speed up development and deployment of e-Gov Applications. Educational institutions can avail these facilities on rental.

2.   Web Portals

Various web portals launched time to time are:

(i)   NPTEL https://nptl.ac.in

National Programme on Technology Enhanced Learning NPTEL launched jointly by Indian Institute of Technology (IIT)s and Indian Institute of Science (IISc) in 2003 and supported from MHRD. It has been providing recorded audio/video lectures from Professors of IITs and IISc as technical and Courseware to students, teachers and life long learners. Also, the contents are available in many languages to ease of learners. The contents are available in CDs, DVDs and broadcast on different channel.

(ii)   CEC

Consortium for Educational Communication (CEC) as developed e-content for under-graduate courses. The digital Media Library at CEC is a central repository of all educational video programmes produced by Educational Media Research Centres set up by UGC in the Universities and Higher educational institutions across the country. CEC has a collection of about 20,000 educational video programmes in the form of video programme, university video course lectures, e-contents on UG subjects, Learning objects repositories (LOR) on under-graduate students. The educational contents are broadcast using CEC-EDUSAT network   and   North   East   CEC-   EDUSAT.http://cec.nic.in/e-Education/Pages/e-Education.aspx **;** www.E-yantra.org

(iii)   eGyankosh

It is a national digital repository of education contents developed by the open and distance education institutions in the country to store, preserve, distribute and share digital learning resources i.e. text material and videos.www.egyankosh.ac.in The course materials of all the programmes offered by IGNOU are available on the website of eGyankosh. Its associated open course portal FlexiLearn (www.ignouflexilearn.ac.in) facilitates informed learning wherein, anyone can register and explore courses free of cost to gain knowledge and skill in a particular area of interest.

(iv)   SAKSHAT www.sakshat.ac.in

It is a one stop education portal to address the needs of students, teachers and lifelong learners. It has been providing e-content using 4 quadrant approach i.e. Text, Video, Assessment and Link. The network connectivity is also provided to 26000 colleges and 2000 polytechnic and in 419 universities. It provides facility to remotely connect to teacher through web using web conferencing tool A-View.

 Talk to a Teacher www.co-learn.in

This portal under NMICT provides recording of live courses taught by IIT Bombay, Talks given by Ph.D students of IIT Bombay and question-answer series with faculty of IIT Bombay.

(v)   Open Educational Resources (OER) https://nroer.gov.in

The government has funded development of National Repository Open Educational Resources (NROER) of subjects and degree/certification levels through NMEICT mission using ICT. OER are useful for accommodating large repositories of audio/video digital content. The end users can customized the content depending upon the authorization. The Government has also taken initiatives to promote OERs to make the content accessible to large number of users

Some other initiative are:

1. Spoken tutorial www.spoken-tutorial.org developed by IIT Bombay, free and Open Source Software , launched as a part of the project 'Talk to a Teacher'.
2. A-View Virtual classrooms : it is built indigenously built multimedia platform which provide the e-Learning experience developed by Amrita e-Learning research lab www.aview.in
3. Virtual –lab to provide remote access to labs for science and engineering to serve students of undergraduate, post graduate , research scholars at www.virtual-labs.co.in
4. Fossee – Providing Free and Open Source Software and tools for education and research https://fossee.in
5. E-kalpa – a Project for creating social networking digital learning environment for design, providing digital content, digital resource database design https://dsource.in
6. e-Yantra : Teaching robotics in engineering education www.eyantra.org .
7. SOS tool – software and simulation packages for analysis of systems and solving problems of students in various fields http://sos-tools.org .

Handheld mobile devices are very useful for accessing interactive learning objects. Akash the in-house developed.

SWAYAM

The SWAYAM platform is 'Study Webs of Active – Learning for Young and Aspiring Minds' announced by MHRD a national platform for MOOCs in 2014 to serve students from 9th standard till Post graduation in all fields of education. The Courses under Swayam web portal www.swayam.gov.in are offered free of cost but for certification, the students have to go through the assessment process and pay some nominal fees. The objective of this platform is to provide best and appropriate teaching and learning resources to all including the most disadvantaged sections of the society. The designing of this platform is to attain the three cardinal principles of education i.e. access, equity and quality. The education under Swayam platform is given using four quadrant i.e. video lecture, reading material downloadable/printed, assessment through tests/ quizzes and online discussion forum to clear doubts. The Courses are prepared by experts from NCERT, NIOS, IGNOU, NPTEL, IIM Bangalore, UGC and CEC. The programmes under Swayam platform are based on MOOCs (Massive Open Online Courses).

MOOCs

MOOCs are Massive Open Online Courses, can be launched on SWAYAM platform. These programmes launched through MOOCs under Swayam are available and accessible for all from anywhere anytime for the education taught in classrooms from 9th class till post-graduation by offering Certificate, Diploma, School level programmes. MOOC Courses hosted on Swayam platform can be adopted for credit transfer in Indian Universities.

Availability of Resources on web portals

- Recorded Presentations
- Facility of Discussion Forum for interaction among teacher and students
- View Presentation via App
- Study material as E-contents/ as Open Educational Resources (OER)

- E-content in the form of Video lectures, Simulations, Animations, e-books prepared by experts from nationwide
- Self Assessment exercises, Reference Links, Online Quiz
- Audio/video tutorials

However, live interaction among teachers and students using Virtual class facility could be initiated where Institution(s) have the required infrastructure / communication software

3.   Broadcast of educational content

There are few television channels which broadcast educational content. Learners can watch the educational content free of cost. These are:

(i)   Swayam Prabha : Free DTH channel of education, launched in 2017, is a group of 32 Direct to Home (DTH) channels on Dish TV and Doordarshan Free Dish for telecasting high quality educational content for schools and colleges. The contents were prepared by popular educational institutions and Universities like IITs, NIOS, NCERT, IGNOU, EMRC and other Universities in the country. These channels telecast about 4 hours of new content everyday and repeated 5 times during a day for ease of students. Archive of contents provided on swayam prabha channels is available on Youtube.The schedule, timings, archive videos of lecture is available on website www.swayamprabha.gov.in

(ii)   Gyandarshan Television channel

Gyandarshan television channel has been educating students by telecasting pre-recorded audio/video lectures www.ignou.ac.in/youtube.com/ignou .The live broadcasting facilities for accessing video lectures is available at www.ignouonline.ac.in/broadcast

(iii)   Vyas channel for higher education

24x7 broadcast channel for e-content higher education launched in 2004 for undergraduate students to supplement classroom teaching to reach students and households. It is available on DD Direct Plus, a DTH platform for Doordarshan, Dish TV - a private DTH operator http://webcast.gov.in/vyaslive/

(iv)   Gyan Vani Radio channel : A Gyan Vani Radio channel operates at FM 105.6 MHz (within 60 km range) and is operated in various cities in the country. It schedules day to day programmes with the cooperation of many educational institutions i.e. semi-Government institutions, NGOs, Government institutions like NCERT, NIOS, State Open Universities, IGNOU and others. IGNOU provides facilities for Interactive Radio Counselling (IRC) to its learners through Gyan Vani FM Radio Stations to its learners twice a week at specified timings. The students interact with the faculty and ask questions during the discussions. The learners were already provided the schedule of IRC.

(v)   YouTube : A large amount of e-contents in the form of multimedia audio/video(s) are available at YouTube as archived material on various subjects/topics from various institutions. These can be downloaded easily.

Conclusion

The study reveals that a lot of e-content is developed by various subject/domain experts in well defined formats in various sectors especially in the field of education. There are number of portals available, many provided by Government of India, for disseminating educational content free of cost but the need is to propagate and popularize its presence and advantages among various domains of education, student communities, teacher's communities, especially in schools, researchers and under privileged sectors of the society

to take the benefits of this free and open educational content. Educational institutions to come forward to avail the network infrastructure facilities, education broadcast and web portals facilities provided under NMEICT to establish e-Learning platforms to promote online education.

References

- https://www.franchiseindia.com/education/Online-Education-Market-in-India-2016-2020.9263
- https://www.statista.com/statistics/746611/online-education-market-value-india/
- www.mhrd.ac.in
- www.egyankosh.ac.in
- www.nptel.ac.in
- www.virtual-labs.ac.in
- www.inflibnet.ac.in
- www.digitalindia.org
- www.a-view.ac.in
- www.spoken-tutorial.org
- www.ignou.ac.in
- https://economictimes.indiatimes.com/industry/services/education/online-education-will-be-a-2-bn-industry-in-india-by-2021-google-kpmg/articleshow/58913744.cms
- https://yourstory.com/2016/05/khan-academy/