DIGITAL INITIATIVES FOR INDIAN HIGHER EDUCATION

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Abstract: Indian higher education sector is currently undergoing rapid transformation process. Digital content and smart classrooms are becoming lifeline of education. Govt. of India has made huge investment in higher education to digitize the educational content and delivery using information and communication technology. In this paper, various digital initiatives of Govt. of India for improving quality of higher education are discussed.

I. INTRODUCTION

Digital age has made strong impact on people's life in all spheres. Teaching and learning in digital era has also grown beyond the boundaries of classroom and books. Today's learners have exposure to various e-learning resources and plenty of information is available at click of mouse. But sadly, current state of affairs in Indian higher education presents a gloomy picture and education sector is struggling with various problems like shortage of trained faculty and lack supporting infrastructure facilities [1]. Govt. of India has initiated a series of programs to improve the quality of education by leveraging the benefits of digital technology. High quality e-content has been created under various digital initiatives rolled out by Govt. of India and disseminated to all stakeholders using information and communication technology (ICT). In this paper, an overview of various learning resources funded by Govt. of India has been carried out.

II. MAJOR ISSUES

In ancient times, India has been a great center of learning with world famous institutions at Takshashila and Nalanda. But at present time higher education scenario in India does not look so promising. Barring famous IITs and few other elite institutions, most of the colleges and universities have shortage of qualified teachers and lack physical facilities. Colleges in rural and remote places do not even possess basic facilities for a conducive learning environment for students. It is a mammoth task to improve the quality of higher education in India, as it requires large time-frame and enormous funding. Still it would not be possible to provide educational facilities to colleges and universities in remote areas at par with their urban counterparts by physically expanding the available resources. But by leveraging the power of ICT, the twin concerns of higher education can be addressed adequately.

The Govt. of India has been funding a series of programs under the mentorship of leading academic institutions to raise the quality standards in higher education. The main goal is to create high class e-content based on college curriculum which should be freely available to all stakeholders. As high quality content once created can be transmitted and scaled to any level by using state-of-the-art ICT. Premium Indian Universities and institutions have been assigned the task to create high quality content by recording live lectures of their classroom activities [2]. Thereby giving a chance to students from various universities and colleges to access the education imparted in elite institutions. Under the National mission on Education through Information and Communication Technology (NMEICT), interactive digital content has been created on a large scale by many sciences and engineering institutions. Many other govt. entities are involved in creating e-content for other subjects such as Consortium for Educational Communication (CEC) for PG Level University courses and IGNOU in 17 disciplines of Social Sciences and Humanities.

III. KEY INITIATIVES

Govt. has been implementing numerous strategies to enhance the education standards. Several initiatives has been launched under NMEICT, program of Ministry of human resource development, Government of India. Sakshat is main delivery portal to host all e-content developed under NMEICT program [3]. The portal will also act as facilitator between various stakeholders for communication and receiving feedback from students. The various digital programs in higher education discussed in following section are entirely funded by Govt. of India.

A. Educational TV and Radio Broadcasting

EDUSAT was the first exclusive satellite launched for broadcasting classroom educational content for distance learning in year 2004. Gyan Darshan is a satellite channel of DD India to telecast programmes in association with IGNOU. It airs programs related to open and distance education courses offered by IGNOU. Gyan Dhara is an internet based live discussion service for students where they can participate by asking questions through email or telephone [4]. Gyan Vani is FM based radio service airing programs related to higher and technical education. Swayam Prabha is a bouquet of Direct-to-Home channels launched recently for transmitting high quality educational content without any charges [5]. Consortium Education communication (CEC) is also running 24 hours Vyas channel for transmitting educational content for undergraduate classes. CEC has also established media centres in various universities across the country to produce high quality educational video content.

B. Global Initiative of Academic Networks (GIAN)

GIAN has been launched to invite world famous foreign academics to premier Indian institutes by providing global exposure and knowledge sharing by renowned professors with students and faculty [6]. Many courses are taught by foreign faculty from different countries under this program.

C. National Programme on Technology Enhanced Learning (NPTEL)

NPTEL is collaboration of seven older IITs and IISc, operational since 1999 to offer web and video based online courses [7]. Anyone can access these courses without any fee or eligibility requirement. The lectures are delivered by renowned Professors from IITs and leading institutes. NPTEL was first of its kind successful MOOC type platform to stream online lectures.

D. Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM)

SWAYAM portal offers free of cost online MOOC courses in many disciplines [8]. The portal provides high quality multimedia audio and video content along with textual study material. The courses have been made highly interactive by incorporating discussion forums and self-assessment tests. The course contents has been aligned with class curriculum as per AICTE/UGC guidelines. Anyone interested can also get a certificate after paying a nominal fee and appearing in an exam. The certificate earned through MOOC course has been legally made equivalent to formal education course from session 2017-18.

E. Quality Enhancement in Engineering Education (QUEEE)

QUEEE program is run through IIT Madras, where live lectures are delivered through dedicated bandwidth to students of top 10% engineering colleges by faculty of IIT. The course pack also include tutorials, virtual labs, e-books, Quizzes and assignment and Bridge courses. Students are evaluated at the end of the course through proctored examination by local faculty members and a certificate is also awarded to all successful candidates.

F. Spoken Tutorial

Spoken Tutorial project aims to teach various Free and open source software through small length audio and video tutorials. The idea is that what we see and hear can be better comprehended by human mind. Each Tutorial is approximately ten minutes screencast explaining the use/working of software along with recorded narration for self-learning. The target audience is anyone who want to learn IT concepts. The various tutorials in spoken tutorials are on Libre Office (open word processor), Scilab, Linux, Latex, PHP, MySQL, Python etc. These tutorials are provided free of cost on project website [9]. Spoken tutorial project has also collaborated with many institutes all over India by dubbing the content in various regional languages. The spoken tutorials are available in English, Hindi and many state languages of India.

G. Virtual Labs

A virtual laboratory is an online tool for remote learning and performing experimentation through web interface available anywhere on many science and engineering subjects [10]. The virtual lab has been designed to give students a feel of real laboratory. Students have been guided through wizard to perform each experiment step wise. Unlike traditional lab setup, students can perform the same experiment as many as times and individually. Students are even able to perform experiments involving sophisticated and costly equipment generally not readily available in every college. It helps to arouse the student curiosity as they can perform experiments any time and as per individual pace.

H. Talk to a Teacher

This project running at IIT, Bombay has three major components: Researchoscope (RS), Courses on view (COV) and Ask a Question (AAQ) [11]. RS is a series of Lecture under which Ph.D. scholars of IIT Bombay exhibit their work by giving talks about their research work. The video archives of talks on various subjects of science and engineering are available. The graduates speak for about 40 minutes to discuss details of his research work and also invite questions in last 10 minutes. COV project provides free access to Engineering and Science courses recorded live in the classrooms of IIT Bombay. AAQ is a one of its kind initiative in which learners can ask questions in various fields of science & engineering from faculty members of IIT Bombay. The questions can be asked during live sessions as well as offline in forum discussions. The project gives an opportunity to students from various engineering colleges to interact face to face with faculty of IIT Bombay.

I. National Digital Library (NDL)

NDL of India is free and open collection of e-books, research papers from IISc, various state education board books, and previous year question papers of UPSC/GATE/JEE exams. The books are available in English as well as in many Indian languages. Full e-books in pdf format can be downloaded and read in offline mode [12].

J. Shodhganga

Shodhganga is an online and open repository of research theses uploaded by all Indian universities [13]. It has been made mandatory by UGC to upload full thesis work of all scholars before awarding any research degree. Even synopsis and Research project proposals can be uploaded on shodhgangotri, which is also part of this initiative. The research work of Ph.D. scholars all over India is available in open repository and can be accessed freely by anyone.

K. National Knowledge Network (NKN)

NKN is multi-gigabit internet backbone for higher education and research network to aid resource sharing and multidisciplinary research [14]. Various CSIR research laboratories, atomic energy institutions, IITs/, universities and higher learning institutes are digitally interconnected via NKN, so that researchers, professors, scientists and students can work closely with each other via streaming of lectures, information sharing and collaborative research. With such seamless digital connectivity Classroom sessions, video conferences, digital library, guest lectures can be delivered to all connected institutions. NKN has the capacity to connect as many as 30,000 to 40,000 universities and laboratories all over India. Virtual classrooms are set up in all connected institutions for knowledge dissemination.

IV. CONCLUSION

Digital initiatives of Govt. have given a fillip to higher education in India. Students are getting used to e-content and its acceptability is growing day by day. As per prevailing trend various social media sites like Facebook, Twitter, Skype, etc. should be integrated within e-content to make learning more fruitful. The e-content should be translated to regional

languages so that people from every walk of life may benefit from it. The colleges in remote and rural parts should be provided with broadband connectivity and smart classrooms to embed the e-content in teaching. Teachers should be trained to be technology savvy and adapt to incorporate the e-content in university curriculum. Students should be made aware about the free availability of digital content by organizing special campaigns and promotional events.

V. REFERENCES

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