CHAPTER 2

Current status of e-Learning in India

2.1 OVERVIEW

2.2 Various initiatives taken by government of India

2.3 Initiative taken by various Non-government Stakeholders

2.4 Summing Up
2.1. Overview

India is the largest democracy with remarkable diversity among its population of more than 1.2 billion which makes up about 17% of the world’s population. Almost 70% of Indian population is rural. The adult literacy rate stands at about 60% and this is significantly lower in women and minorities. Education in India comprises of government, government aided and private institutions, of which nearly 40% are government. With the population growth rate of approximately 1.5%, there is tremendous pressure on the education system to provide quality education at affordable price and improve the literacy rate. (Upadhyay Ajay; 2009)

India has one of the largest education systems in the world. A typical Indian student is introduced to formal education at the age of five. The Right to Education (RTE) Act provides free and compulsory education for all children in the age group of six to fourteen years as a fundamental right. According to the statistics published by University Grants Commission in 2012, India is host to 6599 universities (45 central, 312 state, 173 private, and 129 “deemed to be” universities) and over 33,023 colleges. The distance education system contributed a quarter of student enrolments in the higher education system, with over 20 million students enrolled in the Indian Higher Education systems. The Education system has been changing from Vedic education system to today’s ICT enabled education. With increase in population and with change of technology, the entire education system is also changing. As per working paper no 179, (MAY 2006), higher education in India: Seizing the Opportunity; Kaul Sanat, over the last 50 years, the Government of India has provided full policy support and substantial public funds to create one of the world’s largest systems of higher education. These institutions, with the exception of some notable ones, have however, not been able to maintain the high standards of education or keep pace with developments in the fields especially in
knowledge and technology. Over time, financial constraints with exploding enrolments and a very high demand from primary and secondary education, has led to the deterioration in the financial support provided by the government. On top of this, an overall structure of myriad controls with a rigid bureaucracy has stifled its development. In terms of higher education, however, on the science and technology side, India has however built up the largest stock of scientists, engineers and technicians.

Jaiswal Vijay (2013), in his publication “Current Status of e-Learning in Indian Higher Education: A Case Study of U.P.” stated that Integration of ICTs into education at all levels has been a defining feature of education all over the world in recent years. In a rapidly changing world of global market competition, automation and increasing democratization, education must contribute to an individual’s capacity to access and apply information in the proper context. At the national level IGNOU, NCERT, CEC, DST etc. are major users of EDUSAT network for distance education, school education, higher education and science education respectively. The rapid pace of technological change offers hope that education in India can leapfrog into the new era of global knowledge at considerably less cost than the developed, industrialized countries have experienced.

National Mission on Education through Information and Communication Technology(NMEICT) has been envisaged to leverage the potential of ICT in providing high quality personalized and interactive knowledge modules over the internet/intranet for all the learners in Higher Education Institution in any-time, anywhere mode. It also plans to focus on appropriate pedagogy for e-Learning, providing facility of performing experiments through virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of Direct to Home (DTH) platforms,
training and empowerment of teachers to effectively use the technology integrated methods of teaching etc. (Government of India, Ministry of Human Resource Development, Annual Report 13-14)

As per data provided by planning commission of India through www.data.gov.in, there has been a considerable increase of educational institutes as exhibited below:

Table 2.1: Number of Higher Education Institutes in India

<table>
<thead>
<tr>
<th>Type of Institution</th>
<th>Year 07-08</th>
<th>Year 11-12</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Universities</td>
<td>19</td>
<td>42</td>
<td>23</td>
</tr>
<tr>
<td>Indian Institute of Technology</td>
<td>7</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Indian Institute of Management</td>
<td>4</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Indian Institute of Science, Education and Research</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>School of Planning and Architecture</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>National Institute of Technology</td>
<td>20</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>112</td>
<td>54</td>
</tr>
</tbody>
</table>

Despite the presence of more than 1,400,000 schools and over 3,500 diploma/degree awarding (or higher education) institutions across the country, India still lacks infrastructure in its conventional education system to serve a growing population. Distance and e-Learning programs are potential, seemingly obvious solutions to this problem.

The Indian constitutions have now provided education as a fundamental right to every citizen of the country. Access, reach and quality of education are still a mystery. The benign concept of Right to Education and unreached quality of
education could be achieved through the e-Learning. It is also important for skill and professional training to the mass. Catering to the large industrial work force need is also a challenge which could be met through this new mode educational delivery system. In recent years, the Indian government has invested a great amount of money and has put considerable effort into providing quality education and promoting new technologies to all citizens.

e-Learning access is mainly depending on internet and broadband access. India has already launched wireless broadband based on 3G and the teledensity is increasing rapidly. As per TRAI the number of Internet subscribers increased from 0.95 million in March 2000 to 22.39 million in December 2011, grown at a CAGR of 33.3 per cent. As of December 2011, this comprises of 13.35 million broadband (>=256 kbps) connections and 9.08 million narrowband. Despite such impressive growth, the share of Internet users remains a negligible fraction of India’s total population. Lack of accessibility, lack of information, lack of literacy, inconsistent power supply, and high maintenance cost of personal computers (PCs) are some of the major reasons for this phenomenon. This implies that mobile Internet access may have a substantial impact on Internet users in the country. Mobile broadband is getting increasingly popular in India similar to China, especially accessing broadband over the mobile phone. There were 431.37 million wireless subscribers in India who had subscribed to data services as of December 2011. This implies that 48.26 per cent of total wireless subscribers were capable of accessing data services/Internet at the end of December 2011. The number of wireless subscribers who have subscribed to data services has increased at the CAGR of 93.1 per cent between March 2007 and December 2011.

1. Telecom Sector in India: A Decadal Profile, 2012, published by Telecom Regulatory Authority of India
This growth rate is much higher than the growth in traditional Internet subscribers. Broadband subscription is 59.6 per cent of total Internet subscription as of December 2011. Dial-up is the most popular narrowband technology with 24.2 per cent of total Internet connections. It clearly indicates that future prospects of e-Learning in India are very good.

e-Learning is one of the thrust areas identified by the Indian government. MHRD have taken steps by permitting opening of new courses in technical institutions and providing concession to IT industry. The Department of Information Technology (DIT) is involved in the development and promotion of Information Technology and Electronics in the country.

The main thrust of the e-Learning programme is to effectively integrate e-Learning methodology and approach with the conventional classroom system to maximize the benefits flowing from the traditional education system, increase its reach to more and more learners and spread e-learning from teaching of IT related subjects to other subjects. After recommendation of National Task Force on IT and 10th Plan Working Group, DIT had initiated development projects leading academic and R&D institutions in the area of e-learning.

2.2. Various initiatives taken by government of India

There are many Government initiatives for promoting e-Learning. Initially eight projects have been funded by DIT (Background Note for Task Force on HRD in IT). These eight projects are briefed as below.

1. National Resource Centre for On-Line Learning: C-DAC, Mumbai:- Under the project a comprehensive portal for on-line learning has been set up and is accessible at http://www.ncst.ernet.in/~vidyakash. The
portal covers institutions, standards, on-line content, resource material (articles, papers, tutorials, etc), tools and development environment. The portal contains over 400 links.

2. Virtual Campus Initiative: IGNOU, New Delhi:- The PG Diploma Courses were launched under the project at IGNOU, New Delhi.

3. Developing Web based Digitized Collection for Distance & Continuing Education in Information Technology (IT) - A Demonstrative Project on the Internet Based Online Interactive Courseware: IIT, Delhi

4. India’s 1st Virtual University - a multi-modal e-learning system developed at the Birla Institute of Technology and Science, Pilani (BITS). This is CBT and Web-based E-learning systems developed in collaboration with IBM India, Distance Education Council (GoI), Ministry of Information Technology (GoI), CISCO Systems (USA) and Oxford University (UK). BITS used Web-based Learning over the Internet, Video-on- Demand over IP, Virtual Digital Library and WAP enabled Device Support for select e-Learning Services in helping the registered students

5. Development of Interactive Multimedia Information Services over a Hybrid Internet and Broadcast Digital TV Networks: IIT, Kanpur

6. Developing Web based Intelligent Interactive Tutoring (WebIIT): IIT, Delhi

7. Design and Development of Component Based Functionality to e-learning tools: C-DAC, Hyderabad

8. Multimedia Digital Distance Education for IT & Other Critical Technologies: School of Education Technology, Jadavpur University

National knowledge commission has also shown its concern for implementation of ICT based educational projects. The country has already initiated massive projects to explore the potential of e-Learning.
Snapshot of Government initiatives taken to promote e-Learning is given below:

<table>
<thead>
<tr>
<th>Government Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPTEL</td>
</tr>
<tr>
<td>Virtual Labs</td>
</tr>
<tr>
<td>Talk to a Teacher</td>
</tr>
<tr>
<td>Spoken Tutorial</td>
</tr>
<tr>
<td>Consortium for Educational Communication</td>
</tr>
<tr>
<td>Digital Library Inflibnet</td>
</tr>
<tr>
<td>Quantum-Nano Centre</td>
</tr>
<tr>
<td>ERP Mission Brihaspati</td>
</tr>
<tr>
<td>ISLERS</td>
</tr>
<tr>
<td>OSCAR</td>
</tr>
<tr>
<td>FOSSEE</td>
</tr>
<tr>
<td>e-Kalpa</td>
</tr>
<tr>
<td>Robotics for Education</td>
</tr>
<tr>
<td>Pedagogy Project</td>
</tr>
<tr>
<td>Virtual Learning Environment</td>
</tr>
<tr>
<td>Text Transcription</td>
</tr>
<tr>
<td>OSS for Maths Edu</td>
</tr>
<tr>
<td>SOS Tools</td>
</tr>
<tr>
<td>Integrated National Knowledge Network (iNKN)</td>
</tr>
<tr>
<td>IGNOU e-Learning initiatives</td>
</tr>
<tr>
<td>NMEICT</td>
</tr>
<tr>
<td>Sakshat Portal</td>
</tr>
<tr>
<td>IITM-K Initiatives</td>
</tr>
<tr>
<td>EDUSAT (Educational Satellite)</td>
</tr>
<tr>
<td>VTU e-Learning Framework</td>
</tr>
<tr>
<td>Initiatives taken by Jadavpur University</td>
</tr>
<tr>
<td>Initiatives taken by Aligarh Muslim University</td>
</tr>
<tr>
<td>Central Institute of English and Foreign Language, Hyderabad</td>
</tr>
<tr>
<td>NIC e-Learning Portal (<a href="http://elearning.nic.in">http://elearning.nic.in</a>)</td>
</tr>
<tr>
<td>MOOCs</td>
</tr>
</tbody>
</table>
Various projects which have been undertaken by Indian Government for implementation of e-Learning are described as follows:

1. NPTEL (National Programme on Technology Enhanced Learning)

NPTEL provides E-learning through online Web and Video courses in Engineering, Science and humanities streams. The mission of NPTEL is to enhance the quality of Engineering education in the country by providing free online courseware.

The NPTEL (National Programme on Technology Enhanced Learning) was initiated in 1999 and funded by govt. of India MHRD (Ministry of Human Resource and Development). The project was started with 7 IITs (Indian Institutes of Technology) and IISc (Indian Institute of Science) Bangalore. It was estimated to be Rs 20.5 crore project and had to create 112 video courses and 116 web based courses between 2003 to 2006.

As per project document of NPTEL, Five branches of engineering (Civil, Electrical, Electronics and Communication, Computer Science and Engineering, and Mechanical) were addressed in the first phase. The primary target group is students and faculty of institutions offering undergraduate engineering programs.

The following actions have been taken towards the deployment of the web and video courses for the benefit of students, teachers and professionals.

- Host the e-content on a web site that students have free access to.
- E-content can be made available in the form of CDs/DVDs.
- Colleges will be encouraged to host these materials on one of their servers and allow students to access.
• E-content can be converted into print form and then distributed at a low cost. But this format will not allow the flexibility of e-material, where one can navigate from one point to the other in a module, and also, when the courses contain animations or interactive templates or both.

Some or all of the following simple course management features are being introduced, namely

• Keeping track of the extent of usage of the material (feedback for the project)
• Collecting feedback, from both students and faculty, on the content
• Answering specific queries on the subject.

Current status of NPTEL project (As during Feb 2015)

NPTEL Website - http://nptel.ac.in

860+ Courses

200 Million + page views
Diagram 5: Current status of NPTEL project (As during Feb 2015)

- NPTEL Channel in YouTube - [https://www.youtube.com/user/nptelhrd](https://www.youtube.com/user/nptelhrd)
- More than 18210 Videos
- Lakh+ subscribers!
- More than 120 Million views!
- NPTEL - Most viewed Educational Channel!
First phase of the project has been completed and in this phase course materials for approximately 125 web courses have been developed and are accessible freely through the website http://nptel.iitm.ac.in. Approximately 110 video lecture has been developed and uploaded on the portal. Both the web and video courses cover five major engineering disciplines and the core science curriculum that all engineers must have.

The content generation is spread across all eight institutions. The video content is available in MPEG-4 format with a bit-rate of 512 kbps with H.264 compression for streaming through the Internet. They are accessible freely through the YouTube channel http://www.youtube.com/iit. Web contents and access to embedded video lectures from you tube are available free of cost through the website http://nptel.iitm.ac.in.

Second phase of NPTEL has already been announced on 11th June 2010 with more number of courses and discipline. As per the Times of India report dated 26th Dec 2010, the NPTEL is soon going to be virtual university. The report further says that It’s among the most popular educational programs on the internet, registering more than four million hits across 17 countries, and now poised to turn into a virtual university. The online initiative started by the seven IITs and IISc to enhance engineering education through virtual classrooms will soon be expanded by adding more courses, even physical infrastructure, and by granting degrees and diplomas. The National Programme on Technology Enhanced Learning (NPTEL), which got under way in 2003 with web and video content to support engineering students nationwide, will next year see increase in number of disciplines taught from five to 20, and the number of virtual courses offered will go up from 260 to 1000.
2. **Virtual Labs**

**Salient Features of the Virtual Labs are as follows:**

- Modeling the physical phenomenon by a set of equations and carrying out simulations to yield the result of the particular experiment. This can, at-the-best, provide an approximate version of the ‘real-world’ experiment.

- Providing measured data for virtual lab experiments corresponding to the data previously obtained by measurements on an actual system.

- Remotely triggering an experiment in an actual lab and providing the student the result of the experiment through the computer interface. This would entail carrying out the actual lab experiment remotely.

- Virtual Labs will be made more effective and realistic by providing additional inputs to the students like accompanying audio and video streaming of an actual lab experiment and equipment.

- For the ‘touch and feel’ part, the students can possibly visit an actual laboratory for a short duration.

**The objectives of the project are as below**

1. To provide remote-access to Labs in various disciplines of Science and Engineering. These Virtual Labs would cater to students at the undergraduate level, post graduate level as well as to research scholars.
2. To enthuse students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.

3. To provide a complete Learning Management System around the Virtual Labs where the students can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self evaluation.

4. To share costly equipment and resources, which are otherwise available to limited number of users due to constraints on time and geographical distances.

3. **Talk to a Teacher**

A-VIEW is part of Talk to a Teacher program coordinated by IIT Bombay and is funded by the Ministry of Human Resource Development (MHRD) under the Indian Government’s National Mission for Education using Information and Communication Technology (NME-ICT) along with various other projects in Virtual Labs, Haptics and Natural Language Processing. A-VIEW is now deployed at several IITs, NITs and other leading educational institutions across the nation.

A-VIEW (Amrita Virtual Interactive e-Learning World) is an award winning indigenously built multi-modal, multimedia e-learning platform that provides an immersive e-learning experience that is almost as good as a real classroom experience developed by Amrita e-Learning Research Lab. It is a part of Amrita Vishwa Vidhyapeetham, one of the fastest growing institutions of higher learning in India and address the most pressing issue of higher education in India – the shortage of highly qualified teachers.
4. **Spoken Tutorial**

The Spoken Tutorial project is the initiative of the ‘Talk to a Teacher’ activity of the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India. (The Spoken Tutorial project is being developed by IIT Bombay for MHRD, Government of India)

The spoken Tutorial Project aims to make spoken tutorials on FOSS available in several Indian languages, for the learner to be able to learn in the language he/she is comfortable in. Its goal is to enable the use of spoken tutorials to teach in any Indian language, and to be taught to learners of all levels of expertise- Beginner, Intermediate or Advanced.

5. **Consortium for Educational Communication**

Annually Consortium for Educational Communication (CEC) organizes Video Competition and Prakriti. Prakriti is an annual film festival on environment, human rights & development. Video Competition is an annual competition meant to nurture within media centres and other educational institutes in the country. CEC regularly organize various capacity building programs, technical & production related trainings, workshops on issue concerning to media, web enabled learning, production strategies, administration & accounts etc. National & International conventions, conference in the field of education and communication are the main academic events organized by CEC.

6. **Digital Library Inflibnet**

The UGC-Infonet Digital Library Consortium was formally launched in December, 2003 by Honorable Late Dr. A. P. J. Abdul Kalam, the then President of India, soon after providing the Internet connectivity to the
universities in the year 2003 under the UGC-Infonet programme. The Consortium proved to be a recipe to university libraries which have been discontinuing subscription of scholarly journals because of "Serials Crisis". The term "serials crisis" refers to exponential and continuing increase in subscription cost of scholarly journals. The crisis is a result of rise in cost of journals much faster than the rate of inflation, increase in number of journals and the paucity of funds available to the libraries.

The Consortium provides current as well as archival access to more than 7500+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines. The programme has been implemented in phased manner. In the first phase that began in 2004, access to e-resources was provided to 50 universities who had Internet connectivity under the UGC-Infonet Connectivity programme of the UGC. In the second phase, 50 more universities were added to the programme in the year 2005. So far 209 Universities including 14 National Law schools and central universities that come under the purview of UGC, have been provided differential access to subscribed e-resources. These e-resources covers almost all subject disciplines including arts, humanities, social sciences, physical sciences, chemical Sciences, life sciences, computer sciences, mathematics and statistics, etc. The programme is wholly funded by the UGC and executed by the INFLIBNET (Information and Library Network) Centre, Gandhinagar.

The benefit of subscription to e-resources would also be extended to the colleges, to begin with the College for Potential with Excellence (CPE) and autonomous colleges. The Consortium has also launched its "Associate Membership Programme" wherein private universities and other research organizations are welcomed to join the Consortium for selected e-resources.
7. **Quantum-Nano Centre**

The Quantum-Nano Centre is a multidisciplinary centre at Dayalbagh Educational Institute, Agra set up under MHRD National Mission on Education through ICT, with partners including IIT Kanpur, IIT Delhi and IIT Madras, besides several international collaborators. With a focus on the rapidly growing area of quantum-nano computing and quantum information sciences, the Quantum-Nano Centre provides an environment for scientists and mathematicians to explore the fundamental physical characteristics of quantum systems, to devise and implement prototype quantum computers, and to develop quantum algorithms and novel applications. Through a vigorous program of lectures, seminars, and workshops, the Centre stimulates intellectual exchange among students, faculty, and academic partners.

Mission of the project is to aggressively explore and advance the application of quantum-nano systems to a vast array of relevant information processing techniques. It will be accomplished by creating a truly unique environment that fosters cutting-edge research and collaboration between researchers in the areas of computer science, engineering, mathematical, chemical and physical sciences.

8. **ERP Mission Brihaspati**

The software developed by IIT Kanpur. It is the open platform of learning. It is the java servlets based content delivery system. Administrator (admin) is the main authority of Brihaspati. The software is free of cost. We can enter in to Brihaspati as a student, instructor & admin mode. Guest can enter direct to Brihaspati but the instructor & student account is created by the admin. Brihaspati provides the features of glossary, calculator, and the login & password of guest is guest. Every instructor is independent to register student in their specified course. Instructor & student have their unique password of
login. Brihaspati gave full freedom both to the instructor & Student to come in contact with each other through Mail, chat etc.

9. **ISLERS**

This project is aimed to develop an automatic Indian Sign Language education and recognition platform for hearing impaired students of India. The system can substantially help in the primary/vocational/higher education of hearing impaired students and people of India. The framework is proposed to be extended to 14 different languages of India with extensive interactive features in the audio-visual mode. Another important aspect of the project is that, the proposed interactive system will be able to recognize different hand/body gestures of Indian Sign Language and the system can give the interpretation of the recognized gestures in the form of some text messages displayed in the computer monitor along with audio interpretation.

10. **OSCAR**

The main goal of Project OSCAR (Open Source Courseware Animations Repository) is to build a large repository of web-based, interactive animations and simulations, referred to as learning objects (LOs), for teaching and learning concepts in science and technology. These could be useful not only for a classroom environment but also for enabling independent learning and distance education.

The current goal is to develop LOs for topics in various subjects at the Undergraduate and Postgraduate levels. An auxiliary goal of Project OSCAR is to provide training opportunities to students in developing LOs, managing the back-end of the repository, and conducting educational research.
11. **FOSSEE**

FOSSEE project is part of the *National Mission on Education through ICT* with the thrust area being "Adaptation and deployment of open source simulation packages equivalent to proprietary software, funded by MHRD, based at the Indian Institute of Technology Bombay (IITB).

Activities undertaken in this area are:

1. Promoting the use of open source/free software through workshops and other publicity.
2. Creating educational content around existing open source softwares
3. Promoting the use of open source softwares in audio/video courses and virtual labs, the other thrust areas of this mission.
4. Creating documentation, books and courses in the area of open source software
5. To take necessary steps to include open source software in the syllabi of various universities.

12. **e-Kalpa**

This project on 'Creating Digital-learning Environment for Design' also called 'e-kalpa' is sponsored by the Ministry of Human Resources, Government of India as part of the National Mission in Education through Information and Communication Technology.

This project presents three initiatives – providing digital online content for design, a social networking environment for design and higher learning and creating a digital resource database on design. The proposal would focus on knowledge accumulation, storing and dissemination and education in four sectors - University, Industry, Government and the Informal sector.
The overall objective is the creation and development of new learning environments related to design that will provide greater access and enhancement to acquisition of critical knowledge, skills, and abilities for economic and social development in our country.

These initiatives will be based on the use of information and communications technology.

This initiative 'e-kalpa' will be collaboratively developed by the three institutions - IDC at IIT Bombay, NID at Bangalore and DOD at IIT Guwahati along with the support of other design related institutions’ and organizations.

13. **Robotics for Education**
This work started with the funding received from MHRD under NMEICT for the project “Robotics for Education”. The main purpose of this project is to develop state-of-the-art robotic platforms which could be used for imparting robotic education to Indian students. We aim to develop platforms for research and development. Using open-technology and open-source platform is one of the main focus for our research. We believe that the information must be disseminated and inspire people to solve more complex problems. We can gain more through collaboration rather than competition. Through this venture, we also aim to form a robotic network in the country, thereby accelerating the research and development work in the country.

14. **Pedagogy Project**
This project is an experiment to systematically design and develop learner-centric curricula, suitable for outcome-based learning for 4 year degree programs in six major engineering disciplines. This project is NOT, yet another attempt to develop content, although each curriculum document is expected to include around 80 pages of course notes and 120-125 self assessment problems
and solutions. All development and review activities will be carried out collaboratively, using a specially designed web tool. A large number of motivated and experienced faculty members trained in pedagogy of teaching-learning, drawn from a diverse range of institutions across the nation are expected to participate in the development and the review process. The decision to involve such a wide section of faculty experts across India is deliberate, mainly to enhance acceptance and ownership.

15. **Virtual Learning Environment**

VLE, an online environment of e-resources caters to several disciplines taught at undergraduate and postgraduate level. It is an initiative of Institute of Life-Long Learning, University of Delhi. Conceived in 2012, VLE today boasts state of art material that addresses emerging needs of a diverse student body, not only of Delhi University but other universities as well. Drawing from several successful Moodle models, the multi-media interactive contents loaded on VLE are categorized discipline-wise.

The lessons are developed by highly qualified faculty members across the universities and are continually edited and reviewed, primarily by discipline-expert Fellows employed to edit, oversee and coordinate the content. The content goes through several levels of rigorous peer reviewing and academic vetting to ensure quality and standardization. VLE also contains multimedia repository in form of audio, video and short films to expose students to new technologies in pedagogy.

16. **Text Transcription**

The main objective of ICT text transcription project is to create accurate text transcriptions of all NPTEL video lectures in engineering sciences from Phase I and other metadata for video indexing and searching.
Approximately 70,000 print pages (A4) will be made available for online access from 5,000 hours of NPTEL video lectures. The text files will be certified by the faculty who developed the video courses.

17. **OSS for Maths Edu**

Project consists of organizing four workshops (5 days) for popularization of Open Source Mathematical Software at the National level in the educational field. The aim of the workshops will be to familiarize the participants to Mathematical Software for teaching and learning of Mathematics.

Bhaskaracharya Pratishthana has vast experience of organizing such National workshops in the field of Mathematics, in an efficient manner and the institute has organized many such workshops earlier on LaTeX and Mathematical Software. More information about the institute is available at www.bprim.org

There will be 30-50 participants for each workshop. The workshops will deal with the Open Source Mathematical software such as Scilab, LaTeX, Gap, Maxima, Geogebra, Sage, etc.

18. **SOS Tools**

Software and simulation packages are useful tools for the analysis of systems and solving problems by the students of Science, Social Science, Engineering, Management and related disciplines. Many commercial software packages are available for the above. But many of these software packages are quite costly and require yearly license fee for updates and maintenance. Many open source softwares are available which can perform similar functions but are not user friendly and do not have proper documentation. Beside these, adequate manpower to teach students to use these packages is not available.
The objective of this project is to develop software tools for analysis of systems and computations, create adequate manpower to teach students to use open source software and to develop simulation tools. The developed software should be user friendly and properly documented. Such packages, tailored to suit the needs of our students will be ported on Sakshat for making freely available to any student, teacher or institution willing to use them.

19. **Integrated National Knowledge Network (iNKN)**
It was initiated to build a “technology backbone” of the country. The main features of the iNKN projects are:-

- High Capacity, Highly Scalable Backbone Provide Quality of Service (QoS) and Security
- Wide Geographical Coverage
- Bandwidth from Many NLD’s
- Highly Reliable & Available by Design
- Test beds (for various implementation)
- Dedicated and Owned.
- Connectivity for International & other global R&D Networks

20. **IGNOU e-Learning initiatives**
Indira Gandhi National Open University (IGNOU) provides multi-channel, multiple media teaching- learning packages in the form of self-instructional print and audio/video materials, radio and television broadcasts, face-to-face counseling/ tutoring, laboratory and hands on experience, video conferencing, interactive radio counseling, interactive multimedia CD ROM and internet based learning. IGNOU is pioneer organization for implementation of e-Learning to cater its gigantic learner base across the country. It has launched several online programs. Some of IGNOU e-Learning initiatives are mentioned below:
(a) Egyankosh

Indira Gandhi National Open University started the knowledge repository in October, 2005. It started to store, index, preserve, distribute and share the digital learning resources developed by the ODL institutions in the country. It is named as e-GyanKosh and can be accessed with www.egyankosh.ac.in. Today e-Gyankosh has emerged as one of the world`s largest educational resource repositories, and the access is free. Over 95% of the selfinstructional print material (40,000 volumes) of IGNOU has already been digitized and uploaded on the repository. Over 1600 video programs are being provided through a special channel of IGNOU in YouTube with the metadata link in the repository. The repository also has a wiki for collaborative content generation and a blog for discussion on various issues, ideas and thoughts.

(b) Educational Broadcast

Live educational programs are available through the webcasting platform which may be accessed with www.ignouonline.ac.in/Broadcast. At present available broadcast channels are Gyan Darshan-1, Gyan Darshan-2 simulcast with EduSat, and Gyan Vani (Delhi). The platform supports multiple operating systems, processors and devices. The user has options to select from VLC, Windows Media or Flash players with a multiple bandwidth support ranging from 100 Kbps to 256 Kbps. After its public launch in June 9, 2008, the site has already received over 6,80,000 hits, with an average of 1,000 visits per day from all over the world. There are 60,000 active registered users of the repository. The statistics clearly indicate the growing popularity.
(c) Online Programs

IGNOU has developed an in-house e-learning platform for delivery of online programs. Seventeen major online programs have been launched by the University using this platform. The platform provides a complete Virtual Learning Environment (VLE) covering all the activities, from registration to certification.

(d) Flexilearn

The facilities of e-GyanKosh have now been extended with the FlexiLearn platform, which was launched on November 19th, 2009 by the Honourable President of India, on the occasion of the launch of the silver jubilee year of the University. The FlexiLearn website (www.ignouflexilearn.ac.in) is a personal learning space, where free learning resources are integrated with a learning management system for anyone who wants to learn, whatever their educational needs and experience. Anyone can register and explore courses free of cost. However, certification for the courses will be based on payment of the requisite fees.

21. National Mission on Education through Information and Communication Technology (NMEICT)

The Government of India has launched the National Mission on Education through Information & Communication Technology (NMEICT) to provide high quality, high definition interactive video courses & E-content for various under-graduate and post-graduate courses. Under the NMEICT connectivity is proposed to be provided to Universities and colleges which at present number 504 and 25000 respectively for the purpose. The Mission is also necessary to sustain a high growth rate of our economy through the capacity building and knowledge empowerment of the people and for promoting new, upcoming multi-disciplinary fields of knowledge.
22. Sakshat Portal

The Ministry of Human Resource Development has designed an education helpline named ‘Sakshat’. It is perceived to be a single stop education portal for addressing the needs of students, scholars, teachers and life-long learners. It is a free portal launched by the Hon’ble President of India on 30th October 2006.

The website can be accessed at the following urls

- http://www.sakshat.ac.in
- http://sakshat.ignou.ac.in/sakshat/index.aspx
- http://sakshat.gov.in

The education portal can be accessed through broadband internet connectivity. The Virtual Class components and other log-in based features can also be accessed by logging in as user id guest1 and password guest1 on site No 1 and 2 and using user id guest and password guest on the site no 3.

23. The Indian Institute of Information Technology and Management – Kerala

(IITM-K) promotes higher education through its IT facilitated education programs and services. Among several activities, IITM-K provides multimedia authoring and content generation facilities for the development of quality e-courseware, targeting higher education and professions.

24. EDUSAT (Educational Satellite)

Indian Space Research Organization has pioneered the use of front line space based communication technologies in the field of education and development. ISRO launched EDUSAT, a satellite meant exclusively for the education sector and the world's first satellite meant only for educational purposes on September 20, 2004. The satellite-based interactive narrow casting network has one-way video and two-way audio facilities. The network is capable of data
transfer from the teaching end to the remote classrooms. The data includes lecture notes, courseware, presentation material, exercises etc. The network consists of three major elements: teaching end, remote receiving sites called classrooms and spacecraft. (http://elearning.vtu.ac.in/edusat_bde.htm)

25. **VTU e-Learning Framework**
In the proposed Visvesvaraya Technological University project (VTU-EDUSAT), the network infrastructure will be used for the delivery of “live” video-based lecture sessions. The subject experts use presentation content, which is derived from the deployed e-Learning content. Such video sessions would be captured, digitized and linked to become part of the overall e-Learning content.

26. **Initiatives taken by Jadavpur University**
It started a new inter-disciplinary “Masters in Multimedia Development” course in 2000-01 as a distance education course using print material, CD ROM, and web-based learning environment. Technology was provided by CDAC Kolkatta and CMC.

27. **Initiatives taken by Aligarh Muslim University**
It worked on a project in 2006-07 to take its distance education program online, starting with a few courses which are industry-relevant.

28. **Central Institute of English and Foreign Language, Hyderabad**
It had a project for online learning software set-up and usage in 2006.

29. **NIC e-Learning Portal (http://elearning.nic.in)**
NIC is in the process of offering full-fledged e-learning, which utilizes various electronic media to fully or partially deliver trainings. It has the advantage of
allowing learners to monitor their pace and, in the same single window, have access to a repository on various latest technology areas.

30. **Massive Online Open Courses (MOOCs)**

India has recently announced its own MOOCs platform Swayam. Countries premier institutions have intended to offer courses on this platform. India is already the second biggest market (next to the United States) for MOOCs. The three top US-based MOOCs — Coursera, Udacity and EdX — now have a large proportion of Indian students.

MOOCs and blended learning programs figure prominently in the “Higher Education in India: Vision 2030” prepared by Ernst and Young for the Government of India. One of its recommendations reads as follows: “Promote continuing education for working professionals and introduce blended learning model using Massive Open Online Courses (MOOCs)”. The Government of India, on its part, has ensured that all distance/ online learning programs awarded by universities in India are recognized on par with regular, full-time degrees. In 2014, more funding is expected to be allocated by the government for “virtual classroom projects” across the country.

2.3. **Initiative taken by various Non-government Stakeholders**

Products, CHENNAI (DEVELOPMENT CENTRE), Zenith Global (e-learning), Aptech, Anim Graphix Pvt.Ltd, are showing keen interest in collaborative projects with educational organization for online distance education.

Snapshot of Non-Government initiatives taken to promote e-Learning is given below:

<table>
<thead>
<tr>
<th>Non Government Initiatives</th>
<th>Liqvid e-learning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NIIT: <a href="http://www.niit.com">www.niit.com</a></td>
</tr>
<tr>
<td></td>
<td>Educomp Solutions</td>
</tr>
<tr>
<td></td>
<td>Everonn: <a href="http://www.everonn.com">www.everonn.com</a></td>
</tr>
<tr>
<td>Hughes Global Education:</td>
<td><a href="http://www.hugheseducation.com">www.hugheseducation.com</a></td>
</tr>
<tr>
<td>24/7 Learning: <a href="http://www.24x7learning.com">www.24x7learning.com</a></td>
<td>eAbyas Solutions: <a href="http://www.eabyas.in">www.eabyas.in</a></td>
</tr>
<tr>
<td>Enable Mobile Technologies Pvt Ltd (Enable M):</td>
<td><a href="http://www.enablem.com">www.enablem.com</a></td>
</tr>
<tr>
<td>All India Management Association (AIMA):</td>
<td><a href="http://www.aima.in">www.aima.in</a></td>
</tr>
<tr>
<td>Talentedge: <a href="http://www.talentedge.in">www.talentedge.in</a></td>
<td>Amrita Vishwa Vidyapeetham</td>
</tr>
<tr>
<td>Gurukul Online Learning Solutions (<a href="http://www.gurukulonline.co.in">http://www.gurukulonline.co.in</a>)</td>
<td>SIFY, <a href="http://www.sifyelearning.com">http://www.sifyelearning.com</a></td>
</tr>
</tbody>
</table>
Various initiatives undertaken by private key players in the Indian e-Learning scenario are described below:

1. **Liqvid e-learning**
   English Edge: www.liqvid.com / www.englishedge.in partnered with BBC and is one of the largest providers of a computer based English language program. They have just had a fresh round of funding and are betting big on MOOCs in India.

2. **NIIT: www.niit.com**
   The largest private provider of IT programs in India, NIIT has just set up a university of their own.

3. **Educomp Solutions: www.educomp.com**
   Pioneers and one of the largest players in the K-12 space in India, Educomp is one of the very few education companies to be traded on Indian stock markets.

4. **Everonn: www.everonn.com**
   A very large education company and one of the few to be traded on the Indian stock market. Everonn has been in the news as a result of merger talks with GEMS Education and Bharti Centum, two other major players.

5. **Hughes Global Education: www.hugheseducation.com**
   Pioneers in V-SAT education in India, Hughes is popular for their varied executive management programs, which lead to certification from some Indian Institutes of Management (IIMs).
6. 24/7 Learning: www.24x7learning.com
Established in 2001, 24/7 Learning are the pioneers of e-Learning in India, particularly in the corporate training segment.

7. eAbyas Solutions: www.eabyas.in
Moodle partners in India, eAbyas Solutions is a relatively new entrant which shows great potential.

This is winners of the ‘Best Mobile Education or Learning Product or Service’ category at the 2014 Global Mobile Awards, Geneva and a leading mobile learning content provider.

9. All India Management Association (AIMA): www.aima.in
A relatively new entrant in the e-learning segment, AIMA are pioneers of distance learning in the non-university sector, AIMA is the publisher of the well-accepted Management Aptitude Test (MAT), used as a screening test in many leading Management Institutions in India.

10. Talentedge: www.talentedge.in
Graced with enterprising leadership open to new ideas, Talentedge acquired Karrox, and turned e-learning and blended learning into a successful business model.

11. Amrita Vishwa Vidyapeetham
This initiative launched in 2004 uses satellite technology to connect 4 campuses of Amrita University located in 4 cities of South India. There is a collaboration with US universities also, and the project was “expected” to expand to 200 universities. It was based on technological support from ISRO.
12. **Gurukul Online Learning Solutions** (http://www.gurukulonline.co.in)

Gurukul Online Learning Solutions™ (GOLS) offers specialized solutions in all spheres of elearning strategy consulting, synchronous and asynchronous learning, deployed blended learning, content development and off-the-shelf courseware(s). Several years of in-depth research has gone into the making of GOLS’s products, giving them that cutting-edge advantage.

13. **SIFY** (http://www.sifyelearning.com)

SIFY provides high quality learning services helping their clients maximize employee productivity, proficiency and satisfaction while managing training costs and risks. With strong focus on creating custom content, mobile learning, globalization and learning infrastructure services, Sify is poised to provide end-to-end e-Learning services to all. Leading organizations across many industries use their services to minimize training costs and increase employee productivity.

14. **Net Varsity** (http://www.netvarsity.com)

NIIT Limited, the IT training pioneer, offers Learning and integrated e-Learning Solutions to individuals and global corporations. NIIT trains over 500,000 students annually through a network of nearly 3500 centersspread across 33 countries.

15. **WIPRO Technologies** (http://www.wipro.com)

Wipro has recently launched the Virtual Learning or eLearning initiative where employees can ask for course materials and learn at their own pace. For those working in Japanese projects, Wipro has introduced Shimpo, a program for learning the Japanese language and culture. Wipro currently has six ‘Learn-while-you-Earn’ programs for working employees to stay on top in technical knowledge and skills sets in emerging technologies. As far as university level e-learning is concerned, there are some sporadic attempts made by some universities.
2.4. Summing Up

The Indian private sector has embarked on initiatives to provide e-learning courses. Several initiatives have already been taken by Indian Government to cater the educational need of vast population of the country through e-Learning. Looking in to the e-Learning market of India private players has also invested huge funds in it. The National Institute of Information Technology (NIIT) set up Net Varsity in 1996. Amity University, India’s largest private university has developed its own range of online degree programs that are currently priced around CAD 2,700 and are available in over 80 countries.

In line with the recommendations of National Task Force on IT and 10th Plan Working Group, DIT had initiated development projects leading academic and R&D institutions in the area of e-Learning.

Indian learners have taken to MOOCs and other forms of e-learning in a big way. With well-established and highly prestigious domestic brands like Indian Institutes of Management and Indian Institutes of Technology introducing e-learning programs of their own or joining large global e-learning conglomerates, credibility issues around e-learning may become an outmoded concept within a short period of time.

With the Government initiatives, e-governance as a whole and e-learning in particular is expected to take off in a big way. It is already promised to “use technology to deliver low cost quality education to specially-abled students 'in-home' – through E-learning” and that it would “set up Massive Open Online Courses (MOOC) and virtual classrooms to make it convenient for working class people and housewives to further their knowledge and qualifications”.

53
Considering all these facts, it is understandable that the period between now and 2020 will be one of the most defining ones for higher education and e-learning in India. This period will belong to bold and enterprising businesses, the innovative yet cost-effective ideas and the persistent and patient investor.

--------------------------