

## E-CONTENT DEVELOPMENT: INDIAN INITIATIVES

Dr. S. Senthilnathan (Lecturer, Department of Educational Technology, Bharathidasan University, Tiruchirappalli – 620 023, Tamilnadu, India.)

### ABSTRACT

Ever since the buzz letter ‘e’ got tagged to the word ‘learning’, the world of education has witnessed a plethora of ICT initiatives with varying degrees of success. Thanks to the far-sighted approach that India followed in the field of Information Technology, world’s best information technologists are available in the country and state-of-the-art facilities in terms of technologies and infrastructure, comparable with the most advanced countries are available to Indian teachers and students. E-content development is a major task before the teachers and content developers and the need for the same is more pronounced in India to provide quality education to 8.8 million students in 348 universities and 17,695 colleges across the country. In this regard, the Indian subcontinent has witnessed a considerable number of efforts to create e-content as well as to build the capacity of the teaching community for content creation. The most important ones are the efforts of the Consortium for Educational Communication of the University Grants Commission through the 17 Educational Multimedia Research Centres and the National Programme on Technology Enabled Learning through the Indian Institutes of Technology. This paper attempts to provide an account of these initiatives against the backdrop of India’s fast expanding IT infrastructure and the current e-readiness.

### 1. INTRODUCTION

The developments in Information and Communication Technology (ICT) that have been taking place during the last two decades have led to a metamorphosis of processes and practices in almost all spheres of human endeavour. New Information and Communication Technologies have revolutionized the nature and pace of human interaction across the world which is increasingly assuming the contours of a ‘global village’. ICTs can empower individuals and communities to interact and access knowledge locally and globally, thus empower them to learn, build capacity, drive and integrate development activities and adapt over time. ICT plays three fundamental roles: first, as an infrastructure for accessing information and sharing knowledge at any time from anywhere and at low cost; second, as a disruptive and transformative technology that is reshaping all types of processes and sectors of modern and traditional economies; and third, as an infrastructure for connecting people and enabling stakeholders to communicate and organise as well as access timely and relevant information and thus empower them to have voice, build capacity. learn and act. ‘Information society’ and ‘knowledge economy’ are the

visions of what is possible or enabled by ICT. Other equally relevant terms may be connected economy and learning society. The challenge has been and is how to operationalise these visions. The unprecedented advances in the field of ICT have impacted the field of education more than any other field. “Rapid advances in Information and Communication Technology have created unprecedented opportunities in the field of education and have had a profound effect on the way teachers teach and how learners learn. Mastering ICT skills and utilising ICT towards creating an improved teaching and learning environment is of utmost importance to teachers in creating a new learning culture” (Molly Lee 2005). With the speed at which technology is changing the world, it is impossible to imagine education in the year 2020 not being immersed in technology. As the new millennium unfolds itself, most people are by now aware that we are in the midst of one of the most dramatic technological revolutions in history that is changing everything, the way in which we work, communicate, transact business, spend our leisure time and what not. The technological revolution centres on computer, information, communication and multimedia technologies, is often interpreted as the beginnings of a knowledge or information society, and therefore ascribes education a central role in every aspect of

life. This great transformation poses tremendous challenges to educators to rethink their basic tenets, to deploy the media in creative and productive ways, and to restructure education to respond constructively and progressively to the technological and social changes that we are now experiencing, as “teachers are the central forces in tapping the learning opportunities created by ICT” (Majumdar 2004).

## **2. THE REVOLUTIONIZED EDUCATION SCENE IN INDIA: FROM GURUKULA TO EGURUKUL**

In recent years, the US, Japan and many of the European nations have become information societies, described as countries in which information workers are more numerous than such occupational categories as farmers, industrial workers, or service workers. India as a nation is still far from becoming an information society with 25 percent of workers in service occupations, 60 percent of them in farming and 15 percent in factories. However, of those in the service occupations, tens of millions are information workers. India has more information workers than Japan, and about the same number as the US. Thus, India has an information society within this nation of approximately one billion people. India is making remarkable progress towards development through the informatization strategy, the process through which communication technologies are used as a means of furthering socio-economic development. There will be more than one billion personal computers in use worldwide by the end of 2008 according to a new report ‘Worldwide PC adoption forecast 2007 to 2015’ from Forrester Research. The report added that while it took 27 years for first billion PCs, the next billion is likely to come within next five years. The emerging Brazil, Russia, India, and China (BRIC) market will account for more than 775 million new PCs by 2015. India’s Internet population is expected to cross 100 million by 2007-08, up from 38.5 million in 2005-06. The recent Nasscom-McKinsey report has predicted that India can build a \$17-billion web-enabled industry by 2008. Some time between 2008 and 2010, annual export revenues from India’s information technology (IT) sector are predicted to hit \$50 billion. The revenue earned worldwide from

e-learning was \$6 billion in 2003 which is expected to rise to \$21 billion by 2008. Nasscom reports that Indian companies would get revenues of \$7 million to \$9 million by end-2005. Given India’s strengths in the ICT and software sectors, an array of innovations and experiments are underway for utilizing these tools and technologies to overcome educational challenges. A high-powered IT Task Force was set up in 1998 to break India’s shackles and make her “a Global IT Superpower and a front-runner in the age of Information Revolution”. It formulated India’s National Informatics Policy. The Task Force’s first report, IT Action Plan, consisting of 108 recommendations suggests “revisions and additions to the existing policy and procedures for removing bottlenecks and achieving a pre-eminent status for India”. The second report, referred to as a Basic Background Report on IT Hardware Development, Production and Export calls for a paradigm shift in the IT hardware industry so that it “can survive the future shock of fast changing prices, technological obsolescence and an ever-expanding horizon of highly innovative industry” in order to make India the “number one provider of IT products” in the world. The report IT Action Plan has a section on operation knowledge, consisting of 29 recommendations. Recognising that IT is a “frontier area of knowledge and a critical tool for assimilating, processing and productivising all other spheres of knowledge”, it calls for a national campaign for universal computer literacy. The report talks about strengthening IT programs in various universities and about starting SMART schools in each State. A provision for INR 502 crores has been made for the National Mission for Education through ICT under which all institutions of higher learning would be networked through broadband connectivity. A substantial proportion of this money would be used to network institutions of higher educations and research and for developing e-content. E-content would be developed and made available through the Internet, Cable TV networks and Direct-to-Home (DTH) systems. The University grants Commission (UGC) had been given a Plan Budget of 1269 crore in 2006-07, itself a substantial increase of over 68% over 2005-06 allocations. As one of the largest higher education systems in the

world with 8.8 million students in 348 universities and 17,695 colleges across the country, the Indian higher education system stands well poised and digitally empowered for phenomenal growth in every sphere of its functioning. The ICT initiatives in the arena of Indian education are taking new shapes, thanks to the launch of Edusat, India's first thematic satellite dedicated exclusively for education. With the successful launch of Edusat on 20th September 2004, the Indian sub-continent earned a unique position among the countries of the world as the only nation with an exclusive satellite dedicated for education. Edusat will contribute to the dream of 'educating the nation' through its different modalities, besides providing 72 television channels for satellite based education. Higher education and school education would be allocated 28 channels each and the remaining would be for health, culture, women's development etc. Facilitated by Edusat, Gyan Darshan, the exclusive 24 hour educational television channel now stands expanded into a bouquet of channels namely Gyan Darshan – 1 (for education and distance education), Gyan Darshan – 2 (for interactive distance education), Gyan Darshan – 3 (Ekalavya - for engineering education) and Gyan Darshan – 4 (Vyas - for higher education). A whole host of digital services are also in the offing from Edusat.

### **3. E-LEARNING AND E-CONTENT DEVELOPMENT**

The digital revolution has brought basic changes in the way of the literate Indians' thinking, behaving, communication, working and earning livelihood. The new ways to create knowledge, educate people, and disseminate information are most important products of this revolution. The term e-Learning covers a wide set of applications and processes including computer-based learning, web-based learning, virtual classrooms and digital collaboration. e-Learning is defined as the delivery of content through electronic media, be it Internet, intranet, satellite broadcast, audio/video tape, interactive TV and CD-ROM. It has emerged as a powerful supplement to conventional teaching learning systems. It uses the powerful multimedia and interactivity features of currently available computing platforms to

deliver learning. The growth of World Wide Web and Internet, high-capacity networks through satellite and fibre optics, and high-speed desktop computers is making learning available round the clock around the globe. No wonder, e-learning is increasingly gaining widespread acceptance among students and faculty of India.

When implemented correctly, e-learning builds on the unique, dynamic characteristics of digital content to foster productive and engaging learning. When integrated effectively into the curriculum by skilled teachers, digital content enables students to seek and manipulate digital information in collaborative, creative and engaging ways that make e-learning possible. An essential condition for effective ICT enabled teaching and learning is that there must be access to high quality, culturally relevant content. In the process of developing a techno-pedagogy for the 'new' learner in the 'new' environment, learning 'new' things using 'new' technologies, the first issue to be addressed is the development of content by teachers. The point of paramount importance is the fact that if teachers don't create e-content, either no one else can or somebody else will, of course with all possible shortcomings in terms of subject expertise and pedagogy. At the same time, the task of developing e-content or Knowledge Packaging necessitates collaborative efforts by technologists and academics. In this context, the following observation of Vladimir Kinelev (2005) needs attention, "ICTs have not eliminated the most pressing of problems that education systems face. Attempts to improve education through ICTs suffer from the absence of sound education paradigms". It is here that the teacher with clarity in content and depth in pedagogy assumes a pivotal role in creating the right instructional design and in creating appropriate content in effective manner. Indeed, Knowledge Packaging has always been there in India since the Gurukula days in different forms like conversations, lectures, songs, stories, manuscripts, print, audio and what not. Now, the need for digital convergence of these forms is imperative to provide high quality education to greater quantities of learners (approximately 360 million in the 18-32 age group) for the reason that the reach and richness of e-content is quite high. Other salient features of e-content viz., multi sensory learning

experience, digital convergence of text, image, audio, video, animation etc. to create the effects of multimedia, interactivity, relevance, authenticity, accessibility, reusability, interoperability etc. are also equally important points in favour of the claim to give top priority to e-content development, among all academic endeavours. Responding to the need, the Government of India has initiated concerted efforts for electronic content creation through a variety of agencies and schemes. The most notable efforts have been led by Consortium for Educational Communication (CEC), an Inter University Centre of the University Grants Commission (UGC) and National Programme on Technology Enabled Learning (NPTEL).

#### **4. CONSORTIUM FOR EDUCATIONAL COMMUNICATION (CEC)**

The University Grants Commission, the apex body of the Indian higher education system, as early in 1984 took the initiative to package knowledge in video form and make it available to teachers and students to supplement face to face teaching and learning. It also set up institutional mechanism for development of video based educational programmes. The institutional mechanism comprised Educational Media Research Centres (EMRCs) and Audio Visual Research Centres (AVRCs), located in 17 universities in different regions. In due course, Consortium for Educational Communication (CEC) was established as an Inter University Centre of the UGC, for coordinating all the Educational Media Research Centres (EMRCs) and Audio Visual Research Centres (AVRCs). As a Coordination Centre, the CEC has a huge video library of syllabus-based programmes, enrichment programmes and question-answer programmes on a variety of subjects. Every year, it keeps adding a minimum of 200 programmes and all the programmes are made available round the clock on Vyas – the 24 hour Higher Education Television Channel. Keeping in view the developments in ICT, the Educational Media Research Centres (EMRCs) and Audio Visual Research Centres (AVRCs), located in 17 universities in different regions were converted into Educational Multimedia Research Centres (EMMRCs) during

the 10th Five Year plan. This is considered a major futuristic initiative taken by the UGC for creating web-based learning resources or e-content. All the EMMRCs have been provided with necessary platform and technology for e-content development and the CEC conducts Capacity Development training programmes for teachers in two modes, one on-site (at New Delhi) and the other in remote sites through seamless videoconferencing using the Edusat network. The UGC provides funding through several schemes for higher education teachers for e-content development. The CEC packages knowledge resources as

- UGC Model Curriculum based educational programmes
- Syllabus based programme pertaining to subjects, relevant for undergraduate and postgraduate students
- Short-duration Reusable Learning Objects for the use by teachers for face to face teaching and learning

The content creation is done in any of the following formats:

- Assembled e-content
- Short Course/ Unit/ Module
- Full Courseware
- Short Reusable Learning Objects

The CEC accepts on-line proposals from higher education teachers for syllabus based or enrichment type e-content development in any of the above given formats on any subject and provides funding to them for the same. The content developers are provided with necessary training and technical support at the EMMRCs. The future plans of the CEC include providing educational video programmes in streaming format through UGC-INFONET, UGC's nation wide communication network and converting the existing educational video programmes to digital format with necessary multimedia inputs to be provided on Video-on-Demand mode. The CEC has a Learning Object Repository (LOR) and in addition has collaborated with Commonwealth of Learning for mutually sharing its Reusable Learning Object Repository with that of a Canadian Learning Object Repository, EduSource.

## 5. NATIONAL PROGRAMME ON TECHNOLOGY ENABLED LEARNING (NPTEL)

The National Programme on Technology Enhanced Learning (NPTEL), a project funded by the Ministry of Human Resource Development (MHRD) was first conceived in 1999 to pave the way for introducing multimedia and web technology to enhance learning of basic science and engineering concepts. Significant infrastructure has been set up earlier for production of video-based teaching material by the Indian Institutes of Technology (IITs) and Technical Teacher Training Institutes (TTTIs). In the current project (Phase I), seven IITs and the Indian Institute of Science (IISc) have been working together to develop web and video based material for basic undergraduate science and engineering courses in order to enhance the reach and quality of technical education in the country. Technology enhanced learning initiative involving IITs and Indian Institutes of Management (IIMs) was first proposed by IIT Madras in the year 1999, immediately following a Workshop on Technology Enhanced Learning (WoTEL) conducted in Chennai in collaboration with Carnegie Mellon University (CMU), Pittsburgh, USA. The vast experience of CMU in setting up a successful virtual university in Mexico was useful in drawing up the initial proposal which envisaged four initiatives, namely providing distance education, developing interactive and electronic resources for core courses for undergraduates, conducting joint Ph. D. programmes and setting up a digital library focused on the role of technology in knowledge accumulation, storing and disseminating content for education in three sectors: university, industry and government. A formal Memorandum of Understanding (MoU) between five IITs, four IIMs and CMU established a Virtual Centre for Technology Enhanced Learning (VCTEL). It was the first initiative in which all IITs and IIMs shared a common vision and proposed to work together to improve the quality of science, engineering and management education all across the country by offering courses through VCTEL. This proposal was submitted to MHRD in 1999 and revised several times. The Ministry of Human Resource Development, Government of India considered a modified proposal favorably and approved funding of INR 20.5 crores (205 million) of Indian Rupees in Phase I for three years from June 2003 till June 2006. The

programme by extension has come to an end in June 2007 with a total output of 225 video and web based courses in undergraduate science and engineering disciplines. In order to facilitate the distribution of course material, two modes of operation have been suggested, namely, digital video lectures of courses and web based courses. The video programmes will be made available to the engineering college students through Ekalavya – the the 24 hour Higher Education Television Channel too.

## 6. CONCLUSION

Indian education has always attempted to keep itself ever new. Indian educational researchers have always been quick to apply, test, modify and make the best use of technologies that emerged form time to time. From the launch of Satellite Institutional Television Experiment by Vikram Sarabhai in 1980s to the fresh aspiration of Vijay Bhatkar, the architect of Param series of supercomputers to provide Education-to-Home (ETH), Indian educationists and technologists have always had lofty dreams of which many have come true. “India can become one of the developed countries in the world by 2020, if we adopt technology as our tool. For this, the teaching community should enthuse the students by means of technology” (Abdul Kalam 2004).

## REFERENCES

- Aravind Singhal and Emerett M. Rogers, 2001. *India's Communication Revolution*, Sage Publications. New Delhi.
- Madhu Parhar, 2006. *Satellite in Education*, Shirpa Publications. New Delhi.
- Majumdar (Ed.), 2005. *Regional Guidelines on Teacher Development for Pedagogy – Technology Integration*, UNESCO Asia and Pacific Regional Bureau for Education, Bangkok.
- Rest, P., (Ed.), 2002. *Information and Communication Technologies in Teacher Education: A Planning Guide*, UNESCO. Paris.

Shirley et al., 2000. *Teaching with Learning Technology*, Napier University. Edinburgh.

Singh and Sandhir Sharma, 2005. *E-Learning-New Trends and Innovations*, Deep & Deep Publications. New Delhi