

E – Learning Initiatives in Technical Education: India’s Perspective

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ABSTRACT:In India, Technical Education has been the most favored compared to other field of education. We have a number of technical institutes providing quality education but still there are great variations found due to some factors like social background of students, parents, different standards of teaching and teachers training programs. Teachers cannot convey the same input to all learners. India being diverse in nature it is difficult to change the social background of students, parents and their economical conditions. The only way out to provide uniform training in technical education across the country is to standardize our teaching learning resources or methods. To achieve this we need to have some nationwide network which provides equal quality education to all students of urban and rural areas. Breakthrough in the field of Information Technology has provided an opportunity for development of teaching and learning methods and prepared them to serve the needs of an assorted educational institution. The vision is to transform the method of teaching and learning could proceed through e-learning. E-learning is commonly deliberated to use of networked information and communications technology in teaching and learning practice. The combination of learning, problem solving and technology empowers us with tools and methodology to develop critical skills for today’s and tomorrow’s engineers.

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I. INTRODUCTION

Today's Technical educators in India are facing all together different challenges than their predecessors. In the past few decades, rapid advances in the field of technology and communication have increased demands on academic faculty, resulting in less time for teaching than has previously been the case. Traditional instructor-centered teaching is yielding to a learner-centered model that puts learners in control of their own learning. A recent shift toward competency-based curricula emphasizes the learning outcome, not the process of education.

E-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is used to improve the efficiency and effectiveness of educational interventions in the face of the social, scientific, and pedagogical challenges noted above. E-learning is also called Web-based learning, online learning, distributed learning, computer-assisted instruction, or Internet-based learning. Historically, there have been two common e-learning modes: distance learning and computer-assisted instruction. Distance learning uses information technologies to deliver instruction to learners who are at remote locations from a central site. Computer-assisted instruction uses computers to aid in the delivery of stand-alone multimedia packages for learning and teaching [1].

Faculty, administrators, and learners find that multimedia e-learning enhances both teaching and learning. These advantages can be categorized as targeting either learning delivery or learning enhancement. Learning delivery is the most often cited advantage of e-learning and includes increased accessibility to information, ease in updating content, personalized instruction, ease of distribution, standardization of content, and accountability. Accessibility refers to the user's ability to find what is needed, when it is needed. Improved access to educational materials is crucial, as learning is often an unplanned experience [2].

An E-learning technology allows revising their content quickly and has control over the content, learning sequence, pace of learning, time, and to tailor their experience to meet personal learning objectives. More over it standardizes course content and delivery. Hence, E-learning technologies offer educators a new paradigm based on adult learning theory, which states that adults learn by relating new learning to past experiences, by linking

learning to specific needs, and by practically applying learning, resulting in more effective and efficient learning experiences [3].

1. E – LEARNING MECHANISM

Initiating e-learning involves a mechanism where it is developed; it must be managed, delivered, and standardized. Its operational comprises all instructional materials, which can range in complexity from discrete items to larger instructional modules. A digital learning object is defined as any grouping of digital materials structured in a meaningful way and tied to an educational objective. Learning objects represent discrete, self-contained units of instructional material assembled and reassembled around specific learning objectives, which are used to build larger educational materials such as lessons, modules, or complete courses to meet the requirements of a specified curriculum. It also includes all the administrative functions needed to make e-learning content available to learners [4].

A learning-management system is Internet-based software that facilitates the delivery and tracking of e-learning across an institution. It serves many functions beyond delivering e-learning content. It can simplify and automate administrative and supervisory tasks, track learners' achievement of competencies, and operate as a repository for instructional resources twenty-four hours a day. Delivery may be either synchronous or asynchronous. Synchronous delivery refers to real-time, where all learners receive information simultaneously and communicate directly with other learners. While asynchronous delivery, the transmission and receipt of information do not occur simultaneously. The learners are responsible for pacing their own self-instruction and learning [5].

Apart from establishing, managing, and delivering content, the most important component that's becoming increasingly obvious is the standards that are needed for the creation of e-learning material. Such standards promote compatibility and usability of products across many computer systems, facilitating the widespread use of e-learning materials. Several organizations have been engaged in creating broad e-learning standards.

II. E – LEARNING INITIATIVES IN INDIA

In India, some initiatives have been taken by the Institutions especially Technical Institutions towards e-learning. Some of them go after a business model, while some are offering it for free, while still some others have their e-learning initiatives on an experimental basis.

In a motivated agreement signed in July 2005, between United States and India, six leading American Universities, Indian Space Research Organization (ISRO) and Department of Science and Technology (DST) along with Amrita Vishwa Vidyapeetham have designed to enhance Technical education and research in India through a satellite e-learning network.

The beneficiary institutions are Indian Institute of Technology, National Institute of technology and few other prestigious Institutions across the country. Birla Institute of Technology and Science (BITS) have offered internet based interactive Learning for students to learn at their own pace.

A new e-learning initiative was formally launched in August 2005 with an Internet and Computing Core Certification (IC3) course on Reliance WebWorld platform. WebWorld, in association with India Cyber Learning, will offer the globally acclaimed course across its 240 stores in 104 Indian cities. IC3 is the first globally validated, standards-based training and certification program for measuring computing and Internet skills. The students of this course have the knowledge and the skills required for basic use of computer, hardware, software, networks and the Internet. More than 47,000 IC3 exams are administered each month through more than 9000 certified testing centers worldwide in 114 countries and 18 languages.

INFLIBNET Centre is an autonomous Inter-University Centre of the University Grants Commission. It is the co-coordinating and monitoring agency in the UGC-Infonet Project. It liaises between UGC, ERNET and universities [6]. INFLIBNET is also responsible for providing training to university library professionals in the use of this network for providing variety of services to the users. Web Based Intelligent Interactive Tutor (WebIIT) is a website-based curriculum that offers online engineering courses, sponsored by Department of Information Technology (DIT), Ministry of Communications and Information Technology, Government of India. The courses are designed to be interactive and user friendly. The web - based courses are aimed to supplement class room teaching where the users will be able to learn at their own pace and level of understanding.

2. ACCESSIBILITY TO E – LEARNING RESOURCES

With the rapid growth of educational technologies and the Internet, the accessibility for e-learning resources available to educators has dramatically increased. Within Technical education, repositories or digital libraries have been established to manage access to e-learning materials. Such repositories offer a vision of expanded access to a large number of high-quality, peer-reviewed, sharable e-learning materials. It collects to

link online learning materials, along with annotations such as users' reviews and assignments. Most of the materials in this repository are free to use, although some materials have clearly defined conditions for use. In the future, these and other repositories may require a membership or other fees to cover the ongoing expenses of Web-site maintenance [7].

III. E – LEARNING EVALUATION

Adopting e-learning and its technology requires large investments in faculty, time, money, and space that need to be justified to administrators and leadership. As with other educational materials, there are two major approaches to the evaluation of e-learning: process and outcomes.

Process evaluation examines an e-learning program's strengths and weaknesses and how its results are produced, often providing information that will allow others to replicate it. Peer review is one type of process evaluation. Traditional peer review for journal articles verifies the quality of content. E-learning requires the consideration of additional dimensions [8].

Outcome evaluation of changes in learners' knowledge, skills, or attitudes allows e-learning developers to gauge program effectiveness. The evaluation framework uses four levels of evaluation based on outcome: satisfaction, learning, change in learner behavior, and organizational change/patient outcome. Satisfaction measures learners' reactions to the material do not measure learning. Likewise, a module that is highly entertaining in its use of multimedia but superficial in its content may be rated as excellent [9].

Tracking and monitoring learners' knowledge, attitudes, and skills via a learning-management system can greatly simplify the process of evaluating the gains made through e-learning. An approach that combines assessment of skills and attitudes using e-learning technology with facilitator-mediated observation would allow a more in-depth evaluation of skills and behavior [10].

3. INTEGRATING E-LEARNING INTO TECHNICAL EDUCATION

The integration of e-learning into existing Technical curriculum resulted in a well-devised plan that begins with a need for assessment and concludes with the decision to use e-learning. Although some institutions have tried to use e-learning as a stand-alone solution to updating or expanding their curriculum, it is better to begin with an integrated strategy that benefits and burdens of blended learning before revising the curriculum.

In Technical education, e-learning offers learners materials for self-instruction and collaborative learning. E-learning materials can be integrated into the education of residents and fellows, replacing lectures and other synchronous methods of instruction. Asynchronous e-learning can be effectively used especially when teaching hours are limited yet curriculum requirements remain high. In continuing education, teachers can attend e-conferences using e-learning.

The complexity and breadth of technical education content, together with the scarcity of experts and resources in e-learning, make the creation of centers of excellence in e-learning a reasonable proposition. The establishment of centers explores new delivery modes for educating medical practitioners and providing continuing medical education; e-learning clearly fits that description. Such centers could offer a wide range of services, including system deployment and administration, training of faculty and administrators, assistance in content development, the design of learning pathways and programs, marketing and support, supervision, maintenance, research, and consultation [11].

The Internet2 was developed to provide additional infrastructure for the Internet backbone capable of super high bandwidth. The Internet2's vision of extremely fast speed, complex real-time multimedia capabilities, and quality of service would provide educators enormous potential to enhance the learning experience. Larger bandwidth offers the promise of sophisticated immersive simulations and the use of full-motion video in real time, in both asynchronous and synchronous modes of instruction, delivered to any desktop computer. So Technical Institutes can access these high-fidelity e-learning materials.

IV. FUTURE DIRECTIONS FOR E – LEARNING

Developments in e-learning and technologies are creating the basis for a revolution in Technical education, allowing learning to be adaptive learning, collaborative learning and transforming the role of the teacher from disseminator to a facilitator.

Adaptive learning uses technology to assess learners' knowledge, skills, and attitudes at the beginning of online training in order to deliver educational materials at the level most appropriate for each learner. Adaptive learning is possible through identification of the learner, personalization of content, and individualization of tracking, monitoring, support, and assessment. Adaptive learning is the ultimate learner-centered experience because it individualizes a unique learning path for each learner that is likely to target his or her specific learning needs and aptitudes.

Collaborative learning breaks the isolation of learners through e-learning technologies. Advances in synchronous distance education and collaborative technologies like Weblogs, message boards, chats, e-mail, and teleconferencing are making such collaborative learning more readily available. Quantitative and qualitative studies of collaborative learning have shown higher levels of learner satisfaction, improvements in knowledge, self-awareness, understanding of concepts, achievement of course objectives, and changes in practice.

An evolving emphasis within Technical education on lifelong learning and competency-based education has forced educators to reevaluate their traditional roles. In this changing paradigm, educators no longer serve as the sole distributors of content, but are becoming facilitators of learning and assessors of competency. Thus, E-learning offers the opportunity for educators to evolve into this new responsibility by providing them with a set of online resources to facilitate the learning process [12].

V. CONCLUSIONS

E-learning refers to the use of Internet technologies to deliver a broad array of learning modes that enhance learners' knowledge and performance. There is evidence for the effectiveness and efficiency in accepting e-learning amongst education community, especially when combined with traditional teacher-led activities in a blended-learning educational experience. Several digital repositories of e-learning materials exist, some with peer review, where instructors or developers can submit materials for widespread use or retrieve them for creating new materials. The evaluation of e-learning should include a peer-review process and an assessment of outcomes such as learner satisfaction, content usability, and demonstration of learning.

With technological advancement, the future offers the promise of high-fidelity, high-speed simulations and personalized instruction using both adaptive and collaborative learning. Centers of excellence in e-learning can provide national support for the design, development, implementation, evaluation, collaboration, and sharing of digital e-learning materials. In particular, the integration of e-learning into Technical Education will promote a shift towards learning in Engineering / Management education, wherein educators will no longer be just distributors of content, but will become facilitators of learning too.

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