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T-learning – An evolution of new front for Indian Education System

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Abstract— **Time, distance, and language have been traditional hurdles in the path of formal education in India. Information technology (IT) and communication and computing technologies have made available powerful tools to a large section of the population in India now a day. In India, Hundreds of languages are spoken. Literacy in urban areas is 80%, and rural literacy is 56%. India has 192 million illiterate women, which is nearly one-third of all illiterate women in the world. While the educational divide is wide and causes concern, traditional methods of bridging it are limited by physical and fiscal factors. The increases in numbers of teachers have tapered off from 5.6% in the 1950s to 1.6% in the 1980s. The average teacher: student ratio at primary level is 1:58 in rural regions. This will become worse if the field of education is not revolutionized using recent technologies like e-learning, m-learning etc. T-Learning is an emerging field. T-Learning is a combination of learning services and technology to provide high value integrated learning; anytime, anyplace. It is represented as the next evolution in the Education industry and a new phase in the Digital Convergence.**

Keywords- E-learning, M-learning, T-learning, Tech Convergence, Knowledge sharing, ICT, Re-engineering Higher Education, Distance Education, Learning Framework, Digital Divide, Crossroad, Paradigm Shift.

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I. INTRODUCTION

Time, distance, and language have been traditional hurdles in the path of formal education in India. Communication and Computing technologies have made available powerful tools to a large section of the population in India. Literacy in urban India is 80%, and in rural area is 56%. India has 192 million illiterate women, which is nearly one-third of all illiterate women in the world. While the educational divide as well as Digital divide is significant, traditional methods of bridging it are limited by physical and fiscal factors. The increases in numbers of teachers have tapered off from 5.6% in the 1950s to 1.6% in the 1980s. The average teacher: student ratio at primary level is 1:60 in rural regions. This will become worse if the field of education is not revolutionized using recent technologies like e-learning. e-Learning is an emerging field in India and will go a long way to assist in managing the problems faced in the education system. In particular, e-learning is only feasible solution to enhancing teaching and learning effectiveness.

E-Learning is a combination of advance learning services and technology convergence to provide Integrated Learning at "Anytime, Anywhere for Anybody" [16]. It is the only ray of hope for "What is Global is Locally available" in this economy based society. It is about a new blend of resources, interactivity, performance support and structured learning activities. The methodology [10,11,12] makes use of various technologies to enhance or transform a learning process, achieving real business and educational value, and reaching a larger, more diverse learner population with minimal expenditure.

In its short history, e-learning has come a long way, offering enormous benefits with scalability. e-Learning can be used to reduce cost, improve quality, and accelerate time to market business benefits that directly contribute to top and bottom line of organizations.

II. WHAT IS E-LEARNING?

The European Commission defines e-learning in the context of its e-learning initiative, as "The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration".

E-learning in a broad sense embraces all these views and meanings. As such it can be conceived as a complex, integrated process, where the Internet enables social inclusion and social cohesion – enabling us to involve and connect people, pedagogy, processes, content and technology. E-learning is supporting the development, delivery, evaluation, management and commerce of learning in an integrated way. Understanding the complex nature of this new learning paradigm [2,3] has led to adopt a broad definition of e-learning. It is related to our notion of e-business, which is about transforming core business processes by leveraging the net. Typical core business processes are customer relationship management (CRM), Supply Chain Management and e-commerce [4]. Since e-

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learning affects the core business processes and the business model relating to learning provision we define it as follows:

'E-learning is the application of e-business technology and services to teaching and learning'. It provides digital content and collaboration to support remote learning and to augment class-based learning. It includes infrastructure, framework[11], e-learning delivery platforms, content development and management. It provides the collaborative framework to enable knowledge sharing and peer to peer learning hubs that can be further supported by mentors or coaches, thus supporting informal collaboration, sharing of knowledge and experiential learning.

We can find many more definitions of e-Learning. Few more definitions are:

- e-Learning [1] is the convergence of learning and the Internet.

- e-Learning is the use of network technology to design, deliver, select, administer, and extend LEARNING. – Elliott Masie, The Masie Center [21]

- e-Learning companies as those that leverage various Internet and Web technologies to create, enable, deliver, and/or facilitate lifelong learning. – Robert Peterson, Piper Jaffray [22]

e-Learning is Internet-enabled learning. Components can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts. e-Learning provides faster learning at reduced costs, increased access to learning, and clear accountability for all participants in the learning process. In today's fast-paced culture, organizations that implement e-Learning provide their work force with the ability to turn change into an advantage. – Cisco Systems [23]

III. SCENARIO

3.1   International: Most of the countries in the world have felt the need to incorporate the Computer Education and the use of Information Communication Technology (ICT) in education. The developed world has a strong network, facility and curricula for computer education in their schools even at primary levels. In U.S. all the (Government) schools are well equipped with computers, teachers, encourage their pupils for computer projects by using e-Learning material and also using information available on internet. This not only makes the learning interesting and joyful but also incorporate innovativeness in thinking and approach of the children and enhances their

imagination power. Australia, Canada and European nations are also not behind. European countries are attaching a very high priority to the use of ICT in Education in their national policy and seeking to adjust the way as a result their education systems are organized and function well.

3.2   National: In the International scenario as above we talked about the computer education in schools only. In our country forget about the schools we do not have ICT penetration even in our colleges, Universities and even in some Engineering, Polytechnic colleges etc. For competing successfully in the global IT market, it is necessary that the IT workforce of the country is of highest quality and assured competency required to successfully innovate process, systems and acts. While the Government of India, MHRD, AICTE have already taken steps by permitting opening of new courses in technical institutions and providing concession to IT industry, there is an acute need to enhance the competency and improve the quality of training for Engineering teachers and working professional from IT industry especially in advanced areas of Mobile computing, Embedded Systems, etc.

Perceiving this need, the Department of Information Technology (DIT) is involved in the development and promotion of Information Technology and Electronics in the country. e-learning is one of the thrust areas identified by the Department. The main thrust of the e-learning program 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 in the school curricula.

IV. NEED OF E-LEARNING

Today there is an urgent need of e-learning which can be fulfilling by reengineering Higher Education. Reengineering is a great idea and a clever new buzzword. Reengineering is a management term that calls for throwing out everything that exists and recommends reconstituting a workable organization on the basis of completely fresh ideas. During the past decade business processes have been reengineered for bringing in efficiency, effectiveness and economy through use of advanced technology, which in our present context are communication and information technologies.

4.1   Higher Education at Crossroads

Higher education in India since its inception in 1857 has been following the same road. The road has therefore reached dead-end [7] from several perspectives. As the nature of occupations has been constantly changing with rapid developments in science and technology but curricula

have practically remained unchanged, therefore, students no longer have confidence in higher education institutions for preparing them for profession. For a long time the principal employer of the educated youth in the country was the State. State as an employer generally did not look beyond academic certifications such as graduate, post-graduate, and occasionally at the level at which the degrees were obtained. It is only in the recent past requirement such as National Eligibility Test coupled with the level of pass at the post-graduate level were introduced as essential criteria for appointment of lecturers in colleges and universities.   The private sector employs only those who possess skills and competencies required by it. Its requirements are continually changing because this sector has to keep pace with its global competitors. Education now has to be tailor-made to the requirements of the private sector. Also, foreign institutions are making inroads in the higher education sector by providing alternative learning opportunities leading to award of degrees of their universities. They claim that their certification will be preferred by multinationals.

To add to the complexity of issues of higher education in India, its demand and asymptotic saturation of state investment in higher education have been exploited by the private sector in a big way in setting up institutions with the hidden agenda of making money.

At the same time, the traditional structure of higher education in the state funded institutions has continued to remain around teacher-student contact, and finds that it is no longer adequate in meeting its demand and relevance. There are not enough lecturers, library books or rooms, and there is not enough time. New organizational structures are therefore required to support new learning processes.

In such a scenario, an obvious conclusion is that the road of higher education seems to have reached dead-end, or in other words it is at crossroads [24]. The need of the hour is to give a fresh look to the higher education and introduce such changes as will restore confidence in the ability of the state universities and colleges for providing, cost effectively [15], education relevant to the present context of the world of work.

4.2   Paradigm shift

What is the required paradigm shift? Perhaps, a partial answer may be found from the experience of the manufacturing sector. It is also struggling to remain competitive when the foreign countries have flooded the domestic market with goods and services. The key to meeting this challenge has been quality assurance that too cost effectively. Customer satisfaction is the key for upgrading quality, as without full customer satisfaction it is not possible to increase market share. The customers of education are students. Decline in interest in general education courses has hit the universities and colleges. It is

perhaps due to dissatisfaction with the present education system, students seeking tertiary education clamour for joining professional courses of study than courses in general education. The widespread impression is that unlike professional education courses, the general education courses have failed to keep pace with changes that are taking place in the world of work. The courses offered by the general education colleges are determined by traditional mindset and have continued to remain inflexible. The general perception is that contents of courses that are being offered at present may not be helpful to them in acquiring skills and abilities required by their future employers.

In the information age it is the knowledge-based work that generates wealth. Instead of large capital investment of funds that was required for starting an industry for production of goods at a competitive cost, a knowledge-based enterprise requires human capital of knowledge workers only. The computer can store a vast amount of information but it cannot think. It can process information as per the direction given to it by its user. The directions are the outcome of thinking by the human brain. There is no substitute for hard and serious thinking; and with sustained and serious effort we should be able to go long way even with our meagre resource and capital. It will, therefore, be an anachronism to continue to use the human brain for memorising information when it should be used for solving problems, creative thinking - the skill attributes of knowledge workers. Therefore, any system of education unless it is learner centred, is flexible, is around developing thinking skills and is able to help learners in acquiring the ability of learning how to learn will gradually lose its relevance. We should not be surprised that now the good students rarely select the conventional courses offered by the colleges as their first choice for higher studies. Therefore, there is now an urgent need to reorient teaching learning in the universities to meet the requirements of the youth for living and contributing effectively in the 21st century.

The dimensions of the Information Revolution and its limitless possibilities are widely accepted. We must also acknowledge that there are challenges before the education system particularly the higher education system, and we must make important choices. We can extend opportunity to all or leave many behind. We can accelerate the most powerful engine of growth and prosperity the world has ever known, or allows the engine to stall. History has taught us that choices cannot be deferred; action or inaction makes them. There is no such thing as virtual opportunity. We cannot point and click our way to a better future. The tools of information and communication technologies that are available today offer themselves for introducing the paradigm shift [10] that the higher education system needs for making it relevant to the needs of the 21st century.

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Each student has to be enabled to stretch a hand across a keyboard and reach every book ever written. Also, information that is being generated, nearly in real time, is being made available online [13] with the Internet. For the first time in our history, it is now possible, for a student in India to have access to the same world of knowledge at the same instant as a student in advance country.

Time has come for redesigning curricular concerns in higher education. The challenge is to introduce innovative interdisciplinary programs of study, appropriate to the concerns of the 21st century. If teachers continue to work in isolation and curriculum concerns are tackled by each institution individually without drawing benefit of each other's experience it may become a race in which goal post is receding at a pace faster than the speed of approach. The end result will be that reaching the target may forever remain elusive.

4.3   Future Vision

An action plan for reengineering higher education for excellence can be as follows:

- Information technology literacy to be made a compulsory component of all courses whether offered as campus program or as distance education program.
- Access to the state of the art learning resources through CD-ROM and the internet be made available to all learners.
- Networking of teachers for collaborative development of teaching-learning resources.
- Institution to recognize sovereignty of learners and teaching-learning be made as learner-centered.
- Program should be modular and choice can be given to students to select modules for earning the required number of credits.
- Transfer of credits be allowed for enabling students to study a part of a course at another institution.
- Theoretical component of courses to be taught by the teachers of the institution and courses for skills development be taught by hard-core professionals, and the skill component be kept updated with technologies.
- Internship arrangement for each student with industries for obtaining practical experience.

V.   CHALLENGES FOR E-LEARNING

Why has e-learning failed to create an impact in India? This despite the fact that most corporate have good learning management systems or content development/management solutions. Considering the cost effectiveness of e-learning solutions, it is indeed surprising that most organizations have failed to adopt it for their corporate training initiatives. According to industry experts [4], while there is awareness regarding the benefits of e-learning as a "time-saving" and a "cost-effective" [15] tool, it is lack of psychological acceptance which is hampering the growth of e-learning in the industry. The need is to bring a change in the attitude. Most organizations do not take it as a critical function since it does not directly affect their revenues.

Lack of expertise in terms of development and delivery of e-learning solutions and substandard course material, have been the other handicaps. Unreliable communication infrastructure, insufficient bandwidth, lacks of standards and long gestation period for implementation are few other hindrances.

Investing in an e-learning infrastructure can also act as a deterrent in its growth due to the high cost factor. "The bandwidth issue creates a hindrance for enhanced e-learning applications like two-way video conferencing, delivery of rich multimedia training content and real-time training over the Net,"

The situation is not too different in the education sector, though the scale of implementation, usage and acceptance has been relatively wider. In the past two years the education industry saw many players (including dozens of dotcoms and training houses), getting into the business of delivering content, but none was able to make a mark. Many tried to ride the popularity wave but had to close shop due to lack of experience and understanding of this market. It is widely acknowledged that the issue of "personal touch" is hindering the growth of e-learning. Most students still prefer the feel of a classroom, rather than just sitting in front of a computer and waiting for a reply. Expert says [5], "E-learning is still a long way off from entering the mainstream". In our society, it is probably seen as an extension or a new 'tech avatar' of postal training or distance education [6]. We all know the stigma attached to postal or distance education. 'Bright students go to big colleges, where they work with reputed faculty' is probably a common thought. E-learning's ability to create a credible learning mechanism and proof-of-concept is still quite far. Unlike the US, large Indian corporations and government agencies have not considered the e-learning system as their training mechanism. Adding to this is the cost difference between instructor-based learning and e-learning modules—the latter is still evidently higher. "Another reason is the Indian bent towards certification, which is somehow lacking in this emerging industry. There are no major recognized e-learning certification courses that are available today that guarantee employment,"

However, all is not lost. Companies like IBM, Cisco, Google and Educomp Datamatics are doing their bit to make a difference. There would be an increasing number of Governmental intervention and confirmation

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of standards, increased Web [8,9] security and emphasis on branding, and lastly a more flexible pricing by the vendors. Insurance, Banking, Pharmaceutical and other sectors provide immense opportunity for the e-learning industry.

Experts believe [14] that changing attitude is expected to drive the growth of the e-learning market. Emphasis would be on research and development initiatives, as new and innovative technologies which have a futuristic edge (like inclusion of Android based Tablets) are catching up. The need is to invest on research into new modes of learning and in developing applications and products that leverage information technology and the internet to deliver faster and better learning to more & more people through subsidize **T-learning**. It should be able to create an optimum balance of content (India specific) and technology to deliver relevant and focused learning; drive learning solutions based on customer requirements.

VI.   BENEFITS OF E-LEARNING (T-learning)

Increasingly, organizations are adopting online learning as the main delivery method to train employees [3]. At the same time, educational institutions are moving toward the use of the T-learning, both on campus and distance. However, for organizations and institutions to make this often-expensive move, there must be a perception that using online learning provides major benefits. Some of the benefits for learners and instructors are outlined below. For learners, online learning knows no time zones, and location and distance are not an issue. In asynchronous online learning, students can access the online materials at anytime, while synchronous online learning allows for real time interaction between students and the instructor. Learners can use the internet based Cloud Computing Services [16] to access up-to-date and relevant learning environment & materials, and can communicate with experts in the field in which they are studying. Situated learning is facilitated, since learners can complete online courses while working on the job or in their own space, and can contextualize the learning. For the instructor, tutoring can be done at anytime and from anywhere. Online materials can be updated, and learners are able to see the changes at once. When learners are able to access materials on the internet, it is easier for instructors to direct them to appropriate information based on their needs. If designed properly, online learning systems can be used to determine learners' needs and current level of expertise, and to assign appropriate materials for learners to achieve the desired learning outcomes. If we go through the case-study of Verginia Tech [20], we can explore the same benefits [20] here in Indian Distance education like – Active Learning, collaborate learning, Availability of Global Knowledge Bank

through cloud services, templates for trainers & last but not least "Hand-free Teaching & learning Environment" through Image & Voice recognition.

VII.   CONCLUSION

In this Tech-convergent era, the Tablet PC market in India is growing fast. With its introduction in July 2010 in India, the market has witnessed huge growth in terms of demand, shipments and emergence of various players-national & international, in the industry. The mature Indian consumers' increasing preference for Tablets and the younger demographics' desire to use both mobile & tablets along with Web services. Multi usage, great user experience, rising of 3G penetration, enhanced reach and changing lifestyles of Educational consumers, results in boost of the demand for Tablet PCs in India. As per research report [17,18], tablet shipments are expected to rise sharply from 3 million units in 2011 to 23.6 million units in 2017. It is expected that the overall Tablet PC user base is likely to grow at a CAGR of 107 per cent. Hence the Indian Education System having a new hope of sure success due to T-learning.

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