TECHNOLOGICAL ADVANCEMENTS IN METHODS OF TRAINING WITH REFERENCE TO ONLINE TRAINING: IMPACT AND ISSUES FOR ORGANIZATIONS

Amita Maxwell,

Assistant Professor
Joseph School of Business Studies (JSBS),
Sam HigginBottom Institute of Agriculture, Technology and Sciences
[SHIATS] - Deemed University, Naini, Allahabad U. P. India.

ABSTRACT

The present paper considers the increasing impact of information and communication technologies (ICT) and the associated rise in E learning which is now recognized world over for transforming training and learning. As with the other segments in the IT industry that have been greatly impacted by the revolutionary changes taking place in the areas of technology, the training market too is getting affected by some of the new developments. Advances in technology are altering training delivery. On-line learning is the next generation tool that has already started developing its roots in India. It is expected to allow both corporates and the Government to deliver state-of-the-art training to company personnel, students, academicians, researchers and home workers, and enable them to create the kind of skilled computer workforce required for the next millennium. Consequently, learning with technology has been realized by organizations as an innovative form of training. Online training comes with certain limitations; there are issues and challenges related with this form of training. Organizations need to weigh the cost and benefits in order to make use of the latest form of training. Research implications for policy formulation on part of the government, planners, academicians, technocrats and other stakeholders is also discussed.

Keywords: online training, online learning, web-based training/learning, online course, internet-based training, E-learning.

INTRODUCTION:

Technologies have great potential benefit to offer learning and training however this is a complex multifaceted area. Technology based instruction represents a new recent pedagogical paradigm that is excited about, new technologies. The rapid technological advancement over the past decade has fueled an enormous demand for the integration of modern networking, information and computational tools with classical pedagogical instruments. Consequently, learning with technology typically involves utilizing a variety of IT and multimedia resources for online learning, course management, electronic course material and novel tools of communication. The online learning and training market is booming the world over. Surveys conducted by leading global market research firms have indicated that online learning and training will follow an upward moving graph and that more and more organizations and individuals will implement this mode of training. The key contributors to the growth of this segment will be companies that will be spending increasing amounts on knowledge management within their organizations. The other key driver for growth would be training where mid-career professionals would be re skilling themselves on the web. The IT revolution has brought about sweeping and multifaceted changes and has enabled the digital representation of all the important forms of expression; words, music, numeric data, maps, photographs and eventually voice and video and global exchange of all digital information. With the steady advancement in telecommunications they would soon be able to disseminate their own digital content in so many ways to so many people world wide.

THE GROWTH OF E-LEARNING:

Starting from Computer Aided learning/Computer Based learning/Programmed Instructor (PI) the latest development or shift in paradigm has been towards online learning/training called by various other names like web based training/ E learning which applies to the area of training in organizations. The introduction and continued development of various technological advances have influenced a philosophical change in learning and training. This shift is one from knowledge being fixed to a certain time and place to knowledge that is accessible anytime, anywhere, anyplace and at any pace.[1] This flexible shift "creates the potential for a change in the way learning is transacted from those who provide information to those who receive it"[2].

Evolution – Network Computing[3]

Internet **TIME**

	Presence	**E-commerce**	**Collaboration and Interaction**	**Integration and Services**
Emphasis	Eyeballs (human review)	Revenue, expansion	Profit	Capabilities, services
Type of transaction	No transaction	B2C, C2C, C2B, G2C, e- CRM	B2B, B2E, supply chain, c-commerce, G2B	Portals, e-learning, m-commerce, I-commerce
Nature	Publish information	Process transaction	Collaborate	Integrate, provide services
Target	Pages	Process transaction	Digital systems	Digital environments
Concentrate on	Web sites	Web-enabled existing systems, dot-coms	Business transformation consolidation	Internal and external integration
	1993-1994	**1995-1999**	**2000-2001**	**2001-2005**

E-learning is instruction that is delivered electronically, in part or wholly-via a web browser, through the internet or an intranet, or through multimedia platforms such as CD-ROM, or DVD.[4] Also as defined by American Society of Training and Development (ASTD)[5]: "E-learning refers to anything delivered, enabled or

[1]Yeung 2001, "Quality assurance of web-based learning in distance educatioin institutions", Journal *of Distance learning Administration*, 4(4). p.10.Retrieved June 3, 2002 from http://www.westga.edu/~ distance/djdla.

[2] Gold, S. (2001). "A constructivist approach to online training for online teachers", *Journal of Asynchronous learning Networks*, 5(1), 35-57.

[3] Turban Efraim, Liedner Dorthy., et.al., "Information Technology for Management, Transforming organizations in the Digital Economy", New Delhi: Wiley India (P) Ltd., 6th edition 2008. p. 63.

[4] Hall, B. (1997). Web-based training. John Wiley & sons, Inc., New York, New York.

[5] American Society of Training and Development. (2002). State of the industry report. Alexandria, VA: ASTD Publications.

mediated by electronic technology for the explicit purpose of learning."
"E- Learning is the automation of the processes of learning and training through the use of IT"[6].
In corporate world, where decentralization is the buzz-word, companies depend largely on e-learning capabilities for coordination of their various activities, for example, mutual working on a physically dispersed project. Their dependence is also in terms of employees training and orientation. Today every big or small organization wants to incorporate E-learning in their network. This has resulted in a wide range of tools in the market for e-learning modules and every customized help is readily available in this regard.
Further web-based training refers to courses available on an intranet, internet or extranet and that are linked to learning resources outside the course such as references, electronic mail, discussions and videoconferencing." [7]It can also be defined as an alternate term for E-learning. It is the integration of instructional practices and internet capabilities to direct a learner toward a specified level of proficiency in a specified competency. [8] Web-based training also has pragmatic components: anytime, anywhere, accessibility of training, and just-in-time delivery of training.[9]

ONLINE TRAINING:

The term online can be defined in many ways such as "connected to a network"[10] or "available from a network."[11] In recent years, there has been a rapid development of computer networks, improvement in the processing power and advances in storage technology. These developments have made computer a dynamic force in training and learning, providing a new and interactive means of overcoming time and distance barriers. With the proliferation of web-based technology, new instructional possibilities of the internet have been created which includes;

- E-mail
- Internal portal
- Bulletin boards
- Virtual classroom
- White boards
- Webinars
- Internet chat session
- Company intranet and websites
- Other media (e.g., satellite broadcast, videoconference)

The web represents a new way of looking at training. Information on the web is organized in an ever expanding network of nodes and links that represent the more traditional domains of knowledge. The web uses text and graphics interactively and video-audio to a lesser extent these characteristics make the web more useful tool. With its versatility and interconnectedness, the web offers one of the most effective ways, to deliver training to geographically widely-spread settings.
Online training can be synchronous or asynchronous. Synchronous means "at the same time. In training, it is instruction delivered via a network that requires learners and an instructor to be online at the same time to participate in learning interactions."[12]This type of delivery is live and is place independent, but time dependent. For example, a web broadcast seminar that is sent on a certain date and time is an example of synchronous delivery. Although the participants in the web seminar do not have to be physically present at the date and time of the scheduled delivery to participate. Conversely, asynchronous delivery is both time and place independent. A training course available at the convenience of the individual end user 24 hours a day, 7 days a week is an example of asynchronous delivery.
It is clear that E-learning is a broad concept using network technology to design, deliver and administer learning. In this regard online training, web-based training is sub-set of broader framework of E-learning. Online training

[6] Robson, R. (2002), "Explaining E-learning to a stranger", *E-learning magazine*. Retrieved March 1, 2002 from http://www.elearningmag.com

[7] Alexander Laurel, *Online training*, Mumbai: Jaico Publishing House, 1st edition 2008, p.26.
[8] Virtual classroom: A conceptual arena of the Internet where users can interact with each other to learn.
[9] Kruse, K., Keil, J. (1999) "Technology-based training". San Francisco: Jossey-Bass/P Pfeiffer.
[10] Webster's New World Dictionary of computer terms, Bryan Pfaffenberger. IDG Books India (P) Ltd., 8th edition 2001, p. 384.
[11] ibid
[12] ibid

can be used as[13];

- A sole source of learning
- As a supplement to traditional training
- As a follow-up to traditional training
- As an alternative to traditional training
- Other

USEFULNESS OF WEB-BASED TOOLS FOR LEARNING:

1) Online course tools: online databases, tools for quizzes, or tests, cases, questions, or problems relate to classroom material, online course evaluation, file up/ downloading tools.
2) Collaboration and sharing tools[14]: Learners' collaboration, asynchronous discussion forums, real-time chats, interactive feedback.
3) Web resources: search engines, digital libraries, online glossaries, web link tools, articles and journals, books recommendations, news groups, online bulletin boards, white board, webinar etc.

PEDAGOGICAL VERSUS ANDRAGOGICAL MODELS AND APPROACHES:

Probably the most fundamental change in the field of training has been a shift from pedagogical approach to an andragogical approach.[15]Under the pedagogical approach, learners are seen to have a dependant personality, relying heavily on an instructor's knowledge. This knowledge is disseminated in a unilateral method from the teacher to the student. Learners, in turn, "are expected to except the information as disseminated, "learning" the material and delivering it to the instructor in the same manner it was presented to them." [16] From the pedagogical perspective, learning is subject centred and a learner's past experience is to be built upon rather than used as a resource.

In contrast, andragogy is based on self-directed learning theory and is seen as the art and science of facilitating leaning for adults from the andragogical perspective, learning is task or problem centered and is based on need rather than an age level or prescribed curriculum. The andragogical approach is based on an experimental model that is "learner centered rather than instructor-centered, dialogue-based rather than lecture-based,"[17]and sees the learner's past experience as a rich resource from which all involved can learn. Recent advances in instructional technologies are having a tremendous or profound impact on training, whereas technological innovations have transformed the role of the learner into that of a self-directed and independent learner, the role of the trainer has been equally affected. At one time trainers needed only basic skills to develop and use instructional media such as instructional television, slide shows, and computer- assisted instruction (CAI). These skills included graphic design, photography, video production, story boarding, and basic computer programming. The trainer's world is now vastly different because of the creation of the internet and the development of multifaceted communication tools that allow geographically dispersed individuals to collaborate in real time[18]. The introduction of internet and web-based technologies have resulted in changes in the way instructional design models are applied in creation of instruction delivered via the new media. The web allows using high quality instructional strategies and methods to meet a diverse set of learning needs and learning style preferences. The basic form involves text, simple graphics, and a limited amount of interaction. Complex training can include simulations, example simulation of work situations. It can also consist of a course that includes regularly scheduled lectures/instructions by video conferencing on the internet, a web page with several supplemental materials and hyperlinks to other relevant websites. Traditional instructional design models that have directed efforts to produce quality learning in face-to-face training environments also are being applied to web-based learning.

1.6 Online Course Delivery: Issues and Challenges

There are many issues and challenges associated with delivering a course online via the internet. These include development and revision of the course prior to being online, teaching the course once it goes "live", quality control of online courses, efficient time utilization by learners when online, and methods and procedures for

[13]Curtis J. Bonk, "Online Training in an online world" 2002, available at JonesKnowledge,Inc. and CourseShare.com.
[14] Ibid.
[15] Gibbons, H.S., & Wentworth, G.P. (2001). "Andragogical and pedagogical training differences for online instructors". *Online journal of distance learning Administration*, 4(3). Retrieved June 3, 2002, from http://www.westga.edu/~distance/ojdla.
[16] ibid, p.2
[17] ibid
[18] Steven R. Aragon & Scott D. Johnson., "Emerging Roles and Competencies for Training in E-Learning Environments", *Advances in Human Resources* Vol. 4, No. 4 November 2002.Available at http://jmd.sagepub.com.

teaching an online course.

Internet and interactive multimedia has revolutionized the delivery of training and learning. Online course delivery is seen as a way to reach beyond geographic and time constraints normally associated with traditional programs of training and learning. Enhanced delivery systems are a means to help individuals/trainees to better meet their work schedules, interests and other needs.

Some of the other issues associated with online course delivery are;

- added time requirements to develop content and set up in the interactive
- Online environment
- leaning to use software and updates
- developing meaningful assessment techniques
- structuring assignments and providing clear and explicit instructions
- course revisions for both content and delivery technologies

ADVANTAGES AND DISADVANTAGES OF ONLINE DELIVERY:

There is a fundamental need for minimum technology access either personal or at a specific learning site. To utilize the equipment there is a need for skills to interact with the instructor. This goes beyond computer literacy and might be called computer competence without which learners experience difficulty[19]. This may negatively impact motivation and initiative, causing underperformance and course dissatisfaction[20]. On the other hand, online courses allow learners to be personally responsible for their own learning. They need to determine for themselves the amount of time they need to achieve expected outcomes and meet course requirements.

Advantages

- Eliminates geographic barriers
- More diverse curriculum offerings possible
- Flexibility of scheduling personal time
- Eliminates or reduces travel time and need for transportation
- Individualized attention for the instructor
- Provides a format for self- paced learning
- Instruction can be more customized and flexible

Disadvantages

- Capital intensive for delivery systems and resources
- Frustration with technical problems
- Challenging to maintain sufficient learner contact, assistance and feedback

QUALITY CONTROL IN ONLINE ENVIRONMENT:

To be successful online course needs good quality, well delivered material supported by tutorials, advice and counseling, and an overall support system which will effectively manage the program. The trainer needs to devise ways to capture and hold student attention, limit exposure to technological frustration, and provide consistency among course offerings, navigation techniques, and assessments. The trainer also needs to organize and deliver the training courses in ways different from traditional lecture formats. With an online course, the danger is that trainees may become spectators rather than participants.[21]There are a number of basic foundations that can be tried to help assure quality and success of the online course. There are certain quality initiatives that should be taken care of like;

- adequate infrastructure and technical support
- instructor training
- adequate development and preparation time
- structure learning activities(assignments, cases, discussions) specifically for the online environment
- structure assessment and exams for the online environment
- collaborative activities for the online learners
- prompt feedback by the instructor

[19]Dr. Susan Haugen, Dr. J LaBarre, Dr. J. Melrose , "Online Course Delivery: Issues and Challenges", http://www.iacis.org/iis/2001_iis/pdf%%20files/Hangen127.PDF

[20] Ibid.

[21]Healy,Y.(2001), "Caution on E-learning". Available at http://www.ireland.com/education/third level/2001/0417/story2.html.

- clearly articulated directives for assignments, projects, etc

ISO/IEC: E-LEARNING STANDARDS:

The International Organization for Standardization (ISO) and the International Electro technical Commission (IEC) approved ISO/IEC 24751:2008, an e-learning standard designed to match individual user needs and preferences with educational resources. ISO/IEC 24751:2008-information technology-individualized adaptability and accessibility in e-learning, education and training is published in three parts. It offers a framework and reference model and "access for all" criteria on personal needs and preferences and a digital resource description. An ISO/IEC International Standard aims to harmonize the various approaches used around the world for assessing the quality of e-learning initiatives. By having comparable and commonly understood requirements and criteria, there will be a better match between the needs of users, purchasers and providers.
Use of ISO/IEC will assist in matching individual learner needs in a computer-mediated learning environment with the necessary user interface and resources needed to meet those needs. The standards will reduce the cost and complexity of adopting quality approaches and, at the same time, bring new or improved products or services. This will enhance level of innovation.
Without a doubt, technology will increasingly play a role in employee training. According to Martin Renkis[22]CEO of Trainer Soft Corporation, 18% of the total training is expected to be technology-based in 2002, which is anticipated to increase to 35% by the end of the decade. Online training potential promises different skills to be learnt via this new mode of delivery like software skills, technical skills, communication skills, computer system/programming skill, customer service skill, management/supervisory skill development, sales and marketing skills and other job related skills. This conforms to the growing popularity and acceptability of online courses in delivering a wide range of skills across organizations world wide.

CONCLUSION:

Managers and training departments need to determine when and if online training is a viable strategy. Organizations today realize that they cannot use traditional training methods if they want to stay competitive. Because product cycles, competitive intelligence, industry information and corporate strategies are moving and changing much faster than they need to; companies understand that the only way to get knowledge to their employees is through online learning that relies on the internet. Electronic delivery does not only mean reducing cost but increasing effectiveness, in terms of improving the way the organization does business. Apart from this online training is also preferred because of its cost-effectiveness, one of the biggest differences between online training and traditional modes of training is that the delivery cost of the former is very low, companies are increasingly outsourcing their training activities in an effort to take advantage of this new training approach while also reducing cost.
Issues that need to be addressed in online training are:

- How motivational is the climate of online instruction, in terms of motivation will trainees perceive online learning as electronic page turning or as a fun and engaging learning opportunity.
- Trainees' engagement may be the most vital issue to address when adapting online training.
- Whether management can actually document savings due to online training initiatives, are course completion rates higher or lower than in conventional class room training environment.
- Variables that assess online training's impact on organizational effectiveness which includes production levels, employee turnover, quality measures, and absenteeism.

In times to come employees will witness extensive use of online training in organizations, some of the chief drivers of this will be:

- Emergence of wireless technologies
- Electronic book tools
- Standards (development of courseware and content standard from ASTD)
- Knowledge management (linking knowledge with e-learning initiatives and goals
- Multiple language support
- Mentoring (use of online mentoring as a vehicle to enhance course quality, feedback, relevancy and interactivity)
- Artificial Intelligence and assistance (more responsive and interactive online environments)

[22] Renkis, M. (2001, April). The future of e-learning. Presentation at the e-learning 2001 conference, Washington, DC.

The question confronting online training is not about replacing human-taught courses with online self-directed content or are computers replacing human contact, instead the issue is how to blend the two or when to implement a human touch within the online course. Just how can organizations integrate collaborative opportunities and live mentoring with rich internet resources. The shift should be towards a "blended" or "integrated" approach to online training. Blended learning can be defined as "the thoughtful combination of training methods."[23]The blended learning approach offers organizations both cost savings associated with online training and personal touch of classroom instruction. Online training can be combined with instructor-led seminars and live coaching. Organizations need to differentiate between online training and traditional classroom training and design it as online training from the start; you can't just "chop up" your class room training to offer it online as different skills need to be addressed differently and in the best possible way. Online methods should be used in conjunction with other modalities in a blended learning format, very few training programs rely extensively on online delivery. Online training can be used as:

1. A sole source of learning
2. Supplement traditional
3. Follow-up to traditional
4. Alternative to traditional

There are areas where traditional training dominates; the issue is not about replacing traditional with online but using online training in areas where it has the potential of being used as a viable or effective training method because of the benefits it promise to the organization.

Any organization planning to implement online training should access five critical online training success factors as detailed by Teri Anderson[24]:

- Assessing or evaluating corporate culture and readiness for online learning
- Specific content and programs
- Internal capabilities or infrastructure
- Cost options of the initiative
- Targeted clients or employees.

Hence there are five C's of online learning; *culture, content, capability, cost and clients*-this would help acknowledge and address a wide range of online training and learning issues confronting organizations.

It is difficult to conclude whether online training is equally, more or less effective than traditional class room based training as both the methods have their inherent advantages and disadvantages and should be used depending on training need. Despite many questions and concerns online training has impacted corporate training in a variety of ways. It has altered training goals and expectations and can positively influence organizational outcomes. Impact of the internet and the ways in which it can be used to support learning and training has revolutionized the landscape of training in organizations giving access to so many people to learn at the same time, ensuring flexibility, convenience and self-paced learning at the work setting reducing travel costs to outside training facilities, also allowing organizations to deliver training consistently to all trainees and keeping the content updated. Lastly, online training's viability, effectiveness, and potential to return tangible benefits to organizations depends largely on how it is designed, delivered and evaluated.

RESEARCH IMPLICATIONS FOR POLICY FORMULATION:

1. E-learning is now a global scenario. As a developing country India following the pattern of other developing nations like Bangladesh can design new courses and E-learning systems for distance learning or open learning education programmes through existing facilities which can help learners acquire competences which is closely tied to work contexts and accredited. As streaming video and audio technologies become widely available, more distance learning web sites will attempt to capitalize on these dynamic forms of instructional messages which will provide education and learning to the doorsteps of learners irrespective of time and place.
2. Education authorities should develop or adopt management and governance system that is based on universally applicable principles and adopt processes that will work most efficiently in prevailing economic

[23] Brodsky, M. W. 2003.November. Four blended learning blunders and how to avoid them. Learning circuits, ASTD. http://www.learningcircuits.org/2003/nov2003/elearn.html.Accesssed Feb, 9, 2004.

[24]Anderson, T. (2002, January). Is e-learning right for your organization? Learning circuits, American Society for Training and Development.RetrievedJanuary24,2002,from http://www.learningcircuits.org/2002/jan2002/anderson.html.)

and political circumstances. Relevant example to mention is Government of India's initiative in the area of education, Department of Higher Education under (MoHRD) - "Sakshat" an educational portal, which addresses learning needs of students, scholars, teachers and life long learners in the country. English is a ligua franca of the global internet, it is not appropriate for many regions. In a country like India, probably the biggest barrier to internet usage is language.

3. Issues related to localization of curriculum in specific national and local contexts as a way of ensuring greater responsiveness to local needs and realities should be taken care of through E-learning content. School Net Programmes may be adopted in country like India, where information in local languages is needed to enable the efficient and desired use of PCs and the internet. As when developing curriculum materials and books, exploiting the internet for teaching at the primary, secondary and other levels requires developing content in local languages as well. Teaching basic ICT skills should start in early years. Primary schools should be able to teach pupils the basics of operating a computer and accessing the internet. Government of India's initiative "Sarv Shiksha Abhiyan" has adopted Computer Aided Learning (CAL) for off school and on school model for primary, upper primary and high school level should ensure responsiveness of local needs.
4. Training programmes in trades having high employability can be designed as people with lower skill levels are at a risk of reduced employability prospects. Various training programmes organized by Government of India, Ministry of Labour and Employment, Directorate General of Employment and Training (DGE&T), like National Vocational training institutes (NVTIs)/Regional Vocational Training Institutes (RVTIs), National Academy for Training and Research in Social Security (NATRSS), Indian Institute of Workers Education (under Central Board for Workers Education), National Council of Vocational Training (NCVT) conduct vocational training programmes namely Women's vocational training programmes, which are short term course for 6-8 months and part time courses, E-learning content can be developed for such courses which assures flexibility of learning and training more people at the same time. As much of these courses are skill based it can be supported by instructor-led follow up classes. Hence a blended approach can be adopted for dissemination of information through E-learning environment with reduced cost and maximum benefits.
5. Increased use of E-learning to be seen- not only as a more flexible and integrated means for creating a learning setting (delivery of education and training) but also as a potential instrument for different forms of skills enhancement. Training portal can be designed for addressing the needs of entrepreneurs. The National Institute for Entrepreneurship and Small Business Development (NIESBUD), under Ministry of Micro Small & Medium Enterprises, government of India which is the apex entrepreneurship development training organization and coordinates with various institutions and agencies engaged in EDP and similar institutions like NSIC, NISIET, SIDO, and CAPART with the help of quality E-learning content can design tailored and specialized training and development programmes and curriculum for entrepreneurs/target groups on basic topics like managerial skill, market survey, project preparation, technical knowledge and skills, achievement and motivation. This will help to store, preserve, distribute and share the digital learning resources in the country.

The potential of online training in the near future to enhance learning outcomes can be summed up in the words of Plato as he rightly remarked;

"Someday, in the distant future, our grandchildren's grandchildren will develop a new equivalent of our classrooms. They will spend many hours in front of boxes with fires glowing within. May they have the wisdom to know the difference between light and knowledge."

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