E- Learning: Development and Directions for Organizational Sustainability

Jamil Ahmed, Dr.
Ijaz A. Qureshi, Dr.
Shakeel Iqbal
Donna Schaeffer, Dr.

Available at: https://works.bepress.com/shakeel_iqbal/6/
E-Learning: Developments and Directions for Organizational Sustainability

Dr. Jamil Ahmad\textsuperscript{1a}, Dr. Ijaz A. Qureshi\textsuperscript{2b}, Shakeel Iqbal\textsuperscript{3c}

\textsuperscript{a} Dean, Iqra University Islamabad Campus, Islamabad, 44000, Pakistan Email: jamil@iqraisb.edu.pk
\textsuperscript{b} Head of Business School, Iqra University Islamabad Campus, Islamabad, 44000, Pakistan Email: ijaz@iqraisb.edu.pk
\textsuperscript{c} Ph.D. Scholar, Department of Management Sciences, Iqra University Islamabad Campus, Islamabad, 44000, Pakistan Email: siqbal@iqraisb.edu.pk

*Dr. Donna Schaeffer
Professor of Information Systems, Argosy University, San Francisco, California, 94194, USA
E-mail: donna_schaeffer@hotmail.com

Abstract

Developments in the field of IT and telecommunications paved the way for use of technology in education. Near the end of last millennium, the ability of e-learning to reach distant users who want to learn at their own pace attracted the attention of many engaged in education and training. An increasing number of colleges and universities started offering online degrees and courses. There was an increase in the number of organizations using this new medium to provide training to their employees. This paper discusses some of the perceived benefits of e-learning as well as major hurdles hampering the growth and development of this medium. Some of the current trends as well as future directions of e-learning are also discussed in this paper.

Keywords: E-learning, m-learning, benefits, hurdles, current trends, future directions.

1. Introduction

The term e-learning may be defined as ‘instructions delivered electronically via the Internet, intranets or multimedia platforms such as DVD or CD-ROM’ (Cappel and Hayen, 2004). There are different terms used in existing literature to describe learning and teaching via some electronic medium: ‘web-based learning, computer mediated instruction, virtual classrooms, online education, e-learning, e-education, computer-driven interactive communication, open and distance learning, I-Campus, borderless education, cyberspace learning environments, distributed learning, flexible learning, blended learning, mobile-learning’ (Guri-Rosenblit, 2005).

E-learning can take place in any one of the following three forms: Asynchronous, Synchronous or Blended learning (Welsh et al., 2003). Asynchronous learning is where ‘pre-recorded’ information is available to the intended audience 24/7 (Rosenberg, 2001). Synchronous learning is ‘live’ where instructor and learners interact with each other simultaneously. Blended learning is where a combination of technology and classroom based learning is used to deliver information. It is this third form of e-learning which is the focus of attention of most of the researchers in recent
era (Elliott, 2002).

Near the end of last millennium, the agenda of e-learning was pushed forward so aggressively that it caught attention of almost everyone. In the words of John Chambers, CEO of Cisco: ‘The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make email usage look like a rounding error’ (Chamber, 1999).

The following intriguing developments have been noted in the e-learning environment:

1.1 **E-Learning as an alternative to Classroom Learning**

E-learning became a preferred mode of teaching for colleges and universities as it offered enormous potential of growth. It was quoted to be ideal for those students who could not join any college or university due to time and location constraints (Maldonado, 2010). Many advantages were claimed for this medium of learning. In the words of Robertson (2003, pp. 284–285): “Information technology promises to deliver more (and more important) learning for every student accomplished in less time; to ensure ‘individualization’ no matter how large and diverse the class; to obliterate the differences and disadvantages associated with race, gender, and class; to vary and yet standardize the curriculum; to remove subjectivity from student evaluation; to make reporting and record keeping a snap; to keep discipline problems to a minimum; to enhance professional learning and discourse; and to transform the discredited teacher-centered classroom into that paean of pedagogy: the constructivist, student-centered classroom”.

Nowadays a large number of colleges and universities are offering online courses and degrees. Organizational investment in e-learning keeps growing because of the convenience and cost effectiveness (Moore, 2003). Continuous usage of e-learning, however, has proven that besides many advantages claimed for this technology-based mode of learning, it has many shortcomings as well. In a study participants mentioned that class learning has been difficult for them due to either too much theory with no pause or the group discussion was too lengthy and didn’t contribute as much as they would have thought (Pearson and Trinidad, 2005). The table given below gives a comparison between e-learning and classroom based teaching:

**Comparison of traditional classroom learning Vs. E-learning**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Traditional Classroom Learning</th>
<th>E-Learning</th>
<th>Blended Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Immediate Feedback</td>
<td>• Learner centered and self-paced.</td>
<td>• Flexibility of learning with the opportunity to interact with the instructors and trainers</td>
<td></td>
</tr>
<tr>
<td>• Being familiar to both instructors and students</td>
<td>• Time and location flexibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Motivating students</td>
<td>• Cost-effective for learners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cultivation of a social community</td>
<td>• Potentially available to global audience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Personal touch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1: (adapted from Zhang et. al, 2004)

<table>
<thead>
<tr>
<th>Disadvantages</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Instructor-centered</td>
<td>• Unlimited access to knowledge</td>
</tr>
<tr>
<td>• Time and location constraints</td>
<td>• Archival capability for knowledge reuse and sharing</td>
</tr>
<tr>
<td>• More expensive to deliver</td>
<td>• Slow learners get accommodates without any inconvenience to others in class</td>
</tr>
<tr>
<td>• Timing constraint</td>
<td>• Cost saving may not be there anymore</td>
</tr>
<tr>
<td>• If missed something in the class – difficult to grasp as white board may be washed off in next minutes</td>
<td>• Lack of immediate feedback in asynchronous e-learning</td>
</tr>
<tr>
<td></td>
<td>• Increased preparation time for the instructor</td>
</tr>
<tr>
<td></td>
<td>• Not comfortable for some people</td>
</tr>
<tr>
<td></td>
<td>• Potentially more frustration, anxiety and confusion</td>
</tr>
</tbody>
</table>

1.2 E-Learning as a medium of training

E-learning became a preferred mode of training for many organizations. The advantages perceived for this mode of training are: lower cost, increased learner’s convenience, reduced delivery cycle time, improved tracking, reduced information overload and consistent world-wide training (Welsh et al., 2003). Zhang (2003) in his study reported the following advantages of e-learning: Time and location flexibility, cost and time savings, self paced and just for me learning, collaborative learning environment, better access to the instructors and unlimited use of learning materials.

Another popular usage of this technology is online certifications offered by many professional organizations. In these online certifications all activities are carried through Internet i.e., registration, delivery of reading material, submission of assignments, exams and feedback.
1.3 M-Learning

M-learning is the latest trend in e-learning. In the words of Quin (2001) m-learning is “e-learning through mobile computational devices: Palms, windows CE machine, even your digital cell phone”. Mobile communication is already gaining significant popularity as compared to online communication in many developed countries of the world. Rapid advancements in mobile technologies offers tremendous potential for this form of learning and it can be said that m-learning will have a greater impact on learning than e-learning (Bates, 2002). “Anytime, anywhere learning” and “learning while doing” are the two main advantages claimed for m-learning (Lehner et al., 2003). M-learning provides more convenience, flexibility and mobility than online learning. Mobile phones make synchronous learning possible at a lower cost and provide access to those who are without a high speed bandwidth. Currently, work is in progress on the development of m-LMS (Learning Management Systems for m-learning). It can be said about m-learning in the words of Keegan (2003): “The mixing of distance learning with mobile technology to produce m-learning will provide the future of learning.”

2. Hurdles in E-Learning Implementation

2.1 Inappropriate Design

Although E-learning is claimed to be very convenient and interesting mode of education but some of the previous studies shows that inappropriately designed e-learning program can result in frustration, confusion and decrease in interest of the learners (Hara and Kling, 2000; Maki et al., 2000). Dissemination of information by static and non-interactive means cannot be termed as training. Besides pushing information at the trainees, training should include the components of guidance, practice and feedback as well. In the words of Dobbs (2002): ‘Quit pretending that reading is training’.

2.2 High Dropout Rate

Another proclaimed advantage for e-learning is that it is an effective way of reducing absenteeism and dropouts. But it has been proved by some of studies conducted on this topic that there are more dropouts in online education as compared to distance education and traditional face-to-face education (Diaz, 2002). Some of the reasons for high dropout rates in E-learning are lack of commitment, lack of student support, poorly designed course, substandard and inexperienced instructors (Frankola, 2001).

2.3 Effectiveness and Disruptive Technologies

Another problem in the implementation of e-learning is to keep pace with the advancement of technology (Guri-Rosenblit, 2005; Robertson, 2003; Watson 2001). Rapid innovations in e-learning provide very little time to provide thoughtful appraisal and critique of the issues related to its adoption and use (Kompf, 2005). The pace of educational research and change in technology
can be compared to the pace of turtle and a hare. This mismatch gives rise to a very pertinent question: whether in e-learning the focus is on the ‘e’ or on the learning (Njenga and Fourie, 2010). The contribution of ‘e’ in e-learning needs very careful evaluation in terms of opportunities and threats. In the words of Gandolfo (1998): “the effective use of technology has the potential to improve and enhance learning. Just as assuredly there is the danger that the wrong headed adoption of various technologies apart from a sound grounding in educational research and practice will result, and indeed in some instances has already resulted, in costly additions to an already expensive enterprise without any value added. That is, technology applications must be consonant with what is known about the nature of learning and must be assessed to ensure that they are indeed enhancing learners’ experiences”.

2.4 High Implementation Cost

E-learning is not as cost effective as is usually considered. There is an initial investment required in the form of computer hardware and software, but the story doesn’t end here. Organizations need to spend more money on maintenance, technical support and training, internet access, electricity, cost of adaptation and localization of learning material produced for different cultures and contexts (Guri-Rosenblit, 2005; Mac Keogh, 2001).

2.5 Privacy and Security of User Information

Security of information available on worldwide web is another big concern both for users and providers of online education and training. E-learning offers information virtually to anyone, anywhere and anytime which makes this system exposed to the risks of unauthorized usage and copying issues. Different encryption techniques and digital signatures should be used to protect the system from unauthorized usage and malicious access. Illegal usage can be discouraged by means of using copyright and license agreements. Knowledge is an intellectual property and owners’ of intellectual property should be compensated properly. An E-learning system need to have a well-designed system to track user’s accounts, maintain their usage and billing record and receive online payments through secured modes by ensuring the privacy and security of user information (El-Khatib et al., 2003).

2.6 High Bandwidth Requirement

In order to make training lively and interactive a lot of multimedia stuff is used in e-learning systems which give rise to the requirement of high bandwidth network (Zhang et al., 2004). Non availability of high bandwidth network is also a hurdle in the development of e-learning.

3. Recent Trends in E-Learning

Review of more recent literature on E-learning shows the following trends in developing e-learning solutions (Rogerson-Revell, 2007):
3.1 Integration

In order to increase the effectiveness of e-learning different applications and utilities are being bundled together to improve functionality and ease of production.

3.2 Modularity and Re-usability

More recent idea in developing e-learning contents is to use small modules or ‘learningware’ instead of traditional courses or ‘courseware’ (Alt-I-Lab, 2004). There is a lot of duplication and wastage involved in the creation of new contents. This problem can be solved by adopting an object oriented approach. This approach is currently being used by some educational institutions (e.g., UK’s Open University) and commercial organizations (e.g., Macromedia).

3.3 Standardization

Need for standardization is strongly felt in the field of e-learning but the progress towards this objective is very slow. Standardization will enhance flexibility and exchange of material from one e-learning system to another (Godwin-Jones, 2002) but too much emphasis on standardization can seriously limit the creativity of designers (Arneil and Holmes, 2003).

3.4 Interactivity

To make e-learning lively there is a great need to engage online learners in interactive tasks and to help them socialize with other online learners (Skehan, 2003). Interactive learning can be of two types: Material interaction and social interaction (Laurillard, 2004). Material interaction can be created in e-learning by the use of new web tools for sound (e.g., Wimba, online), text (e.g. Dreamweaver) and graphics (e.g. flash). Social interaction can be created by means of voice emails and voice and video broadcasting.

4. Designing E-Learning Systems

The problem with majority of the earlier e-learning products was that they used a “spray and pray” approach rather than helping organizations to collect, organize, manage, maintain and reuse the learning material. Most of the e-learning programs are launched without any clear and measurable objectives and cohesive strategies. E-learning strategies should at least provide a common language and vision, governing principles and organization-wide support policies, creative and compelling e-learning content and a standard driven technical architecture (McGraw, 2001).

The designers of e-learning system need to understand the e-learning “ecosystem”. The first thing that should be developed is e-learning systems framework which will help in selection and development of each component in line with the objectives defined in the organizational e-learning strategy. This framework will enable organizations to systematically envision and develop their e-learning system, maintaining interoperability with third party products at the same time.

There can be three critical components of this learning system framework (Ismail, 2002): Learning Design System (LDS), Learning Content Management System (LCMS) and Learning Support System (LSS). LDS purpose is to assist in designing instructionally sound learning
programs by combining clear learning goals with pedagogical models. LCMS is helpful in bridging the gap between authoring tools and LMS (Singh, 2001). It assists organizations in capturing knowledge within their organization and structure knowledge into focused learning programs. It provides help in incorporating third party content and providing timely updates and dissemination of knowledge throughout the organizations. LSS offers a web-based environment to assist the teachers and learners. The teachers can manage and provide support to a group of learners whereas learners can access learning material, communicate with other learners and share their knowledge with the help of LSS.

5. Critical Success Factors for E-Learning Development

McPherson and Nunes (2008) identified four critical success factors (CSF) for e-learning delivery: Staffing issues, delivery models, training issues and leadership issues. Staffing issues define the availability of suitable staff with adequate experience on the delivering side and well prepared students on the receiving side of the system. Delivery models outline the adoption of an appropriate pedagogical model developed by faculty and creation of an interactive online environment. It requires that an appropriate evaluation approach be adopted. Training issues requires essential training of staff at all levels, provide student support, pay attention to technical issues and ensure adoptability, customizability and re-usability of e-learning systems. Leadership issues require the selection of appropriate strategy, appreciate motivation of workers, ensure sufficient resources and guarantee sufficient funds. These CSFs ensure that e-learning system operates in an effective manner without any hiccups and provide a suitable theoretical foundation to underpin the successful delivery of e-learning.

6. Conclusion

E-learning is much more than simply transferring some offline data to an online medium (Cornford and Pollock, 2002). An online learning environment calls more in terms of pedagogy than simply putting professor’s lectures on the net. Adoption of these new pedagogical models requires a whole set of new teaching and learning skills for which many teachers and learner may not be adequately prepared (Mcpherson & Nunes, 2004). But one thing is certain that e-learning will continue to evolve in the years to come because of the convenience factors. The hype created by this technology-centered form of learning has declined to some extent but it still has more to offer than realized at this point in time. Those engaged in offering e-learning solutions need to focus more on learning rather than on ‘e’. Organizations must clarify the objectives and devise cohesive strategies to achieve these objectives. Additional research need to be conducted to discover where e-learning can be applied more effectively, to design suitable, reusable and extendible LMS and retain learning interest of users of this technology.

Based on the current developments in the e-learning, the future of learning seems to be in the blended learning because of alignment in the learning and development (Keith, 2006).
References
Ismail, J. (2002). The design of an e-learning system beyond the hype. The internet and higher education, 4(2002), 329-336
Kompf, M. (2005). Information and Communications Technology (ICT) and the Seduction of


Maldonado, N. (2010). Career World, Apr/May, 38(6), 4-4, 1/2p


