# **Integrated E-Learning**

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*Abstract:* In this paper we analyze the evolution of the modern educational delivery system. The main emerging educational paradigms are identified. These paradigms are considered as main features of a new educational delivery model. This model is treated as an e-business model as a justification for its development and implementation using the underlying technologies. The main idea of the complemented and compound e-learning is to create a "culture of Internet education" at school, college and enterprise levels, providing continuous access to the on-line education.

Key-Words: E-learning, e-commerce, Internet, distance education.

#### **1** Introduction

The three powerful worldwide changes that have altered the social environment – the emergence and strengthening of the global economy, the transformation of industrial economies and societies into knowledge- and information- based service economies, and the transformation of the business enterprise – are also changing the educational institutions and educational paradigms [1].

As companies rethink almost every aspect of the way their employees work, e-learning holds the potential of becoming the most widely used application in the enterprise. In this era of rapid change, employees around the world are expected to regularly assimilate vast amount of new product, market, and competitive information to compete effectively. Traditional instructor-led training can't scale to meet these new learning challenges.

"Classroom training is a 19<sup>th</sup>-century artifact - if not an artifact of the medieval times," says former U.S. Dept. of Labor Secretary Robert Reich. "It tends not to be tailored to needs of a particular individual. With e-learning, you can go at your own pace and do training when you need it and when it's convenient for you" [2].

"The press for lifelong learning and the availability of technology have spawned a variety of education initiatives outside the traditional classroom. Courses Now can be taken " at a distance" over the Internet. These are just the newest in a series of attempts to move learning closer to workers on the job and to make it more relevant to changing business needs." [3]

E-learning, defined as Internet-enabled or Internet-enhanced learning, provides the tools to help companies tackle these learning challenges and make continual, lifelong learning a reality [4].

The key e-learning philosophies of one of the leading e-learning companies, Cisco, assume the following [4]:

- E-learning is the online delivery of information, communication, education, and training.
- E-learning provides a new set of tools that can add value to all the traditional learning modesclassroom experiences, textbook study, CD-ROM, and traditional computer based training.
- Old-world learning models don't scale to meet the new world learning challenge. E-learning can provide the tools to meet that challenge.
- E-learning will not replace the classroom setting, but enhance it, taking advantage of new content and delivery technologies to enable learning.
- With e-learning you can empower learners, and the learner, as well as in the mentoring system, is held accountable.
- Retention for a learner varies, based on content type and the delivery vehicle. The better the match of content and delivery vehicle to a learner's style, the greater the retention, and therefore the greater the results.

The key e-learning stakeholders can be divided into two broad categories – the consumers of elearning and providers of e-learning. E-learning combines communication, education, information, and training and is a core element of a successful ebusiness strategy. The new Internet economy demands that people's knowledge and skill levels be constantly updated. The people, companies, and countries with the greatest knowledge, skills, and the ability to efficiently create and share knowledge will have the best chance at success in the new, knowledge-based Internet economy. A SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of e-learning is described in paper [5].

Before beginning to build an e-learning architecture, it is important to understand the business needs that can be addressed with an elearning solution: cost, access, modularity. timeliness, relevance, and accountability. With a clear picture of business drivers fueling an elearning initiative, design principles and implementation guidelines should be carefully elaborated: e-learning architecture should be open, scalable, global, integrated, flexible, rapid and timely [4].

In this paper we analyze the evolution of the modern educational delivery system. The main emerging educational paradigms are identified. These paradigms are considered as main features of a new educational model. This model can be treated as an e-business model. This justifies the development and implementation of this model in an e-commerce and e-business<sup>1</sup> framework using the underlying technologies. The main idea of the complemented and compound e-learning is to create a "culture of Internet education" at school, college and enterprise levels, providing access to the on-line training. The following challenges are confronted:

- How does the traditional educational paradigms evolve?
- What are the main trends of this evolution?
- How could new educational paradigms be implemented?

# 2 New Educational Paradigms

Education as we know it will be around for many years to come. However there are significant changes occurring that already having a profound impact on educational institutions. Actually we are watching the similar transformations that are taking place in any business environment – "e-business or out of business" claim could be rephrased as "e-education or educational failure".

To survive in the 21<sup>st</sup> century colleges and universities are shifting:

- from being geographically specific and program diversified to being program specific and geographically diversified.
- from traditional "classroom teaching" paradigm to "self learning & training" paradigm.
- from traditional "in-advance learning" to "just-in-time (as needed) learning".
- And lately, from local one-stop-shop, to global one-stop-shop.

One of the main educational tasks is to integrate a student into the modern business environment. It is essential that students, if they wish to be productive and successful, should be educated with the use of technologies similar to those that are being used by the specialists outside colleges and universities. Business environment is dynamic and changes quickly. The traditional educational system simply can't follow up. The programs that are taught at university levels, like in business, lagging behind, and the students find that what they are being taught has no echo in the real world. One possible example, is teaching TQM. While the TOM practice and methodologies has progressed, we find that the material taught at many universities is the same that TQM started with many years back. Here we recall one of the basic principles of information systems theory: the performance of a system is optimized when both the technology and the organization mutually adjust to one another until a satisfactory fit is obtained.

Are new educational paradigms supplementing or substituting the traditional ones? It is not a proper question. The point is that traditional educational paradigms are gradually evolving into a new one that incorporate the fruits of IT into its methods of presentation, access and delivery of knowledge. Taking into account the innovation rate in the information & communications technology (ICT) we can say that it is a never-ending story [6]. The

<sup>&</sup>lt;sup>1</sup> E-business covers the application of IT in all aspects of the business world. E-commerce covers mainly the activities of marketing, selling, and buying products and services on the Internet

new technologies are putting up pressures, driven by profit seeking enterprises, or mere intellectual curiosity, the traditional educational systems to modernize and innovate.

Are the new educational paradigms cost effective? The recent analysis shows that the answer is 'yes'. Through the return on investment (ROI) analysis, companies can measure the ability to train more people, eliminate the downtime associated with training off-site, and accelerate the learning process. Studies indicate that companies experience a 40-60 percent cost savings when comparing instructor-led education with technology-delivered courses; and learning occurs 50 percent faster on-line than in a classroom setting [7].

## 3 An E-Business Model for E-Learning

New educational paradigms form a new educational model. This model can be considered from the point of view of e-business models. It justifies the development and implementation of this model in an e-commerce and e-business framework using the underlying technologies (such as database, Internet security, XML, Web applications, etc). Moving in this direction, we can say that the development and implementation of the new educational model is an educational process reengineering (EPR) problem. EPR involves a process of re-inventing the entire educational delivery system with its central mission as to incorporate the new IT into the process. This treatment gives an opportunity to use (of course with the proper adjustment) in EPR the results, ideas and technologies accumulated in e-business, integration e-commerce, BPR, system and enterprise computing.

Instead of owning its own e-learning (specialized e-commerce) portal, the typical educational institution of 2005 will participate in a global education-supply network. Many universities resorted to form consortiums that would deliver a "set" of courseware to global set of students. This consortium network is subject to the law of increased returns, as are other network businesses. The more customers (students) and providers (educational institutions) are in the network, the more valuable it becomes.

It is important to point out that underlying elearning are the basics activities of any educational institution – registration and enrollment, marketing, evaluation and assessment, etc. – but redesigned and delivered in a new contemporary way.

Providers of e-learning could build their enterprise model based on the principles of the Cisco E-Learning Solution Architecture. The full architecture includes three layers: the top access layer, the middle application layer, and the underlying network infrastructure layer [4].

The role and function of a teacher are also changing. The most important role for a faculty today is to be an educational facilitator and a kind of a coach. Teaching and facilitating learners in an on-line, Web-based environment is very different from traditional face-to-face teaching. Faculties should become a more advanced and quick learners than their students. Faculty training needs to occur on-line so that the faculty experiences what their learners will experience.

Consumers of e-learning need special skills and attitude, different from the ones necessary for traditional classroom education. The special "culture of the Internet education" can help to achieve this objective if it is implemented from the elementary school level. One possible scenario is the following :

- At the elementary school level we introduce information technology (IT) and the Internet on the level of entertainment games, educational games and testing programs. Special educational Web sites should be used for school projects.
- At the middle school level students should become familiar with more advanced computer and communications programs and Internet environment. They should be able to freely use different Internet search engines, and express themselves in on-line discussion as it would be in a classroom. They should be ready for "self directed learning" with a minimum help of a teacher.
- At the high school level we should implement one or a few curriculum courses like on-line courses. These courses can be taken from any elearning centers, but they should correspond to the school educational standards. The final examinations could be arranged by the school itself.

The e-learning process, however, will unleash a chain reaction that may include: increasing the student's feeling of responsibility for their own learning, developing curriculum that best fit the needs of students, subjecting students to identical learning environment, help create a cadre capable of handling future e-learning projects, and finally improve the acumen of faculty in dealing with this technology [7].

IT certainly needs to be part of school education, and it's a task of the government and sponsors to fund it. If a school cannot afford the 24 hours Internet access, the similar "educational environment" can be created on the Intranet.

Finding the right mix of e-learning and traditional classroom learning is presently emerging as the key to success in the market place [7].

Not everyone after the school will go to the College, but every one will have experience of traditional and on-line education.

E-learning should be encouraged at all educational institutions, and finally at business enterprises. Sponsorship, supervision and additional funding will be needed. It could be provided in the following way:

- School level: by the government and sponsors.
- College Level: by the College itself and by sponsors.
- Enterprise level: it should be a part of the business transformation.

Individuals (especially in the developing countries) should be able to access e-learning through the nearest Centers of learning.

E-learning is a productivity tool that not only gives students personalized learning or the information to meet their needs, but also allows for assessment and accountability [8].

The e-learning accountability should be provided at all levels in the following way:

- School & College level: e-learning courses should be a part of the school curriculum.
- Enterprise level:
  - Give employees cash towards upon evidence of completing self-paced coursework.
  - Use the virtual university model, granting homespun Associates, Bachelors, Masters and even Ph.D. degrees for completing various levels of an on-line curriculum.

### 4 Conclusion

It has been amply shown that the classroom instruction mode is deeply imbedded in our culture, and it would take time to change it. This mode, however, does provide or achieve an important dimension of the educational process, and that is providing the conduit for students to mature through the social interaction and face to face dialogues. The classroom instruction employs more of the human senses (seeing, hearing and even feeling through body language) than the e-learning. The gap is narrowing by the continuous development of more "real time" interactive multimedia technology. On the other hand the e-learning environment does have its own unique features. In either synchronous and asynchronous learning, it allows the learner the freedom to navigate the information landscape at will and gather at the same time a multitude of knowledge, that may be too difficult to do in following the traditional mode. Also, the e-learning permits the learner to formulate the path he/she would take to master the subject matter without the influence of the teacher. This may prove better on one hand, but also it can be argued that it would not allow the generational transfer of knowledge and experience. The conclusion is that both modes has advantages and disadvantages. To avoid the pitfalls of both schemes and reap the benefit of both, we conclude that an integrated mode that run on a scale of "level of integration" and changes (increase or decrease) over the entire educational process lifetime. It starts with the elementary school, and goes up through the graduate, post graduate, and continuing education phases. The point is that the culture of "e-learning" should be started at the early stage of life, with the classical classroom education gets less and less as the person matures, and becomes more self reliant. The reason is that the elearning requires focus and discipline in going through the rigorous learning process, that may involve, searching, reading, absorbing, sorting, reorganizing, concluding from the knowledge being gathered. The e-learning provides the mechanism of course-plotting the ocean of information in an efficient way. The learning has to be achieved by the learner him/herself. There is a need to do research on effective ways and "the right degree" of integration needed, and whether the new paradigm of e-learning will deliver the right amount of learning or education. Perhaps a comparative study at all age levels between the results achieved by following the two modes may shed some light on the efficacy of the e-learning mode compared with the traditional classroom mode. It is not a matter of doing something differently, but doing something different.

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