

Successful E-Learning in Corporations

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ABSTRACT

This paper seeks to explore the concepts and best practices of successful e-learning in corporations. It will first describe what e-learning is as well as its history in relation to educational models. A brief introduction will cover the variety types of e-learning. The paper will then provide information on e-learning limitations such as various standards, lack of infrastructure and architecture, and at length discuss employee motivation and cultural resistance to e-learning. Organizational advantages and benefits of e-learning will be outlined. Some of them include cost savings on travel, globalization, improved value-chain activities, and return on investment. Finally the paper will present some success stories and discuss the future implications of e-learning in corporations.

INTRODUCTION

Wikipedia defines “Electronic learning” (or e-Learning or eLearning) as “is a term where the student and the teacher use online technology to interact and participate.” When you combine learning with technology the application is called e-learning. E-learning is delivered through information and communication technologies. E-learning in corporation can be defined as a type of training delivered on a computer that supports an individual learning as well as organizational goals. The key of e-learning in corporations is to reach the organizations strategic goals through reliable learning. In order to do so, companies need to provide high-quality training programs which potentially can create a greater return on investment to corporations within their current training plans. How they are able to do this is through an electronic medium, hence the “e” in e-learning. What they learn is derived from the content within the e-learning system. The purpose of an organization in using e-learning is to help the individual improve job performance and satisfaction, understand on the job skills and help the company create a competitive work force. It is not surprising that the concept of e-learning is growing rapidly.

Based on interviews with senior executives, Ettinger, Holton and Blass (2006a) report that the acceptance and practice of e-learning is rising, typically by forty percent and as many as seventy eight percent expect their company to start using e-learning in the near future. There are many motives that drive companies to start using e-learning for their training such as, cost-effectiveness, in the fact that it can be adopted across multiple sites taking the learning to the learner, its ability to be tailored to the organizations needs, and that it complements knowledge management approaches. The key reasons that are typical for most companies to use e-learning are outlined below (Ettinger, Holton & Blass, 2006a):

- Creating competitive advantage, by aligning workforce with company strategy
- Globalization, ability to reach anywhere in the world
- Information age, using highly developed tools to communicate
- Demand for post-secondary and life-long learning
- Budget constraints for both internal and external education

Although many companies have similar reasons to use e-learning, some have their own agenda for wanting to use e-learning. The ability to align e-learning with high-level business strategies along with the capacity to train entire workforces to support these strategies is one of the key reasons that attracts companies to e-learning (Clarke & Hermens, 2001). Using technology to deliver learning, such as CD-ROM, DVD, Internet and intranets, allows the company to completely train their workforce while potentially keeping costs down. One way that companies ensure

that their employees have the right tools to execute strategy is by using the Internet as a vehicle for imparting knowledge. These ideas have been around for a while but with recent advances in technology they are now possible (Henry, 2002; Allen, 2008).

HISTORY OF E-LEARNING

When did the concept of e-learning start? In the 1930s, during World War II there was a need for a massive training of the troops. The war created an enormous instructional problem—thousands of new recruits had to be trained rapidly, and the sophistication of new weapons demanded an unprecedented level of mastery (Fe-ConE Team, 2008). The first e-learning was the usage of film to train the soldiers. Parallel to this effort, in 1945, B.F. Skinner developed the first learning system called the “teaching machine.” It consisted of a method in which the “teaching” brought the student increasingly through the information to be learned. The "machine" was the testing or answer portion that was either in a workbook or on the computer. Skinner was a behavioral theorist and was concerned mainly with observable indications of learning and what those observations could imply for teaching (Conway, 1997). The didactical model of Behaviorism spanned from the late thirties until the early seventies when the personal computer was introduced (Fe-ConE Team, 2008).

When the personal computer was introduced and then improved upon the mid to late seventies, learning with computer was mostly used for simulations in mathematics and science. The cognitive model spanned from this time until the early nineties. The cognitive approach in learning is based on the thought that the process of learning is comparable with the way a computer is working and thereby emphasizes students' ability to solve real-life, practical problems (Conway, 1997).

In the late eighties and early nineties computer-based training saw its beginning as the technological advances increased. Constructivism, a new model of learning was introduced. Constructivism is a philosophy of learning founded on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in (Neo, 2005). Learning Management Systems (LMS), such as Blackboard, were launched and used predominantly in educational institutions. During this time learning standards such as Sharable Content Object Reference Model (SCORM), Instructional Management Systems (IMS) and Aviation Industry Computer-Based Training Committee (AICC) were in the infancy of their development. These fundamental standards will help determine and define the future of e-learning as we know it today.

TYPES OF E-LEARNING

There are several types of e-learning and combinations thereof currently being deployed:

- all online
- blended or hybrid
- asynchronous
- synchronous

Both the online and asynchronous approaches are self-directed and self-paced methods of learning that enable learners to increase knowledge and skills when the learner is ready and willing to learn. The difference between the two is that online has no interaction between learners and instructors where as asynchronous learning will have some interaction. For instance there could be a discussion board where learners post comments during a time that is convenient to them and then the instructors will post back at a later time.

Blended or hybrid learning is a type of learning that is a mixture of face-to-face and online learning. The online portion of this learning can be delivered in various ways, such as online tutorials, documents, interactive tests, presentations, video, audio, animations and many other types of interactive media. Typically this approach involves approximately thirty percent of face-to-face classroom time combined with the remaining time spent online (Mitchell & Honore, 2007). They list the advantages of this type of learning are:

- convenience
- increased interaction

- flexibility
- increased learning
- higher retention
- reduced seat time
- decreased costs

The hybrid approach is most valuable when a company wants leverage all of the e-learning advantages while still maintaining the nuances that often times face-to-face training provides to the learner.

Synchronous learning occurs when there are interactions in real time, for instance, in a chat room or within other types of collaboration tools. In synchronous learning both the learner and the instructor are present in the technology based learning environment and can interrelate with each other instantaneously. According to Pulichino (2004), seventy four percent of organizations surveyed used synchronous learning. The reason for its high usage is that in recent years technology has advanced dramatically allowing for a more seamlessly integrated online training approach. Synchronous learning coupled with technology allows for greater interaction between instructors and learners including the opportunity to develop ideas, solve complex problems, and develop critical thinking skills (Taran, 2006). This type of creative thinking produces a competitive advantage for companies who desire to develop these strategic types of skills within their employees.

Companies and organizations need to train and educate their employees in a cost effective, efficient, thorough manner. E-learning can provide the solution in which to help companies successfully achieve these goals. There are both benefits and limitations to e-learning and companies need to consider both of these and devise a plan to utilize e-learning to reach their strategic goals before embarking on the actual development of both technology and e-learning media for distribution to employees.

LIMITATIONS OF E-LEARNING

Many senior executives are hesitant to use e-learning as a tool to educate their employees. Some of the reasons for not using e-learning are its newness, not knowing enough about it, not having the budget, lack of IT infrastructure, and staff reactions to the idea (Ettinger et al., 2006a). It is crucial for companies to understand the limitations of the e-learning environment and work it into a well thought out plan to implement e-learning in order to succeed. In addition to the lack of understanding, budget constraints, IT architecture and infrastructure, and staff reactions, e-learning standards are probably the most limiting. The limitations of the standards for e-learning are in that of the portability of content from one system to another and can create difficulties.

Standards

Standards for e-learning have over time been developed by various professional organizations. This makes it very difficult to have the content portable from one system to another. In the current e-learning environment there are no regulations as to the standardization of products, so it can be difficult for content and data to be shared between different e-learning applications (Ettinger et al., 2006b). Once a company uses a particular delivery system and licenses with a third-party, they may find that they can not transport the content to another system. Content prepared for one system cannot be transferred easily, if at all, to another (Singh & Reed, 2002).

Typical standards are noted by the Aviation Industry Computer-Based Training Committee (AICC) and are such that learning management systems will launch, track and score a course. However, there are other organizations that are developing standards parallel to the AICC. For instance the Instructional Management System (IMS) is currently focusing on metadata tagging the content and how to implement such tagging.

Originating from the United States Department of Defense, SCORM (Shareable Courseware Object Reference Model) uses a relational model to help learning content interconnect. The goal of SCORM is to provide accessibility, reusability, and interoperability within learning systems (Callaghan, 2004). Both AICC and IMS are part of the SCORM model and are currently considered the best as well as the most recent standards available today.

At present the most used standard is created by the Institute of Electrical and Electronics Engineers (IEEE) Learning Technology Committee (LTSC). LTSC standards cover object metadata, student profiles, course sequencing, computer managed instruction, competency definitions, localizations, and content packaging (Hirumi, 2005). Although there are many parallels to all of these standards as well as differences, each e-learning standard has its own strengths in addressing the learning needs for different kinds of organizations. It is important for companies when deciding to use e-learning as part of their overall education plan to consider these various standards in order to allow for future portability, flexibility, and scalability.

Infrastructure and Development

When a company considers implementing e-learning they should have strong support from senior management and IT unit. The e-learning environment should drive the IT infrastructure to uphold it. Often the infrastructure is not in place and would be costly to put into operation. If the infrastructure was in place, developers would be needed to develop the e-learning in-house. Usually a company does not have the talent to take on as an in-house project. These limitations can be overcome by outsourcing and using e-learning services outside the company. There are a variety of companies that offer software or can provide the technology, content, development and various services to companies for a fee. In the last ten years businesses have sprung up offering these services to companies that do not have the means in which to develop and implement e-learning in-house.

Motivation

E-learning requires a great deal of motivation on the part of the employee. Although e-learning is self-directed, motivation can be a legitimate problem. In many companies the demanding work environment makes it harder for training to take place and whilst this affects all training, e-learning is more vulnerable as it relies so heavily on individual motivation (Ettinger et al., 2006a). Organizations need to take this into consideration and promote the fact that the e-learning opportunity is available 24 hours a day, 365 days a year, and it is possible to learn from work and home at the individual's own pace (Féraud, 2005). The availability and convenience of e-learning could outweigh employees' lack of motivation thereby making it successful. One reason appears to be that a cultural change is needed about how training and learning happens and, most importantly, how it is delivered (Ettinger, Holton & Blass, 2006a).

Resistance

The most difficult limitation to overcome when implementing e-learning is resistance. Kotter (1996) refers to culture in his book *Leading Change* as the "norms of behavior and shared values among a group of people." If the company culture has a normal way of acting that is familiar to employees, typically they will continue to behave in that way. If the company culture has not been introduced to e-learning, they will lean toward resistance and not want to even try e-learning. The greatest hurdle for many is getting staff to try e-learning (Ettinger, Holton & Blass, 2006a).

If the company's culture has not already embraced all that e-learning has to offer, many employees do not want to attempt to try e-learning. Féraud (2005) reports that 51% of companies say 'cultural resistance' is a barrier to e-learning. Typically, the method in which learning previously occurred within a company is already ingrained in the culture. If learning has been static, provided in books or documentation, or delivered by a stand up trainer, the company will have to initiate a cultural change on how learning transpires. In order for e-learning to be successful, cultural change is needed about how training and learning happens and, most importantly, how it is delivered (Ettinger, Holton & Blass, 2006b; Mitchell & Honore, 2007).

Furthermore, another reason e-learning may not be embraced by employees and cause them to resist is the social interaction of training classes. For instance, some people are used to, and prefer, the few days offsite with its associated social life, and hence may rebel at having to learn in an alternative way. If the behavior within the corporate culture is open and sociable, then the tendency to classroom training would prevail (Lee et al., 2007).

In order for a company to not come up against the limitation of resistance, it is critical that a company sell and market the e-learning provisions appropriately from the beginning (Ettinger, Holton & Blass, 2006b). Whereas e-learning almost certainly trains in the area of new skills, processes, practices, and company strategies, training to change the attitude of the employees is also just as, if not more important as the other types of training when trying to implement a culture shift to support e-learning (Kotter, 1996).

It would be well advised for organizations to use the Technology Acceptance Model (TAM) to introduce and implement e-learning (Davis, Bagozzi & Warshaw, 1989; Schneberger, Amoroso & Durfee, 2007/2008). First the company will need to change the attitudes of the employees and make them believe in the usefulness of e-learning. They will also need to focus on the fact that e-learning is easy to use, for instance, by promoting that fact that is available twenty-four hours a day, three-hundred sixty-five days a year. By focusing on these key points employees will start to change their behavior toward e-learning and eventually accept its usage (Pearlson & Saunders, 2006).

ORGANIZATIONAL ADVANTAGES

The use of e-learning is growing rapidly due to technological advances in development and delivery systems, as well as the advantages of being self-paced, on-demand, and borderless. About a third of all United States workforce training is now delivered electronically. Ingram, Sandelands and Teare (2002) points out the keys elements in creating successful e-learning within an organization are:

- Select issues that matter to the company while giving the learner the opportunity to make a real difference and boost their status with the company
- Choose subjects that matter to the learner, where fulfillment can be achieved from being taken seriously and by observing the results of change
- The organization must support learners and work with them to evaluate which subjects should be undertaken
- Build networks with the organization, not outside, so that both employees and managers can support each other and bring success to the company

Companies are using e-learning to their benefit in such a way that it is customized to business strategies thereby increasing the competitive advantage these organizations can have in their particular market. In an increasingly competitive environment companies need to quickly train employees. Taran (2006) states that due to severe competition in global markets, organizations need to ensure that they sustain financial momentum and forward movement by securing impeccable, current, and visionary employee performance. E-learning can help companies train employees rapidly with the potential of an educated work force that can gain a competitive advantage.

Benefits of E-Learning

There are many benefits of e-learning which have been widely documented such as the ability to learn from the employees desktop or the convenience to learn from home. Additionally it solidifies the learner's ability understand that life-long learning is an ongoing progression which can be done while having both a career and a family. Other advantages for organizations are that it allows for a globally trained staff, greater employee satisfaction, and cost savings all while creating a competitive advantage (Ingram et al., 2002).

Benefits – Travel Savings

Along with these benefits, one of the key advantages is cost savings on travel. Many companies are now widespread or even global. In order to fly employees to one location in order to take a class for a week or even a few days can be very costly. Another circumstance that could occur would be to fly the instructor to each location to give the training which can cost the organization unnecessary funds in both the instructors travel costs as well as their labor cost and personal time.

To show the cost benefits of online training a study was conducted at BAE Systems over the past two years. BAE Systems had acquired several new locations and needed to train the newly acquired engineers at these locations on

the engineering data storage system. The instructor was located in the New Hampshire facility and usually taught face-to-face classes. In the past they required all the engineers that need to use the system to take the class based training prior to using it. The new facilities were located in Wayne, New Jersey; Greenlawn, New York and Austin, Texas.

The face-to-face training would have required one trainer at each site for six weeks at approximately one thousand five hundred per week per trainer. Additionally the estimated labor and expenses per trainer is estimated to be twenty thousand for the entire training period. The total cost of delivering the training in a face-to-face training session would have been forty seven thousand dollars. The cost to develop the web based course was approximately twelve thousand dollars which shows a net savings of twenty eight thousand dollars.

In addition, this training, once developed, was available for any newly employed engineers at the company or current engineers who wanted to refer back to the training information, which created additional savings down the road. This study demonstrates the cost advantage both in travel and instructor savings that a company would normally incur to deliver the training versus the cost of developing an e-learning solution.

Benefits – Globalization

E-learning has the distinct advantage to allow companies to raise their employees' level of knowledge without require them to travel to seminars or fit college-level course into their off hours (Allen, 2008). This allows for companies to continue to be spread across continents and even be global while training employees on the same strategies and business goals throughout the company.

In today's difficult economy and competitive market, globalization is important to many companies in creating the competitive advantage that gives them the edge against other companies. A good example of this is the U.S. Army, although not a corporation, it is an organization which currently uses electronic learning to deliver training to its soldiers and civilian personnel anywhere in the world (Anonymous, 2002). For obvious reasons, it is important for the Army to train their personnel, whether at home in the United States or deployed in a foreign country. The Army does not develop the e-learning themselves, they use an outside agency to develop and deploy their training worldwide. There are many companies that offer global training as a service, so even if companies do not have the infrastructure in-house to support this, they could use the services of an outside agency and still save a considerable amount on training and travel costs.

Benefits – Improved Value Chain Activities

In the competitive environment companies are in today, it is important that companies can create added value to sustain their business and stay competitive. E-learning can support this by providing training for various activities in the value-chain, such as in the production or service arenas.

An empirical study by Dai and Duserick (2007) on two different companies, NCR and U.S. Engine Valve, which utilized e-learning to improve their value-chain activities, showed positive results. Their study examined how a firm creates competitive advantage through organizational learning linked to customer services.

In the NCR case, they wanted to improve customer service within the technical service team that currently lacked business skills they needed. They deployed a blended learning approach, both online and classroom time that included a set of well-defined competencies, assessment measures and personalized development programs (Dai and Duserick, 2007). The results were positive and at NCR ninety-nine percent of training was available globally through the learning management systems, which yielded a twelve percent cost reduction. The NCR University offers over nine thousand courses, has over forty five thousand learners worldwide and over three-hundred thousand courses are completed each year. In 2006, NCR also garnered fourth place in the ASTD (American Society for Training and Development) BEST Awards and ranked as one of the top one hundred e-learning companies in *Training Magazine*.

In the U.S. Engine Valve case, the company's goals were to foster entrepreneurial creativity, reducing cycling time, eliminating waste, and lean manufacturing (Dai & Duserick, 2007). The company also used blended learning, which

incorporated multimedia into their e-learning program as well as created learning teams to target specific strategic goals. U.S. Engine Valve also had positive outcomes from targeting the value-chain activities with an e-learning approach. As a result, inventory was reduced twelve percent and lean manufacturing scores were raised from 5.1 to 5.3 on a scale of 5.5. The improved manufacturing process was the return on investment e-learning provided for U.S. Engine Valve which was able to give them the competitive advantage they needed.

Dai and Duserick (2007) states in their study that e-learning, when used as a strategy to improve the value-chain, does show significant performance. Using competitive forces and business strategy as the driver to provide learning solutions enhance the value-chain and provides for improved performance.

Return on Investment

When embarking on an e-learning plan, senior executives will want to know what the return on investment is. Cost savings will be incurred by transferring current stand up training to an e-learning environment. However there are other reasons, less tangible than cost savings, that also provide a return on investment that may not be able to be calculated in terms of money but are nevertheless significant when talking about a return on investment with e-learning. Some of these are:

- Travel time
- Instructors time
- Easily updatable content
- Permanent availability of material
- Maximizing currently investment on Internet/Intranet infrastructures
- Employee satisfaction due to higher learning outcomes

While most companies have costs associated with training, when implementing e-learning the initial costs may be high and senior management may hesitate to move forward with e-learning unless a return on investment can be proven. Return on investment (ROI) applies to all training interventions; however, the high investment cost of e-learning may increase the focus on ROI. Ettinger, Holton and Blass (2006b) surveyed over two-hundred senior executives. The research findings indicate that 51 percent seeing an efficiency gain, 46 percent seeing a positive impact on the quality of critical business processes, and 20 percent see improved employee retention, with 53 percent seeing a decline in training costs.

Often return on investment cannot be measured in terms of dollars and cents and must be measured in other performance factors that create value and worth for the company. During the current economic climate, surprisingly, companies are not scaling back on training. They are getting more for their money by reallocating budget to e-learning (Henry, 2002; Allen, 2008).

Another approach that companies can take is to start e-learning program in-house and start small rather than put a large amount of investment into it. Weekes (2006) points out that e-learning does not have to mean buying a costly learning management system (LMS) and investing in libraries of content. Do-it-yourself training can be a very cost efficient way to go. If the company is able to maximize the current system architecture and IT infrastructure, such as the intranet, they will already have someplace to host their e-learning program. They may also have tools available, such as web development tools, in which they can use to create e-learning programs as well. The area which must be considered when developing e-learning in-house is the time it takes to develop the program itself. A company will need to factor in the time spent when determining their return on investment for in-house projects.

Overall, the return on investment for companies, both tangible and intangible, can be measured in some way and it will show that adding e-learning to their training programs is advantageous.

SUCCESSFUL E-LEARNING

There are numerous examples of successful implementation of e-learning in companies. For example, the BBC is defined by its editorial policy, which the training on its policy was traditionally in a book form. Additionally the training originally would take two days of instructional time and it needed to be given to about sixteen thousand employees. The BBC thought it would be more cost-effective to provide an e-learning solution. They outsourced the project due to timing constraints and were able to roll out the training in the time frame they needed. The training not only provided a cost effective solution but also improved the image of e-learning within the corporation (Ettinger & Holton, 2005).

Ryanair, a low-fare airline company, was the first airline company to provide pilots with a web-based training program. Aviation is one of the most highly-regulated industries, in which training requirements are challenging and difficult for an airline organization to track. They outsourced the management of all the records for all the training events such as ground school training, pilot conversion courses and simulator training (Weekes, 2004). Because of the availability of the access of records, it enabled instructors the advantage to easily track the pilots learning. These and many other cases have proven that e-learning provides cost savings, employee satisfaction and competitive advantages for companies.

FUTURE IMPLICATIONS

E-learning has been gaining wide acceptance in today's organizations and will continue to rise. Because of the value added with e-learning companies are willing to spend the money to implement or provide it to their employees. The new generation of employees, stemming from Generation X and the Millennium Generation, will be more adapted to e-learning in the workplace and they will expect it to be part of their ongoing employee development. The rationale behind this is that the millennium generation is a digital generation who are already used to learning in this way (Ettinger et al., 2006B). The challenge that companies will face is to engage these new employees in the delivery of e-learning they are used to such as video games and digital media that they use in their everyday lives. The challenge is to transform what can be a simple mechanical process into an exciting online classroom with powerful interactive features, such as streaming media, personalized skill assessment, application and simulation exercises, case studies, video-clips, knowledge based access, expert communities, online mentoring and discussion groups (Clarke & Hermens, 2001). This would provide a complete e-learning solution to the generation of employees that will capture and hold their attention.

Now and in the future, complete e-learning solutions will need to be developed within organizations to allow for training the new generation of employees. Characteristics of a complete e-learning solution should include rich multimedia (video, audio, interactive features), personalization, collaboration and scalability.

CONCLUSIONS

The concept of e-learning is growing rapidly within corporations. They are utilizing it to help the individual achieve improved job performance and satisfaction, understand on the job skills and help the company create a competitive work force. Companies need to train and educate their employees in a cost effective, efficient, thorough manner. E-learning is providing solutions to companies to achieve these goals. Creating competitive advantage by aligning workforce with company strategy is one of the most important goals of e-learning.

There are both benefits and limitations to e-learning and companies need to consider both of them and devise a plan to utilize e-learning to reach their strategic goals before embarking on the actual development of both technology and e-learning media for distribution to employees.

Return on investment is a key factor when organizations decide to implement e-learning. There are both tangible and intangible reasons that e-learning provides the return on investment companies are looking for. As a new generation

of employees enter the workforce it will be increasingly important for companies to offer e-learning as a solution to educate and maintain employees' life-long learning objectives.

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