

Economies Of Elearning In The 21st Century

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ABSTRACT

The Internet and advancements in the field of information technology have opened up unprecedented opportunities for every citizen to succeed in the 21st Century. Higher education has been utilizing the new technology by offering web-based education. Many universities today offer online classes and even online degrees using eLearning. But how can we measure the cost effectiveness and efficiency of eLearning? The purpose of this article is to review a model to measure the cost effectiveness and efficiency of eLearning by investigating the three major sectors of the eLearning industry and discuss the impacts of economy on the growth of this newly developed industry.

Keywords: eLearning, Web-Based Education, Economics, Higher Education

INTRODUCTION

The world of education is changing. High costs of education, the demand to increase the knowledge of graduates and improve quality, and the increasing diversity of students are factors affecting this change and transition. Information technology and computers possess the ability to solve many of these challenges. Higher education institutions responded by using advanced information technologies (Palloff & Prat, 2000).

Electronic learning or e-learning is defined as learning facilitated through electronic means. In the 1980's Computer Based Training (CBT) was used for learning purposes by some universities. After the introduction of the World Wide Web these institutions started using the Internet for educational purposes, starting the era of Web Based Training (WBT). With the advances of Internet technologies, WBT has become very popular in universities and colleges for teaching purposes. E-learning has changed the role of students and faculty. It has personalized education making it more learner-centered. The new technology has helped institutions of higher education save money through improved processes, distance education, and cutting down costs. E-learning has expanded the scope and content of the curriculum and increased enrollment for colleges and universities (Horgan, 1998).

E-learning has been defined as "pedagogy empowered by digital technology (Titrade, El Baaboua, Sion, & Mihalcescu, 2009)". Different organizations and industries have used e-learning in a wide variety of contexts. In the business world, e-learning refers to the strategies that use the company network to deliver training courses to employees. Specifically in Corporate America, it is defined as a planned learning experience that uses a wide spectrum of technologies to reach learners. In the institutions of Higher Education, e-learning is used to define a specific mode of delivery to attend a course or program of study where the students rarely, if ever, attend face-to-face for on-campus access to educational facilities, because they study online.

Edgar Weippl (2002) suggests that the three most important advantages of e-learning in education are:

- The ability to study on one's own schedule,
- Navigation is no longer limited by serially flipping through pages, and
- Interactive examples are far more likely to actively involve students while studying.

Any system using e-learning consists of four major components: instructor, student, course content, and technology. Each component has specific needs, characteristics, and faces different challenges. Any change to one

component requires making changes to the other three in order to achieve the same goal (Leh, 1999).

With the advances of technology, education and training has become a strategic advantage for institutions of higher education. After revolutionizing the world of business, further advances of network and telecommunication integrated technology into the educational process, making it a major initiative for higher education institutions. E-Learning has become very popular in today's higher education. Using e-learning institutions of higher education can increase their enrollment and expand their programs in other markets and geographical regions (Tavangarian, 2004). Teaching and learning environments were rapidly enhanced by the capabilities of advanced technology methods.

The next question becomes when and where can learning occur? All learning occurs within the learners' minds. The most any education or training professional can do is create appropriate interventions that promote, encourage, and facilitate the attainment of objectives. During this process, consideration is given to how the teacher and learners interact in time and place. E-Learning is a form of distance education that uses web browsers for accessing content from remote locations on the Internet. Effective e-learning differentiates itself from other forms of distance education by being highly interactive on three levels:

- learners interacting with learners
- learners interacting with content
- learners interacting with an instructor

E-learning also presents some challenges to learners. In study published by Jones, Jones and Packham (2009) it was suggested that e-learning presented several challenges:

Firstly, e-learning students require a high level of information communication technology competence, motivation and self-discipline. Secondly, students need to be informed regarding the nature of the experience. Thirdly, university admissions systems must include an assessment of the candidate's ICT competence, motivation and consequent suitability for undertaking an on-line course. Finally, induction programmes must meet student needs in terms of academic level, flexibility and content. This final factor is prevalent in entrepreneurship education students who are disenfranchised from pursuing courses of study due to pressures of running a small business (p. 37, Jones, & Packham, 2009).

Current advances in technology are trying to address some of these challenges. In addition, literature shows that not all students are best fit for web-based education and training. Older students that had not been exposed to today's technology and the World Wide Web must attain competence in computer skills in order to fully take advantage of the opportunities offered by e-learning.

COST EFFICIENCY

Here is the most frequently asked question by faculty and administrators: Is e-Learning as effective as traditional teaching models? To answer this question, first one must recognize the factors that contribute to learning and assess whether they are dependent on a particular delivery system. Little research has been conducted to answer the question whether or not e-learning is as effective as face-to-face instruction? However, recent literature suggests e-learning can make knowledge applicable in any setting and help the learner to gain the dispositions needed to effectively communicate globally. For example, a recent study published by Dailey-Hebert & Donnelly (2010) suggests that by marrying service-learning and eLearning pedagogies, educators can devise innovative pedagogical approaches that respond to the personal characteristics and educational preferences of today's "millennial" learners. Administrators tend to like a simple yes or no answer to the above comparison question; however, the answer to this question is: it really depends. Before an institution begins the design and development phase, it is necessary to understand the difference between efficiency and effectiveness.

To compare the effectiveness of face-to-face and e-learning delivery systems, we must compare the economics of e-learning to the traditional model. The following formulas clearly distinguish between cost-efficiency and cost effectiveness:

- $TCTP - TCNP = PNS$ where TCTP equals the total administrative costs of the former program, TCNP equals the total administrative costs of the new program, and PNS equals the projected net savings.
- $TACT / \text{number of students} = CPS$ where TACT equals the total administrative costs of training and CPS equals the cost per student (Setaro, 2001).

A simple calculation clearly shows that the e-Learning offering is far more cost efficient than the face-to-face course. If an institution is to offer the face-to-face course over and over again on its campus, it would incur travel costs for participants and variable costs such as utilities and building maintenance each time and the economies of scale would not be realized to the same extent. However, while both of these calculations give an indication of cost efficiency, they still do not capture the entire return on investment which must ultimately consider the effectiveness of the training as determined through evaluation. Only then can cost effectiveness and efficiency be compared (Carnevale, 2003).

To understand the total benefits derived from e-Learning, specific metrics and standard measures of effectiveness must be defined. By having standard measures, the cost effectiveness and ROI of an e-learning project can be assessed. The standard evaluations that are administered at the end of a course are not sufficient for assessment purposes. Setaro (2001) offers the following standard measures in order to calculate true percentage of ROI in an e-Learning project:

- Multiply the total benefits (TB) of training in dollars by 100 and divide that by the total training program cost (TTC)
- $TB \text{ (in \$)} \times 100 / TTC = ROI \%$

However, the major challenge in this model is to represent the total benefits as a dollar value. Some researchers believe assigning dollar values to benefits is not a possible task.

BENEFITS AND DOLLARS

There are two types of benefits: hard and soft. Hard benefits are defined as benefits that are objective and easily measured, such as increased productivity. Hard benefits are often easy to convert into dollars. Soft benefits are not very objective and are harder to measure, such as the soft benefits of training in an organization. One of the soft benefits of training is improved communication in the organization. But can this intangible benefit be measured? Often survey research is utilized to convert soft benefits into dollars in organizations.

One way to convert soft benefits into dollars is to evaluate the extent to which training achieved its instructional or performance goals. Not considering the cost factors of training, this model can test the effectiveness and soft benefits of such initiatives.

Knowledge is the driver of today's economy. E-learning in some cases is the only mean of survival for many organizations. E-learning allows organizations to adapt to rapidly changing environments and maintain a competitive advantage in the business world. Such initiatives increase the speed and dissemination of knowledge providing opportunities in the form of personalized learning and new collaborative learning opportunities (Straub & Cardinali, 2005). E-learning is also the most efficient and cost effective way of educating the workplace, as it means that companies are saving on the travel, accommodation and food expenses that are spent on former means of education. Such benefits can easily be converted into dollars.

MAJOR SECTORS OF ELEARNING ECONOMY

Research shows that currently there are three major sectors to the education economy:

- Service provision
- Educational content
- Infrastructure

Service provision

Service provision is the actual delivery of educational services. The service provision is usually divided into the following two levels: K-12 school and college level. In addition large investment in corporate learning and a large informal learning sector exist in this sector. Currently service delivery for schools and colleges exists as a public enterprise. However, in some countries such as the United States the private sector also has a significant involvement. Corporate learning is often delivered by the corporation, though many contract such services to external agencies.

Revenue for the public service sector is derived mainly from the following sources:

- Public funding,
- Tuition,
- Gifts and grants, and
- Royalties and other earnings.

Revenue for the corporate service sector is derived from the following sources:

- Corporations, and
- Tuitions and other direct charges to users.

It is important to note that the service provision sector is heavily regulated. Even where there is private sector involvement, a rigorous accreditation process exists.

Educational content

The educational content consists of the production and distribution of educational content such as textbooks and supplies. The educational content is mainly produced by private enterprise. Similarly to the service sector, the educational content sector also has guidelines and criteria. However, unlike the service sector, these guidelines are typically specified by the purchasing institution. In addition, Copyright laws exist in this sector.

Revenue for purchases of educational content is derived from the following sources:

- Public funding,
- Corporations,
- Direct purchases by users, and
- Gifts and grants

The selection of material is usually made on a competitive basis, with purchase decisions being made in almost all cases by the educational institution or the corporation.

Infrastructure

The infrastructure sector consists of the production and maintenance of educational infrastructure. The major components of this sector are educational buildings and associated expenses such utilities costs and maintenance. Generally infrastructure is provided by private contractors.

Revenue for infrastructure is derived from the following sources:

- Public funding,
- Corporations, and
- Gifts and grants

There are numerous areas of economic activity in education that direct educational purchases form only a small part of that activity. The bulk of educational expenses are made by the institution and not the learner. The internet impacts this picture in a number of areas (Weippl, 2002). It changes the nature of service provision, content, and infrastructure, creating new spending in some areas and decreasing spending in others. The expectation is that on a per-student basis, costs will decrease, however, it is also expected that because of increased efficiencies, the overall market will increase.

DISCUSSION AND CONCLUSIONS

The economy of e-learning and education in general is shifting from a production mode to a service mode. In some cases, new production such as buildings and other infrastructure is neither efficient nor desired; in other cases such as content and software, digital technologies are allowing production to be undertaken by the consumers themselves. Literature does not suggest major changes in the funding of educational resources. Faced with the choice between providing the same type of education to a smaller number of people or adapting to more cost-effective educational delivery methods, institutions will opt for the latter. This does not mean educational ruin for the educational industry; quite the contrary.

As the sector shifts, the per-person cost of learning decreases dramatically. This greatly expands the market. In the public sector, it involves being able to provide more specialized and higher education for a greater number of people. Moreover, it enables more governments, especially those in the developing world, to provide educational opportunities. In the corporate sector, it extends the range of corporate education from the Fortune 500 sector to the much large small and medium enterprise sector.

Growth of e-Learning is the function of two important factors. First factor is the competitive cost advantage and Second Factor is the enabling qualities such as enhanced reach and learning impact. Whatever the growth in US economy is, increasing expectation of capital efficiency will force organizations to continuously reduce Cost/Hour of learning delivery. However more impactful trend might emerge and particularly among the organization which have matured in accepting e-Learning. E-Learning proponents have been able to establish that for certain learning topics more instructionally sound content enable much better quality of long-term learning even compared to class room (Mandal, 2004).

Therefore, this not only substitutes class room and traditional training but achieves better results to the learners. Though this content is very expensive and have a late break-even incase calculated on numbers of learning hours. Mature organizations would still move in this direction as performance benefits immediately after receipt of such training are unmatched.

What happens to the e-Learning industry if the current recession continues or another recession hits? Lower revenues and lower profits for US corporations certainly means cut in spending. However, e-Learning in relative terms is likely to benefit from recessionary conditions as it is a proven cost friendly alternative to a traditional class room. The share of e-Learning hours will dramatically increase due to lowered base of number of training hours. This is expected during recession. Also due to improvements in technology infrastructure coupled with lowered data access cost, share of online e-Learning should increase.

E-Learning industry in general has a great future irrespective the situation of the economy. Economic opportunities will exist, not in the production of new goods that will not be purchased, but rather in the support and servicing of increasingly self-managed educational activity. 21st is a good era for the economy of e-learning.

AUTHOR INFORMATION

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