

# An Investigation of the Effective E-Learning Criteria for Higher Education Institutions

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**Abstract:** The recent advances in Information and Communication Technologies affected education industry as well as other industries all over the world. Over the past decade, higher education institutions have been increasingly utilizing e-learning programs. However, some experiments showed that superficial e-learning systems might result in failure and disappointment. Therefore educational institutions should develop and follow the corporate guidelines so that the courses can be taught effectively and students can feel comfortable to adapt quickly to the other e-learning based courses. The purpose of this study is to investigate the effectiveness criteria of e-learning for higher education institutions. The study presents some of the previous research findings and supplements them with a survey conducted at Epoka University in Spring semester of 2008-2009 academic year. The findings of this study may be very useful to the higher education institutions who are planning to establish e-learning.

## Introduction

The advancement in ICTs (Information and Communication Technologies) and the widespread use of computers have generated a remarkable interest in on-line education in the past decade. This advancement led educational institutions search for alternatives to the traditional education. Consequently, they started to offer on-line education, or simply “e-learning” which aims to eliminate the dependency to the traditional classrooms and/or improve the learning environment (Eastman & Swift, 2001).

There are many definitions of e-learning. For example, Zhang et al. (2004) defined it as “technology-based learning in which learning materials are delivered electronically to remote learners via a computer network”. A very comprehensive one was proposed by Learning and Teaching Support Network (LTSN) Generic Centre: “learning facilitated and supported through the use of information and communication technologies” (Jenkins & Hanson, 2003).

Although e-learning is utilized by many educational institutions and companies today, the major beneficiaries are higher education institutions due to their high number of learners whose ages are very suitable for understanding e-learning. Nowadays, a great number of higher education institutions are providing e-learning courses or complete programs to the students. Besides, the number of those higher institutions is continually increasing. It is becoming evident that on-line education will become an integral part of higher education in the foreseeable future (Nakos et al., 2002).

Despite this increasing interest in e-learning, some recent studies claimed that e-learning is less popular amongst learners compared with traditional learning and there is less demand for online study than enthusiasts predicted (McLeod, 2004; Lam & Bordia, 2008). Some other experiments showed that superficial e-learning systems may even result in failure and disappointment. Since e-learning is a new concept and has been popular swiftly, many higher institutions implemented it without determining corporate guidelines and critical success factors, measuring students perception, etc. Actually, an understanding of students’ perception and the factors that drive adoption intention will be very useful to make this mode of learning more acceptable. Additionally, teachers who are experienced in e-learning might be expected to understand what students are looking for when they are choosing their mode of studies (Lam & Bordia, 2008).

The purpose of this study is to investigate the effectiveness criteria of e-learning in higher education institutions. The study presents some of the previous research findings and supplements them with a survey conducted at Epoka University which is located in a transition country, Albania. E-learning issues are comparatively little known in Albania and there seems no relevant study researching e-Learning in the higher

education institutions in this small lovely country. Therefore findings of this study may be very useful to the higher education institutions in Albania or other transition countries to establish their e-learning strategies.

## **E-Learning Models**

E-learning models used at the higher education institutions can be classified according to various criteria. Three major categories are presented below (Eurybase, 2009):

### **1. The role of e-learning:**

a) *Full e-learning programs* – students obtain access to e-learning contents put on an online platform (like web) or distributed on CDs. Students are usually supported by tutors that use various communication tools (chat, discussion forum, e-mail, virtual classroom, videoconferences). Students take presence at the university several times a year, during which they take exams, participate in kick-off classes. This model is being used successfully only by a small set of universities.

b) *Traditional learning programs supported by ICTs in the area of communication and collaboration* – this model is usually used by institutions that haven't developed e-learning contents yet.

c) *Blended learning programs* – students attend traditional led classes, which are supported with e-learning contents. This is the most popular model today.

### **2. E-learning content distribution method:**

a) *Computer based training* – it is a popular model in universities who are lack of high Internet access.

b) *Web based training* – it is becoming more and more popular due to some improvements in IT infrastructure, as well as the increased availability of cost-effective e-learning solutions.

### **3. E-learning solutions used:**

a) *Self-developed platforms* – they were quite common a few years ago that universities started to develop own solutions instead of purchasing expensive commercial ones. However due to the need for continuous investment in self-developed platform to follow new standards, decreasing prices of commercial solutions, appearance and popularization of open source platforms (e.g. Moodle), only few universities still continue to develop their own platforms.

b) *Open source platforms* – they are commonly used today in many universities. These platforms are usually free and can be easily adapted to the particular needs of a university. One of the most popular platforms is Moodle. Moodle implementations however are rarely integrated with other university systems and their usages lack standardization and coherence between various courses (Please see <http://moodle.org/> for a detailed information on Moodle).

c) *Commercial platforms* – they are usually integrated with other university systems and their usage seems to be the most professional compared to self-developed and open source platforms. These platforms are usually preferred by universities who offer a comprehensive set of e-learning courses.

## **E-Learning Pros and Cons**

Recent developments in ICTs have made e-learning a feasible alternative to access to educational and training opportunities for learners of all ages, at all levels, and in different environments. In contrast to traditional classroom learning, e-Learning has several advantages for learners. First, e-learning provides time and location flexibility. Second, in the long run, e-learning results in cost and time savings for educational institutions. Third, it supports self-directed and self-paced learning by conducting learner-centered activities. Fourth, e-learning offers a collaborative learning environment by linking each learner with physically dispersed experts and peers. Fifth, it allows unlimited access to electronic learning materials. In addition, knowledge stored in a Web repository can be updated and maintained in a timely and effective fashion (Anaraki, 2004).

On the other hand, superficial e-learning systems can result in frustration, anxiety, confusion, and reduced learner interest. Some of the problems that hinder the effectiveness of e-learning are listed below (Lam & Bordia, 2008; Anaraki, 2004).

- *Lack of forms of communication, body language and voice inflection:* Compared to traditional classroom teaching, the electronic experience takes away much of the social and diversity aspects in the e-learning class. These important skills are important in the business community and in an individual's success in interacting face-to-face with others.
- *Text-based learning materials:* The learning materials composed of only text may seem boring to learners and cause them to disengage during online learning.
- *Unstructured and isolated multimedia content:* Many multimedia-based e-learning systems simply post content on the Web without any processing. Postings are usually static, passive and unstructured, without any link to relevant materials in different media. For example, instructional videos and PowerPoint slides of the same lecture are presented separately. Learners may even have to go to two different Web sites to view both of them.
- *Lack of rich content:* A number of e-learning systems lack adequate instructions for students. Some systems provide only PowerPoint slides which may not ensure that learners understand the learning content. It is not uncommon for readers of those slides to fail in understanding what an instructor really means by all those bullet points.
- *Insufficient interactivity or flexibility:* Many current e-learning systems are not quite interactive. Learners have little flexibility to adapt learning content and process to meet their individual needs. For example, it may not be possible to find exactly what is wanted or to skip a portion of content that is already known (Hammond, 1995). In other cases, a student may want to ask a question and get an answer right away instead of sequentially going through an entire instructional video or other multimedia content to find an answer. Most multimedia-based e-learning systems do not provide this capability.

Table 1 illustrates the pros and cons of e-learning in comparison with traditional classroom learning (Zhang et al., 2004; Lam & Bordia, 2008; Anaraki, 2004).

	<b>Traditional Classroom Learning</b>	<b>E-Learning</b>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Immediate feedback</li> <li>Being familiar to both instructors and students</li> <li>Motivating students</li> <li>Cultivation of a social community</li> </ul>	<ul style="list-style-type: none"> <li>Learner-centered and self-paced</li> <li>Time and location flexibility</li> <li>Cost-effective</li> <li>Potentially available to global audience</li> <li>Unlimited access to knowledge</li> <li>Archival capability for knowledge reuse and sharing</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>Instructor-centered</li> <li>Time and location constraints</li> <li>More expensive to deliver</li> <li>Lack of individual interactivity especially in crowded classes.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of immediate feedback in asynchronous e-learning</li> <li>Increased preparation time for the instructor</li> <li>Not comfortable to some people</li> <li>Potentially more frustration, anxiety, and confusion</li> <li>Lack of social communication</li> </ul>

**Table 1.** Pros and Cons of E-Learning

## Effective E-Learning Criteria

Establishing e-Learning courses is a very complex process that includes many critical success factors. Thus, institutions and educators need to consider these factors to provide effective learning environments. The institution should firstly determine its own corporate guidelines and inform the educators to base their courses on them. This is especially important in order to maintain a common user interface for each course. Here are some examples to corporate guidelines: (Zeidman, 2003; Anaraki, 2004)

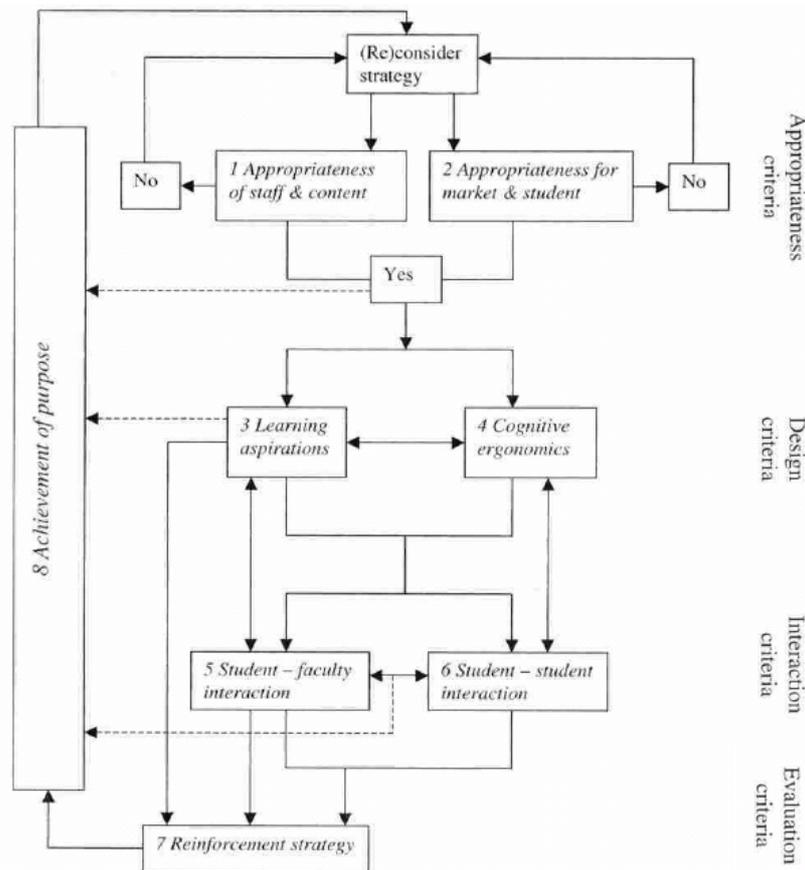
- Learning objectives must be clearly defined.
- The course structure must be well thought-out and consistent for each course
- The user interface must be easy to use and consistent for each course.
- Courses must be prepared by instruction experts with experience in instructional design.
- The courses must require regular interaction with the student.
- The progress must be measured, tracked, and reported.
- Minimum course materials must be determined (i.e. PowerPoint Slides, Videos, etc).

- Support tools (labs, references, collaboration, etc.) must be determined.
- Platform security must be maintained.

A very comprehensive and challenging work has been done by Blass and Davis (2003) to explore the eight areas in terms of guiding principles that can be tailored to the needs of the particular student group and faculty. They grouped these principles into four higher order groupings or criteria, with the central concerns of each of these criteria identified (see Table 2). The relationships between the criteria and guiding principles are shown in the flowchart in Figure 1.

Guiding Principles	Higher Order Criteria	Central Concerns
1 Appropriateness of staff	Appropriateness	Is it appropriate?
2 Appropriateness of content		
3 Learning aspirations	Design	What is the learning goal?
4 Cognitive ergonomics		
5 Student-faculty interaction	Interaction	How to interact?
6 Student-student interaction		
7 Reinforcement strategy	Evaluation	How to reinforce?
8 Achievement of purpose		

**Table 2.** Guiding principles and Higher Order Criteria for E-Learning Development  
(Source: Blass & Davis, 2003)



**Figure 1.** Relations between criteria and guiding principles.  
(Source: Blass & Davis, 2003)

Obeying the guidelines of the institution, instructors must separately evaluate the student satisfaction towards the online course they are providing. Obtaining ‘feedback’ from students about the design and implementation of the learning environment provided is an essential part of identifying what has worked, and where improvements could be made in the future (Pearson & Trinidad, 2005, p. 396). Although educators may create their own survey forms, we can suggest them to use a qualified and effective survey instruments like OLES, one that was used and presented in the methodology section of this study.

## Methodology

This study utilized an instrument called Online Learning Environment Survey (OLES). OLES is a web-based instrument for evaluating e-learning environments. Participants of the survey are asked to indicate their ‘actual’ and ‘preferred’ experiences with components of online learning in a course they take. The data collected and the resultant statistics depict the actual and preferred learning environment of learners giving valuable feedback to educators working in these environments. OLES can be administered totally online by the educators. Using the OLES, educators can gather valuable pre-course and post-course data to evaluate the effectiveness of the e-learning environment. Adjustments can then be made accordingly to improve or adjust the learning environment. OLES instrument was developed by Dr. Sue Trinidad and Dr. John Pearson. Additional information about OLES can be obtained from <http://www.monochrome.com.au/oles/survey.htm>.

OLES contains 54 items arranged in nine scales – Computer Usage (CU); Teacher Support (TS); Student Interaction and Collaboration (SIC); Personal Relevance (PR); Authentic Learning (AL); Student Autonomy (SA); Equity (EQ); Enjoyment (EN); and Asynchronicity (AS). Samples of items in each scale are shown in Table 3. Respondents are asked to rate items using a five-point scale (Almost Never; Seldom; Sometimes; Often; Almost Always). OLES is available in two forms: the student version and teacher version. In this paper, only data on the use of the student version has been used.

SCALES	SAMPLE ITEMS
Computer Usage (CU) (6 items)	<i>I use the computer to find out information about the course. (3)</i> <i>I use the computer to take part in online discussions with other students. (6)</i>
Teacher Support (TS) (8 items)	<i>If I have an inquiry, the teacher finds the time to respond. (7)</i> <i>The teacher gives me valuable feedback on my assignments. (10)</i>
Interaction & Collaboration (SIC) (6 items)	<i>I discuss my ideas with other students. (18)</i> <i>I can collaborate with other students in the class. (19)</i>
Personal Relevance (PR) (5 items)	<i>I am able to pursue topics that interest me. (22)</i> <i>I link class work to my life outside of this class. (24)</i>
Authentic Learning (AL) (5 items)	<i>I work on assignments that deal with real-world information. (28)</i> <i>I apply real world experience to the topic of study. (30)</i>
Student Autonomy (SA) (5 items)	<i>I work during times I find convenient. (32)</i> <i>I play an important role in my own learning. (34)</i>
Equity (EQ) (7 items)	<i>I get the same amount of help from the teacher as do other students. (37)</i> <i>I receive the same encouragement from the teacher as other students do. (39)</i>
Enjoyment (EN) (6 items)	<i>Online learning is exciting. (44)</i> <i>I would enjoy my education if more of my classes were online. (47)</i>
Asynchronicity (AS) (6 items)	<i>I access the discussion forum at places convenient to me. (49)</i> <i>The process of writing and posting messages helps me to think. (52)</i>

**Table 3.** Guiding OLES scales and sample items  
(Source: Pearson & Trinidad, 2006)

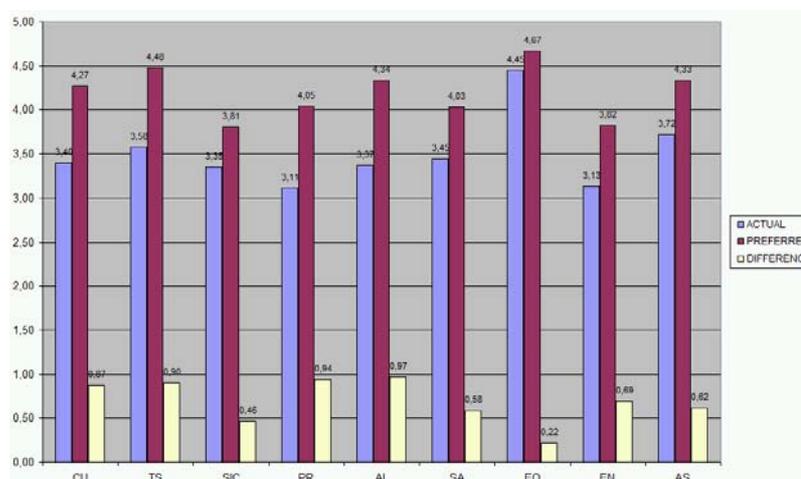
The data were collected from OLES that were applied to 13 MBA students taking Supply Chain Management course in Spring 2009 semester at Epoka University. The course included online discussions, assignments and some visual course materials as an adjunct to classroom presentations given by the lecturer every 3 weeks. Of the students 62% were female (n=8) and 38% were male (n=5).

## Findings

The summarized responses of 13 students who completed OLES are shown in Table 4 and Figure 2. As one would expect, ‘preferred’ scores were higher than ‘actual’ scores. Means of scores ranged from 3.11 to 4.45 for ‘actual’ and 3.81 to 4.67 for ‘preferred’. Statistical analysis (ANOVA) revealed significant differences for the Computer Usage (CU), Teacher Support (TS), Personal Relevance (PR), and Authentic Learning (AL) scales in 95% confidence level. These results are giving opportunity to the lecturer of this course to identify unsatisfied aspects and update the e-learning environment supplied to the students.

OLES Scale	Actual / Preferred	Mean	Std. Deviation	Std. Error	F	Sig.
Computer Usage (CU)	Actual	3,40	0,964	0,267	8,243	0,008
	Preferred	4,27	0,516	0,143		
Teacher Support (TS)	Actual	3,58	1,007	0,279	6,502	0,018
	Preferred	4,48	0,788	0,218		
Student Interaction & Collaboration (SIC)	Actual	3,35	1,287	0,357	0,785	0,384
	Preferred	3,81	1,367	0,379		
Personal Relevance (PR)	Actual	3,11	0,889	0,247	5,598	0,026
	Preferred	4,05	1,120	0,311		
Authentic Learning (AL)	Actual	3,37	1,110	0,308	7,177	0,013
	Preferred	4,34	0,685	0,190		
Student Autonomy (SA)	Actual	3,45	1,138	0,316	1,650	0,211
	Preferred	4,03	1,183	0,328		
Equity (EQ)	Actual	4,45	0,606	0,168	1,005	0,326
	Preferred	4,67	0,513	0,142		
Enjoyment (EN)	Actual	3,13	0,884	0,245	3,340	0,080
	Preferred	3,82	1,039	0,288		
Asynchronicity (AS)	Actual	3,72	0,939	0,261	3,708	0,066
	Preferred	4,33	0,670	0,186		

**Table 4.** Statistics between students' 'actual' and 'preferred' scores on the OLES scales



**Figure 2.** Graphical Representation of Students' Actual and Preferred Scores

## Conclusion

This study investigated the effectiveness criteria of e-learning in higher education institutions. E-learning environments can not be effective without considering students' needs and preferences. Obtaining student feedback is thus crucial for the successful design and implementation of e-learning environment. The study presented important findings regarding the students' feedback on a sample e-learning course. By the help of effectiveness criteria and empirical results, higher education institutions can plan and implement e-learning strategies and thus improve the e-learning courses they offer to satisfy their students. The findings of this study also showed that OLES is a valuable tool to help higher education institutions and lecturers evaluate the effectiveness of their online courses. The results gathered by OLES or similar tools can be used to make changes to the design of actual e-learning environments.

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