A Proposed Assessment Criterion for E-Learning Sites Evaluation: An Experts' Opinion

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Abstract

An increasing growth in the number of e-learning sites at universities and other educational institutions led to necessary of develop and adopt a standards element to assess these sites to ensure efficiency, rival, and educational quality. Therefore, this study proposed an assessment criterion to evaluate the e-learning sites as a guide for decision-makers in order to purchase and development e-learning sites in which these assessment criterions are commensurate with the learning process. An experts' opinion from universities professors who specialize in the field of teaching in different Jordan universities have been considered in order to develop a proposed assessment criterion, the result shows that the assessment criterion to evaluate the e-learning sites has twenty six criterion under five main categorizes namely: website design, and scientific knowledge content, technical elements, operational elements and finally with credibility of information sites. Given that the proposed assessment criterion to evaluate e-learning sites is guide for students, teachers, owners and developers about the benefits of e-learning sites.

Keywords: e-learning site, assessment criterion, decision-making

1. Introduction

Learning process aims to spread knowledge about the specific topic through interactive and interesting environment. Teachers convey their knowledge in both types (implicit and explicit) using some learning techniques (Nokelainen, 2006). Improves learning process conditions and environment to transfer both types knowledge will be enhancing learning process then that achieve education goals. Hence, intervene and usage of the information revolution and e-learning approach provides an improvement and solution to the problems experienced by the traditional learning approach such as the absence of students from their lessons, and increasing population growth and individual differences that makes a computer-based educational software and e-learning assistant outstanding teachers and the education approach itself either. These software applications aim to help and support teachers rather to replace them. However, the evaluation of educational software and e-learning is an important factor that impact on the learners' knowledge and teachers. Therefore, it is necessary to adopt a standards element to assess these sites to ensure efficiency, rival, and educational quality.

Several researchers have therefore approached the analysis of e-learning sites as website design, and scientific knowledge content, technical elements, operational elements and finally with credibility of information sites. Some have argued that the website design aspects of e-learning sites and scientific knowledge content are such importance that they often overshadow the substantial learning complexities (Sharlin & Bartus, 2009; Tarafdar & Zhang, 2005). The use of poor e-learning sites has often been identified as one of the major factors that can jeopardize the success of a learning process and its objectives. Meanwhile, researchers have also recognized that following appropriate e-learning sites contributes to the success of learning process. For example, Veeramani (2010) stated that credibility of information sites is key factors when it comes to the success of learning process. There is a general critical consensus that evaluation of e-learning sites a very important role in the success or failure of learning process.

Other study by Stewart et al, (2004) developed a tool that enabled the lecturers to evaluate the quality of the

courses on the e-learning. The study results suggested seven categorizes namely (hyperlinks and navigation, class procedures and expectations, technical issues, appearance of Web pages, online applications, content delivery, and instructor and peer interaction) that contains fifty-nine items in which lecturers were able to determine the quality of the e-learning courses. Bernard et al. (2004) recommended four factors to assess the achievements of e-learning namely general beliefs e-learning, and confidence in the abilities of pre-requisites, and autonomy and initiative, and the desire to interact. Kay and Knaack (2008) suggested student rating scale development to examine educational objects. The results showed that the student rating scale development will be a valid tool for measuring the three constants: learning, quality and commitment of the learning object.

However, most of e-learning studies have been focus on evaluate e-learning sites from perspective of the learning objects, it is not possible to improve learning process until areas that need improvement in an organization's current standards element to assess e-learning sites have been identified. In other words, the lack of an assessment criterion to evaluate the e-learning sites as a guide for decision-makers in order to purchase and development e-learning have been little mentioned in literature especially from the experts' opinion. Meanwhile, the solution for improving learning process and to assess e-learning sites will be different in each sites and educational institutional; it has been found that a one-size-fits-all approach does not work in such a scenario.

One core question that remains, despite the work done in previous studies, is: what are the experts' opinions of purchase and development e-learning sites? This study set out to understand assessment criterion to evaluate the e-learning sites in terms of purchase and development e-learning sites. The rest of this paper is organized as follows: in Section II we provide a review of previous literature relevant to the concept of e-learning and its assessment; in Section III we describe our research method; in Section IV we present our findings and discussion (the cross elements between e-learning sites and its assessment), in Section V delivers our conclusion and considers future work.

2. Research Method

The purpose of the present study is to understand the phenomenon of e-learning sites evaluation. Many researchers in the field of software engineering and information systems suggest that the best way to understand the phenomenon "evaluation of e-learning sites" practices is to observe and interpret the experiences of the participants involved in the process. One group of participants in universities is professors and doctors who are using e-learning sites to teach and interact with their students. These participants may possibly understand and agree among themselves upon the assessment criterion usage in order to evaluate e-learning sites. This study focuses particularly on participants' perspectives regarding assessment criterion usage in order to evaluate e-learning sites.

Two universities have participated in this research with 10 is professors and doctors who are using e-learning sites to teach and interact with their students from both universities, University 1 and 2 was established in 1997 and 1994 in which has 200 employees and 250 for university 2. The services they offer include undergraduate degree and master degree.

Table 1. Background of the participants

Position	Uni 1	Uni 2
Experience (Years)		
Less than 3 years	2(40%)	1(20%)
3 to 10 years	2(40%)	2(40%)
11 to 20 years	1(20%)	2(40%)
Experience (Position)		
Assistant Prof	2(40%)	1(40%)
Associate Prof	2(40%)	3(60%)
Professor	1(20%)	1(20%)

Table 1 shows the background of the participants who were participated in this study. The total number of participants was 10from both universities. The participants included assistant prof, associate prof, and full professor. All of the professors had a total experience of 11-20 years in the field. However, only 30% of the participants in both universities had less than 3 years' experience. Most of associate prof had over 11 years' experience in the field.

In the last decade focus group interviews have become a commonly used technique to collect qualitative data by

asking the participants about their perceptions, beliefs, opinions, or attitudes regarding a concept, idea, service, or product (Krueger & Casey, 2008). While social research typically adopts direct observation, focus groups are more appropriate for studies of attitudes and experiences. The communication between participants in the focus group allows the researcher to gain access to various areas for studies, sampling, and raises unexpected issues for exploration (Krueger & Casey, 2008). Focus groups are used as a self-contained method as well as in addition to other research methods, like in-depth interviews (Krueger & Casey, 2008).

Furthermore, group interviews may facilitate the discussion of taboo topics, reveal the opinions common to the group, and encourage people whose experiences are similar to discuss these experiences, when they might have been unwilling to discuss them otherwise. Some research has shown that group discussions generate more criticism than individual interviews (Krueger & Casey, 2008).

Before conducting a focus group, we identified the major objectives of the meeting and developed the main questions relevant to the research questions. The discussion session normally lasted an hour or an hour and a half. To plan the session, we needed to schedule a time when all the participants could attend. The universities' conference rooms were used, which allowed all of the participants to see each other. The main ground rules we followed during a focus group were to remain focused on the research topic while the discussion flowed and evolved, to maintain momentum, and to achieve closure of questions. The focus group meeting agendas always included: welcoming the participants, reviewing the agenda and goals of the meeting, explaining the means of recording the session, introduction, conducting a questions and answers period, and wrapping up. During the main part of the session, we might sit back and listen to the discussion. Later on, we might encourage the participants to conduct a discussion in more of a debate style, and to encourage different opinions to be voiced. We worked to facilitate equal participation of all the members, giving each person time to answer the question and to voice their opinion on the matter. To avoid having one or two people dominate the discussion, a round-table rule should be introduced as one of the ground rules at the beginning of a session.

Focus group discussions held presented in the table 2. We had 4 such meetings with participants. Some of these were audio recorded and some were not. The main point of the focus groups was to discuss the participants' perspective about the phenomenon of "e-learning sites evaluation". The participants also discussed the users' interaction strategies during the usage of e-learning sites.

Table 2. Focus group topics

Focus Groups Topics	Questions
Design	What do you think about eLearning site design?
	Do you think design has any impact on the use of e-learning site, if yes how, if no why?
Content	Electronic content elements clearly related to the quality of the website?
	What do you think about the validate and accuracy of the information presented on e-learning site?
Technical elements	- What are the elements that must be available in educational software so that the user can access the website?
	- How it can be treated Website individual differences among users?
Operational elements	What do think about e-learning site operational?
	Do site operational impact users, if yes how and why?
	What are the operational elements must be available in e-learning site?
Credibility	What do think about e-learning site credibility?
	Do site credibility impact users, if yes how and why?
	What are the credibility elements must be available in e-learning site?

3. Analysis Method Selection

The literature regarding qualitative research methods places great emphasis upon the methods used to go out and collect or generate data, but less emphasis upon the analytical techniques that can be used to interpret these data.

So whilst different approaches might be taken when conducting qualitative research, there are also requirements that there should be some consistency between methods, methodology and analysis, in order to demonstrate narrative story being told. At the same time, in order for the research to be credible to the reader, the reader needs to be led toward what the researcher thinks are most significant about the research findings (Gregor, 2006; Denzin, 2000). The importance of these findings must be made "transparent" and choices and assumptions made by the researcher made explicit in relation to the methodological perspective Klein & Myers 2001). For example, if a researcher is a positivist and tends to use deductive method reasoning, they'll tend to do "this".   If they are an interpretivist and tend to use inductive method reasoning, they'll tend to do "that". A wide range of literature documents the underlying assumptions and procedures associated with analyzing qualitative data, including the evaluation of data and data analysis strategies, and inductive and deductive approaches.

4. Results & Discussion

The results discussed in this section were obtained by our summarizing and synthesizing the findings we derived from the data collected during focus groups held with participants. During the focus groups we aimed to collect information from the participants regarding what are their opinions about assessment criterion to evaluate the e-learning sites. Table 3 shows the assessment criterion for each categorize they should be concerned to evaluate the e-learning sites.

Table 3. Assessment criterion for each categorize

Categorize	Assessment Criterion
Design	Ease movement from page to page
	The use of colors, sounds, movements and images
	Readability of the texts and the ease of finding information
	Person enjoyment by browsing and viewing
	Consistency between the colors, fonts and background thread
	Clarity in the chain lessons of logical sequence and linkages built
Content	Suitable title for content
	Information is accurate, objective, useful and sound
	Use of educational activities, useful exercises for target class, and constantly evolving and commensurate with the cognitive levels of users
	The presence of diversity in the presentation of content to achieve the principle of individual differences among the educated.
	The availability of the suspense elements, attract attention, creativity and challenge learners' abilities. The possibility of learning by play and entertaining
	The existence of an interactive dialogue between the software and learners
	It provides link to various sources of knowledge in the teaching areas
Technical elements	Site must provide users log file that show their activates and Users must be authorized to use the site.
	Site should Contains tools determine the level of knowledge of the user
	Site allows the user to choose and control the lesson.
	Site allows the user to return to revise certain parts of a particular lesson
Operational elements	Effective Feedback about online test
	Site performance.
	Effective and necessary links to the site.
	Available help tools to solve technical, writing, and learning problems
Credibility	Show the release date and it was last modified
	The information displayed is based on references and sources of credit
	E-mail is available for someone site owner or his representative
	All images, graphics, texts have names and addresses can be referenced
	The martial quality on the site

After the data had been analyzed inductively to produce the findings reported in this section, we sent emails to both participants in order to validate our data analysis. We have 9 responded out of 10 participants. The instructions for the participants stated: "We are interested in understanding which assessment criterion to evaluate the e-learning sites.   For each criterion shown in the following tables place a tick in the column (from

strongly disagree (0) to strongly agree (4)) that indicates whether you either personally think or witnessed someone else that use criterion to evaluate the e-learning sites".

We compared the assessment criterion to evaluate the e-learning sites marked in order to note similarities and differences between our data analysis and the participants' answers as well as to develop a formulas evaluation model for e-learning site, as shown in Table 4 and Table 5. we adopted an acceptable matching level and compared what the participants' said with what we had originally found in focus group, in order to display whether the two forms of results matched or not.　Table 4 shows design category as examples of our result validation.

Table 4. Design category– result validation

Categorize	Assessment Criterion	Strongly Agree (4)	Agree (3)	Neutral (2)	Disagree (1)	Strongly Disagree (0)
Design	Ease movement from page to page	7	1	1	---	---
	The use of colors, sounds, movements and images	6	2	1	---	---
	Readability of the texts and the ease of finding information	5	4	---	---	---
	Person enjoyment by browsing and viewing	8	1	---	---	---
	Consistency between the colors, fonts and background thread	6	1	2	---	---
	Clarity in the chain lessons of logical sequence and linkages built	4	5	---	---	---
	The formats of files upload	1	2	2	3	1

As shown in Table 4, our results were validated from the original focus group sessions with participants. For example, 'Ease movement from page to page', and 'Consistency between the colors, fonts and background thread' were found as assessment criterion during our focus group analysis and was confirmed by participant's validation. However, 'the formats of files upload' was found as assessment criterion during our focus group analysis but was not confirmed by participant's validation. The general result of the validation process carried out by means of the checklist was that the viewpoints the participants held of the assessment involved in e-learning sites had an approximately 86% similarity with our own view of the process. Therefore, the findings made through our analysis of focus group were validated by the participants at a rate of about 80-90%.

Table 5 shows a proposed formulas evaluation model for e-learning sits in which each criterion has 4 points and each category has the sum of points for its assessment criterion. The table 5 shows the maximum point's criterion, and grades achieved for each category.

The results indicate those different assessment criterions are used for different purposes during the evaluation of e-learning sites. For instance, design of e-learning sites criterions were indicated by participants from the perspective of usability (Chiu et al, 2005). Given that, our study was perceived usability from software design perspective as ease movement from page to page, the use of colors, sounds, movements and images, readability of the texts and the ease of finding information, and person enjoyment by browsing and viewing. In contrast, the study by Chiu et al (2005) was perceived usability from learning perspective as "It is easy for me to become skillful at using the e-learning service", "Using the e-learning service can improve my learning performance". Our results suggest that continuance intention of participants and satisfaction are achieved by perceived software design usability of e-learning sites.

Table 5. Formulas evaluation model for e-learning sits

Categorize	Number of Criterion (NC)	Maximum Marks (MM)	The amount of degrees' verification (DV)	The percentage of grades achieve
Design	6	24	$D1=\sum_{i=1}^{NC}$ Criterion $*$ ScoreMark	D1/MM *100
Content	7	28	$D2=\sum_{i=1}^{NC}$ Criterion $*$ ScoreMark	D2/MM *100
Technical elements	4	16	$D3=\sum_{i=1}^{NC}$ Criterion $*$ ScoreMark	D3/MM *100
Operational elements	4	16	$D4=\sum_{i=1}^{NC}$ Criterion $*$ ScoreMark	D4/MM *100
Credibility	5	20	$D5=\sum_{i=1}^{NC}$ Criterion $*$ ScoreMark	D5/MM *100
Formula of overall site evaluation (SE)				

$$SE = \frac{\sum_{i=1}^{5} D_i}{\sum MM} \times 100\%$$

The results imply that content of e-learning sites seem to be indicated by participants in order to identify negative critical incidents of e-learning sites. Our result indicated that suitable title for content, information is accurate, objective, useful and sound, and use of educational activities, useful exercises for target class, and constantly evolving and commensurate with the cognitive levels of users, and the presence of diversity in the presentation of content to achieve the principle of individual differences among the educated, the availability of the suspense elements, attract attention, creativity and challenge learners' abilities. the possibility of learning by play and entertaining, the existence of an interactive dialogue between the software and learners, it provides link to various sources of knowledge in the teaching areas are an important assessment criterions from participants' perspective as perhaps one that could have an impact on the progress and outcomes of the teaching process Lin, 2011). In contrast, the study by Lee (2010) has evaluated content of e-learning sites from the perspective of concentration that adopted from the study of Moon and Kim as e-learning web site provides the service needs, feel comfortable in using the functions and services provided by the e-learning web site, the e-learning web site provides complete information, and the e-learning web site provides information that is easy to comprehend. One possible explanation for our result is that our data analyses driven from the perspective of software develop and chosen rather than from teaching process. Furthermore, the developing and choosing e-learning sites incorporates a set of progress activities that require different assessment criterions such as a software quality, and elements. These activities may improve the participants' experience of developing and choosing e-learning sites.

5. Conclusion and Future Works

To conclude, the development of an information system involves knowing what to create and how to create it. Understanding what an e-learning sites needs to improve demands on assessment of these sites. This is widely considered to be a challenging process in the development and chosen of the e-learning sites, and the evaluation of e-learning sites has long been considered an important topic in the literature on information systems. Prior research has identified wrong evaluation of e-learning sites as a major contributor to the failure of the efficiency, rival, and educational quality.

In various studies, the issues of assessment criterion to evaluate the e-learning sites have been found to effect execution of development and chosen of the e-learning sites; thus, much of the literature on e-learning investigates how to evaluate the e-learning sites. Having reviewed the literature on this topic, we conclude that there is a significant relationship between assessment criterion to evaluate the e-learning sites and the development and chosen of the e-learning sites. Moreover, the understanding of assessment criterion to evaluate the e-learning sites improves decision-makers vision of what the e-learning sites can provide.

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