A METHODOLOGY FOR THE EVALUATION OF AN E-LEARNING SERVICE IN THE CULTURAL HERITAGE DOMAIN

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Abstract

In this paper is presented a methodology we have developed for the evaluation of an asynchronous e-learning service in the European cultural heritage domain, which is under development as part of the project ERMIONE of the European Commission eTEN Program. The theoretical foundations of this methodology are the basic constructs and conclusions of i) the traditional education evaluation research, ii) the e-learning evaluation and critical success factors research, iii) the information systems (IS) success research and iv) the technology acceptance models - related research. This methodology evaluates e-learning capabilities and resources (content, electronic support by the instructor, learning community, technical quality, customization capabilities and perceived ease of use), e-learning outcomes (service use and extent of accomplishment of educational objectives) and the relations between them. It can be used for both formative and summative evaluation of asynchronous e-learning, while with some adaptations it can be used for the evaluation of other types of e-learning.

Keywords

asynchronous e-learning, evaluation, cultural heritage.

INTRODUCTION

The importance of protecting and safeguarding cultural heritage in all its forms has been widely recognized worldwide (e.g. see whc.unesco.org/en/about/, official web-site of the United Nations Educational, Scientific and Cultural Organization (UNESCO), europa.eu.int/comm/culture/portal/activities/heritage/cultural_heritage_en.htm, official web-site of the European Union – section on European cultural heritage). In this direction the ERMIONE (E-Learning Resource Management Service for InterOperability Networks in the European Cultural Heritage Domain) project (www.ermione-edu.org) of the eTEN Program of the European Commission has as basic objective the initial development, evaluation and market validation of an eRM (e-learning Resource Management) service, which is based on an electronic environment-platform and aiming at:

- supporting the collaborative development and delivery of digital content and e-courses concerning the European cultural heritage,

- providing an 'electronic-one-stop-shop' for digital content and e-courses for learners, teachers and researchers interested in the European cultural heritage domain,
- enabling teachers to build and operate their own e-courses concerning European cultural heritage, using a big variety of digital content and e-learning modules.

For achieving the above objectives the ERMIONE project consortium consists of various organizations with different roles: digital content providers, higher education institutions, technology providers, project coordinators and service enablers. In this paper, after a short review of previous research concerning evaluation of traditional education and e-learning, is presented a methodology we have developed for the evaluation of the asynchronous e-learning service under development in this project.

REVIEW OF PREVIOUS RESEARCH

Extensive research has been conducted for long time in the area of traditional education evaluation and especially in the areas of students' evaluation of (traditional) teaching effectiveness (SETE), e-learning acceptance, e-learning evaluation and critical success factors of e-learning. Table 1 gives a descriptive presentation of the most important approaches that have been developed in the above areas.

Table 1. Most important approaches in the areas of learning and e-learning evaluation.

Kind of Framework	Name	Developers	Description
Traditional Education Evaluation	IDEA	Hoyt & Cashin 1977, Cashin & Downey 1992	Definition of 4 evaluation dimensions
	SEEQ	Marsh 1982, Marsh 1987	Definition of 9 evaluation dimensions
E-Learning Acceptance and Evaluation		Jackson, 1998	E-learning evaluation dimensions
	ELT	Oliver & Conole 1998	Identification of 6 e-learning evaluation stages
		Garrison & Anderson, 2003	Identification of 7 e-learning evaluation stages
	CWAM	Selim, 2003	Evaluation of e-learning acceptance.
		Saade and Bahli, 2005	Evaluation of intention to use
		Ngai et al, 2005	TAM extension for e-learning evaluation
	Global Satisfaction Index	Wang, 2003	E-learning satisfaction constructs

E-learning CSF's		Volery & Lord, 2000	E-learning critical success factors
		Soong et al, 2001	E-learning critical success factors
		Selim, 2005	E-learning critical success factors

However, from all this literature review has been concluded that there is a lack of a complete and widely accepted and practiced e-learning evaluation method, even through the abovementioned approaches contain useful elements for this purpose. Therefore further research is required in this area in order to:

- combine elements and conclusions from the abovementioned approaches shown in Table 1
- create a complete, multi-perspective practically applicable e-learning evaluation methodology,
- utilize and empirically validate it in 'real-life' conditions and situations.

AN E-LEARNING EVALUATION METHODOLOGY

In this direction for the evaluation of the e-learning service under development in the ERMIONE project a methodology has been developed, which is based on the basic conclusions and constructs of the: i) traditional education evaluation research, ii) e-learning evaluation and critical success factors research, iii) Information Systems (IS) success research and iv) Technology Acceptance Models (TAM)-related research, which have been reviewed in the previous section. The basic structure of this multi-perspective and multi-layer methodology is shown in Figure 1.

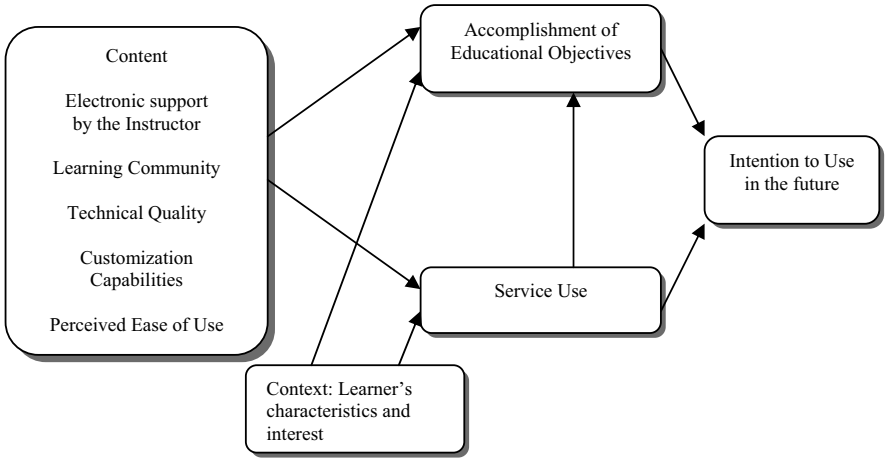

Figure 1. Basic structure of the methodology for the evaluation of the e-learning service.

It includes, at a first layer, the evaluation of the basic e-learning capabilities and resources offered to the learner: content, electronic support by the instructor, learning community, technical quality, customization capabilities and perceived ease of use. At a second layer the methodology includes two direct and one indirect variables of the e-learning service effectiveness from the viewpoint of the e-learner: the extent of perceived accomplishment of the educational objectives (ACEO), the extent of use of the platform by the e-learner, and his/her intention to use it again in the future respectively. Finally, at a third layer, the methodology includes evaluation of some e-learning context characteristics, which can affect its outcomes (effectiveness), such as the level of previous experience and familiarity of the learners with computers, Internet and e-learning systems, and their initial interest in and knowledge of the course subject (learners characteristics).

For each of the above ten constructs of this methodology a measurement instrument (set of questions) has been designed, based on the relevant literature and theory. The data that will be collected using a questionnaire based on this evaluation methodology will be processed in the four steps: a) descriptive statistics calculation, b) conduct of exploratory factor analysis for the above constructs, c) testing of hypotheses (i.e. of the structural model shown in Figure 1) through Structural Equation Modeling (SEM) techniques and finally d) synthesis of a global e-learning satisfaction index.

CONCLUSIONS

Based on conclusions and frameworks of both the traditional education evaluation research and the e-learning evaluation research, and also on conclusions and constructs of the IS success research and the technology acceptance research we have developed a methodology for the evaluation of an asynchronous e-learning service that will be created in the European cultural heritage domain as part of the project ERMIONE. This methodology is multi-perspective and multi-layer: it combines evaluation of the e-learning capabilities and resources offered to the e-learner, the e-learning context characteristics, the e-learning outcomes, and also it allows the estimation of the relations among them; in this way we can examine which the e-learning capabilities and resources and which context factors have a higher impact on the e-learning outcomes and effectiveness. It can be used for both formative and summative evaluation of asynchronous e-learning, while with some adaptations it can be used for the evaluation of other types of e-learning. Further research is in progress for incorporating qualitative methods in the methodology, and for utilizing and validating it.

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