

## REUSABILITY AND PERSONALIZATION OF E-LEARNING: A PILOT STUDY OF E-LEARNING PROGRAMS OFFERED BY GREEK UNIVERSITIES

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### Abstract

The Institutes of Higher Education (I.H.E.) in Greece are adapting to the new social demands and contribute in the diffusion of lifelong learning by offering e-learning programs. However, the main question to be answered is whether and under which conditions can technologies enhance the learning practice. The aim of the current pilot study was to examine the educational packages offered via Internet by the Greek I.H.E. in terms of reusability and personalization. The results highlighted notable design and delivery insufficiencies and indicated that these two key aspects of e-learning are not realized in practice.

### Introduction

The recent economical crisis and the diffused uncertainty in the professional field constitute the need for lifelong learning and training --more crucial than ever before. E-learning is an emerging educational practice; with characteristics that suit the learning needs of modern society and that have a great impact on professional training and academic education (Borg & Mayo, 2005; McLoughlin & Lee, 2007; Sun et al., 2008; Zhang et al., 2004). The Institutes of Higher Education (I.H.E.) in Greece are adapting to the new social demands, in accordance to a recent law (Official Government Gazette, 2011), which explicitly specifies that I.H.E. should aim not only to construct and transmit knowledge, but also to contribute in the diffusion of lifelong learning by offering qualitative e-learning programs.

Delineating the term *quality* in e-learning settings though is not a trivial task, as it entails multiple facets (efficiency, usability, adaptability, learnability, etc.) and subjectivity in its measurement (Ehlers & Pawlowski, 2006; Lin et al., 2010; Padayachee et al., 2010). Nowadays, e-educators can easily and promptly design teaching and learning material and activities, as a great variety of e-learning management systems and compelling authoring tools are available. However, the main question to be answered is whether and under which circumstances technology can ameliorate the e-learning scenario.

Unfortunately, notwithstanding the ongoing research over the last decades, literature indicates that e-learning still fails to attain its full potential (Chan & Robbins, 2006; Childs et al., 2005; Ismail, 2002; Khalil & Schikuta, 2011; Polsani, 2003).

Even from its origins, e-learning focused on two core issues (Olojo et al., 2012; Sampson et al., 2002; Zhang et al., 2004):

- a. Enhancing learning procedure by shifting from the teacher-centered educational practices to a learner-centered, dynamic, personalized and flexible learning environment, which take into account and exploit the individual characteristics of its users, giving them the opportunity to put the content in a context that suits their learning needs; and
- b. Assisting e-educators in the design and retrieval of properly designed e-content, as it is estimated that it takes from 18 up to 300 man hours, depending on the subject and the delivery style, in order to develop one hour of instructional online material (Codone, 2001; Syed-Khuzzan et al., 2008; Weller, 2004).

Yet, literature indicates that *learning objects*, “an entity, digital or non-digital, that can be used, re-used, or referenced during technology-supported learning” (IEEE LTSC, 2001), often lack proper description (Wu et al., 2011). Moreover, developers and e-educators do not support the reusability of learning objects, but focus on the technology aspects of e-learning and use proprietary tools, in order to reproduce the educational material used in the classroom in online environments (McCalla, 2004; Pange & Pange, 2010; Rovai, 2004). Additionally, e-learning content is still presented in a static and rigid way, leaving little space for personalized educational paths (Chee, 2004; Rani et al., 2009). Thus, it is not hard to conclude that the two key aspects of e-learning, reusability of learning objects and learner personalization, are not actualized in practice.

The aim of the current pilot study was to investigate whether the e-courses offered by the Greek I.H.E. fully exploit the potentials of e-learning in terms of learning status, specially, in terms of reusability and personalization, in order to deliver qualitative learning practices.

### **Material and Method**

For the needs of this study, a random sample of twenty-five e-learning courses offered by the I.H.E. during the winter semester of the academic year 2010-2011, was examined. Precisely, in order to select the sample, all academic e-learning courses with free access were catalogued and ordered alphabetically. Subsequently, twenty-five of them were randomly extracted.

An evaluation checklist was used, in order to examine specific characteristics of the academic courses, regarding the reusability of learning objects and the ability to choose for personal learning paths and educational material. The checklist consisted of two sections. The first section contained three basic

criteria regarding the reusability of learning objects and the second four criteria regarding the ability to personalize the educational practice. Explicitly, the criteria regarding the reusability of learning objects were:

- Conceptually independent learning objects,
- Description of learning objects,
- Retrieval of learning objects (via search engines, using as keywords their titles and concepts treated)

And the criteria for personalization were:

- Ability to modulate a learning path,
- Learner control of pacing,
- Identification of learning styles,
- Multiple representation forms of the same learning object.

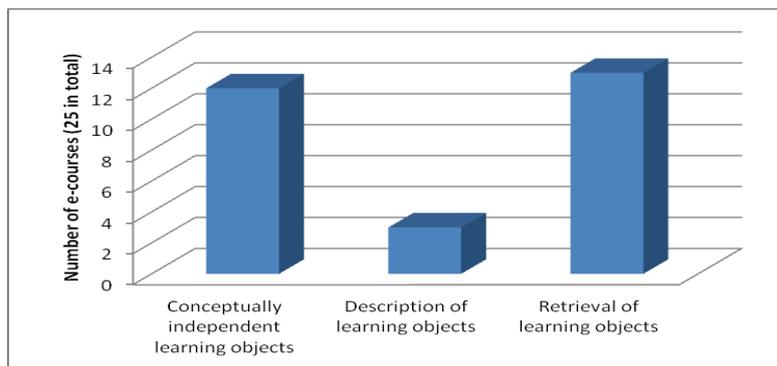
### Results

The data collected were encoded and analyzed with MS Excel 2007. The results of the study showed that the 18 (72%) of the examined e-courses were delivered via the Open eClass learning management system, while 7 (28%) were delivered by Moodle. Both of these two learning management systems support the e-learning standard SCORM, which enables the design of dynamic and personalized courses and the creation of discrete learning objects with rich metadata standards.

Regarding the reusability of the learning objects, the outcomes of the study highlighted significant deficiencies, especially in the description of the learning objects (Table 1). More precisely, only 12 (48%) of the e-courses examined provided conceptually independent learning objects, while in 3 (12%) e-courses the educational material consisted of a unique document, covering all the course material. In the rest of the courses (40%), the learning objects followed the structure of the academic lecture. Moreover, only 3 (12%) of the e-courses contained an adequate description on the documents properties (i.e., in PDF format: *title, subject, keywords*) but none of the learning objects was designed in accordance with the standards provided by the e-learning platform used. In addition, the facility to retrieve a learning object via the Internet, using its title and the concept treated was tested with Google search engine. The findings indicated that only some of the learning objects contained in 13 (52%) of the e-courses appeared in the first 30 URLs indicated by Google search engine.

Table 1

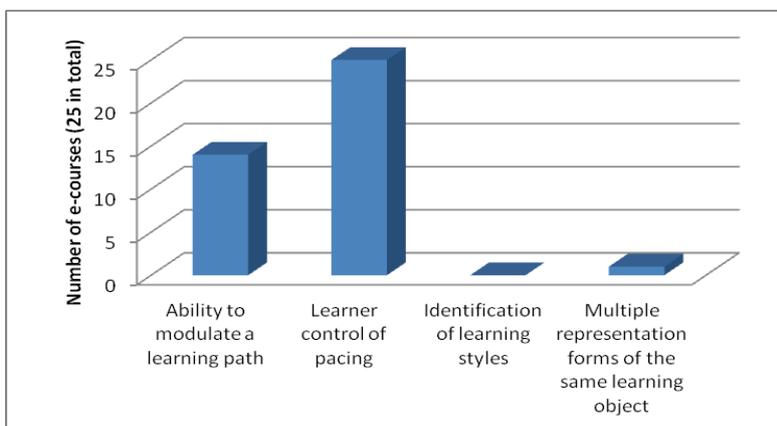
*Results Regarding the Reusability of Learning Objects*



In regard to the personalization aspects of the e-courses examined, the results presented great discrepancies (Table 2). In particular, all the e-courses allowed learners to control the pacing of the learning practice and more than half (56%) gave learners the possibility to modulate their personal learning path. On the contrary, only one e-course offered multiple representation forms of some of its learning objects, which could enable learners to personalize their learning practice by choosing the material that suits their personal learning needs, and none made use of specific tools in order to identify the learning styles of the users or gave learners the ability to record their learning preferences.

Table 2

*Results Regarding the Personalization of E-courses*



**Discussion and Conclusions**

The results of the current study highlighted significant design and delivery insufficiencies and concord with Teo and Guy’s statement (2006) that the two key aspects of e-learning, reusability of learning objects and personalization, are not realized in practice. Precisely, little evidence was found regarding the reusability of learning objects, as most of the learning objects lack proper descriptions and are not easily to retrieve out of the learning environment via the Internet.

E-learning material differs from traditional educational material, as it should be properly designed and presented in order to gain and maintain the learners' interest and lead to concrete learning outcomes. The structure and the educational material of the e-courses under study though, indicated that educators do not handle e-material separately, but reproduce the lecture notes used in the classroom in online environments. This assertion is partly justified by: (a) their limited free time, as in Greek I.H.E. educators are responsible either for traditional and e-learning courses, and (b) the fact that many of the educators have different scientific backgrounds, or use the e-courses according to their opinions about the Internet (Mahdizadeh et al., 2008; Pange, 2004).

Consequently, as it is already well documented (Dickinson, 2005; O'Donnell, 2008), e-learning can support and enhance teaching and learning practices. In order to succeed at this, it is essential for educators to be trained how to use learning management systems efficiently, in order to fully exploit tools and services and deliver qualitative, reusable learning objects and personalized learning experiences that suit the learning needs of their students.

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