Chapter X

Improving the Usefulness of Learning Objects by Means of Pedagogy-Oriented Design

Giuliana Dettori
ITD-CNR, Italy

Paola Forcheri
IMATI-CNR, Italy

Maria Grazia Ierardi
IMATI-CNR, Italy

ABSTRACT

Learning Objects (LOs) are increasingly considered potentially helpful to improve teachers’ work and to spread innovation in the school system. Their technological roots, however, often make them scarcely appealing to the teachers. A key issue to tackle in order to boost their diffusion is to make them closer to actual teacher’s work by emphasising pedagogical aspects. To this end, the authors propose a typology of LOs that allows teachers to highlight differences in the pedagogical approach embedded in their productions, hence sharing not only content but also educational competence. Moreover, in order to allow re-user teachers to explicit and share the pedagogical experience gained while re-using some material, they suggest endowing repositories with ad hoc facilities, such as comments and itineraries related to the repository’s LOs. Comments would allow people to share narrations of experiences of use, while learning itineraries would point out logical connections of various kinds among small groups of LOs, hence helping the users overcome the content fragmentation induced by the granularity of LOs. These proposals are described and exemplified by drawing from our training experience.
INTRODUCTION

Learning Objects (LOs) can result useful in education, by decreasing production costs, exploiting experience and saving time (Littlejohn et al. 2003). Not only are they a source of study materials, but can also give suggestions about teaching strategies (Chiappe Laverde et al. 2007). They can provide a valuable contribution to innovate education, because sharing good quality educational materials among a large number of peers can facilitate the circulation of good ideas (Malcolm 2005). Being able to fruitfully make use of LOs, however, entails overcoming a number of issues of both conceptual and practical nature (Busetti et al. 2004a).

From a practical point of view, integrating didactical resources prepared by other teachers in one’s own lessons is not always straightforward, because it requires to work out connections to the new context of use. Even more work can be necessary for recycling, that is, making use of some elements for a different task. This holds true, in particular, for educational material on complex tasks, which, on the other hand, is what teachers are likely to be most interested in, since their preparation requires time and effort. Analogously, preparing educational materials suitable to be reused, that is, able to raise peers’ interest and easily adaptable to different learning situations, is a rather challenging task (Feldstein 2002, Griffith et al. 2007, Lehman 2007) entailing to split lessons into modules which are consistent and self-contained yet easy to articulate with each other.

From a conceptual point of view, difficulties are brought about by the fact that the concept of LO was initially created and worked out by technologists rather than by experts in education. This fact is relevant, because technologists and teachers have different focus and aims and often even use different technical languages (Friesen et al. 2002). Metadata, which are key to retrieve and re-use LOs, were standardized (Anido et al. 2002, IEEE 2002) not much in line with the current didactical practice (Farance 2003), so that they comprise information which is of limited use from the didactical point of view, such as semantic density, and omit other which is relevant to re-use in real educational contexts, such as the pedagogical and epistemological choices underlying the development of materials. Moreover, standard international metadata did not result apt to take into consideration the peculiarities of national educational systems (Friesen et al. 2002). This limitations should not appear surprising, however, because the variety of needs and points of view that should be taken into consideration by online material makes it complex to devise a set of metadata able to combine simplicity of production with easiness of resource detection (Duval et al 2002).

These issues have been widely discussed over the last years. For instance, the need to endow LOs with metadata which express the underlying educational paradigm was pointed out (Alvino et al. 2007, Qin and Godby 2004), so as to allow teachers to retrieve LOs based on features that they usually take into consideration in their didactical planning. Approaches to the evaluation of pedagogical metadata, so as to verify their quality, have also been worked out (García-Barriocanal et al. 2007). Extensions of the current metadata standard were formulated, integrating or modifying the LOM based on the needs of some group of learners (see for example Alvino et al. 2008, Krull et al. 2006, Yahya and Yusoff 2008). Metadata application profiles including pedagogical descriptors that meet the needs of educators have also been proposed (i. e. Godby 2004). We recall for example the Gateway to Educational Materials project (GEM, http://thegateway.org), an initiative of the US Department of Education based on the Dublin Core Metadata Standard (http://dublincore.
Related Content

A New Diagnostic Mechanism of Instruction: A Dynamic, Real-Time and Non-Interference Quantitative Measurement Technique for Adaptive E-Learning
Pi-Shan Hsu, Te-Jeng Chang and Ming-Hsiung Wu (2009). *International Journal of Distance Education Technologies* (pp. 85-91).
[www.igi-global.com/article/new-diagnostic-mechanism-instruction/3921?camid=4v1a](www.igi-global.com/article/new-diagnostic-mechanism-instruction/3921?camid=4v1a)

Integrating an Educational Game in Moodle LMS
Miroslav Minovic, Miloš Milovanovic, Jelena Minovic and Dušan Starcevic (2012). *International Journal of Distance Education Technologies* (pp. 17-25).
[www.igi-global.com/article/integrating-educational-game-moodle-lms/73931?camid=4v1a](www.igi-global.com/article/integrating-educational-game-moodle-lms/73931?camid=4v1a)

Advancing the Effective Use of Technology in Higher Education
[www.igi-global.com/chapter/advancing-effective-use-technology-higher/27505?camid=4v1a](www.igi-global.com/chapter/advancing-effective-use-technology-higher/27505?camid=4v1a)

The MORPG-based Learning System for Multiple Courses: A Case Study on Computer Science Curriculum
Kuo-Yu Liu (2015). *International Journal of Distance Education Technologies* (pp. 103-123).
[www.igi-global.com/article/the-morpg-based-learning-system-for-multiple-courses/123210?camid=4v1a](www.igi-global.com/article/the-morpg-based-learning-system-for-multiple-courses/123210?camid=4v1a)