Specifying Collaborative Tasks of a CSCL Environment with IMS-LD

Francisco Jurado, Miguel A. Redondo, and Manuel Ortega

Computer Science and Engineering Faculty
University of Castilla-La Mancha
Paseo de la Universidad, 4 – 13071 Ciudad Real – Spain
{Francisco.Jurado, Miguel.Redondo, Manuel.Ortega}@uclm.es

Abstract. The standardization of eLearning environments is causing a constant evolution of the standards, the specifications, the reference models and the best practices of these specifications. Mainly, this evolution is a consequence of the educational and computational paradigms which the standardization applies and of the pedagogic and cognitive requirements of the learner using these environments. *"Instructional Design"* or *"Learning Design"* (LD) is an approach on specifications in the standardization process centred on cognitive characteristics and on the learning process itself. In this case, the learning process is isolated from the learning object design. This is, LD is centred on *"how to learn"*, not in *"what to learn"*. IMS Learning Design (IMS-LD) is the specification used to describe the learning design. We are working in the AULA_IE project whose objective is to evaluate different standards and to check their application and contribution in Computer Supported Collaborative Learning (CSCL) environments. As a consequence of this evaluation we have observed a lack of semantics when some activities and tasks are specified. Based on this result, we propose a reference model inside the IMS specifications core.

1 Introduction

Nowadays we are witnessing a constant evolution of the standards, specifications, reference models and best practices in e-Learning environments in order to support reuse and interoperability. This is a consequence of applying these standards to several educational and computational paradigms. The effectiveness of these specifications can only be tested with real applications and experiences.

Working groups such as IEEE LTSC[1], IMS Global Learning Consortium or ADL[2], are working in this way to provide a set of standards specifications that allow these principles of reuse and interoperability in the e-Learning industry. Standards provided by IEEE LTSC, specifications such as those provided by IMS Global Consortium, or reference models such as those provided by ADL make up the standards framework

[1] IEEE Learning Technology Standards Committee.
[2] Advanced Distributed Learning Network.

Y. Luo (Ed.): CDVE 2006, LNCS 4101, pp. 311 – 317, 2006.

where developers and engineers of e-Learning systems should work. In this framework, AULA_IE[3] (PIB-05-006) is a project whose objective is to evaluate different standards and to check their application and contribution in Computer Supported Collaborative Learning (CSCL) environments. The CSCL is based on an interdisciplinary paradigm that merges the information and communication technologies and Collaborative Learning. Specifications for describing CSCL systems should include support for collaborative activities where a set of actors participate in collaborative learning activities [5].

One specification evaluated in the AULA_IE project is IMS-LD [7]. This specification takes as a basis the Educational Modelling Language (EML) [3], which was proposed by the Open University of the Netherlands and aims to be centred on cognitive characteristics and on the learning process itself. So the learning process is isolated from the learning object design.

IMS-LD represents instructional strategies using the theatre metaphor. Hence, an instructional method is divided in *play* elements that contain several *acts* where different *roles* bring *activities* in specific *environments*. These activities can be classified into three kinds: 1) *learning-activities* that lead the learner to get the knowledge; 2) *support-activities* that do not contribute to the learning process itself, but are needed for the success of learning activities; 3) *structure-activities* that allow structuring learning activities, support-activities or other structure-activities in sequence or selection order. All these activities can be brought into specific *environments.* These environments have *learning objects* and *services* that the different roles can use in the activities.

In this paper the IMS-LD specification applied to CSCL environments will be analyzed, showing its deficiencies and the proposals of other authors in order to solve them. Then, our proposal of a reference model specifying CSCL environments based on IMS-LD and other IMS specifications will be made.

This paper is structured as follows: we will begin showing the deficiencies of IMS-LD when applied to CSCL environments. Then, we will refer to some related works that try to solve them. Next, our proposal of a reference model based on IMS-LD and other IMS specifications will be made. We will end with some concluding remarks and future works.

2 Applying IMS-LD to CSCL Environments

One of the IMS Learning Design Workgroup (LDWG) goals is that the specification needs to *"support multiple learners and multiple roles in a learning activity, reflecting learning experiences that are collaborative or group-based"* [7]. That is, it could be used in CSCL environments. Nevertheless, there are some works that point in the opposite direction. In [1], IMS-LD is criticised from a CSCL viewpoint, and a proposal is presented considering new components as necessary in the IMS-LD sequencing and act models.

[3] Educative standards integration to AULA e-Learning system. http://chico.inf-cr.uclm.es/AULA_IE.