

Chapter III

Using the IMS LD Standard to Describe Learning Designs

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ABSTRACT

IMS learning design (IMSLD) is an open standard that can be used to specify a wide range of pedagogical strategies in computer-interpretable models. Such models then can be played in any learning design (LD) compatible execution environment to support teachers and students to conduct online teaching–learning. This chapter introduces the basic knowledge required to effectively use LD. First of all, we present fundamental principles behind LD. Then, we introduce main concepts and their relations in LD and discuss some technical issues about how to make a learning design executable in a computer-based environment. Finally, how to model learning designs using LD is explained through demonstrating the whole procedure to model a use case in Extensible Markup Language (XML). We expect that the readers of this chapter can apply LD to create simple learning designs and understand learning designs with sophisticated features.

INTRODUCTION

IMS learning design (IMSLD, 2003) is an open standard that is used to code a wide variety of digital courses (called “units of learning” or “units of study”) in a formal, semantic, interoperable, and

machine readable way. In comparison with other e-learning technical specifications like SCORM (sharable content object reference model), in which a learning process is modeled as a sequence of learning material, LD is strong in the support for the wide range of modern pedagogical approaches

that are used today, like active learning, collaborative learning, adaptive learning, and competency based learning. It can also be used to support more informal learning that takes place in communities of practice and learning communities (Koper & Manderveld, 2004a; Koper & Olivier, 2004b; Koper & Tattersall, 2005).

Digital courses developed with LD differ in many aspects from the ones we are currently using in the regular Learning Management Systems (LMSs). The major difference is that it enables an author to specify the complete learning design of a course with all its details explicitly, instead of selecting a restricted set of hardwired designs in the LMS. This means that the designer can specify:

1. the desired type of learning activities, including the related content and services;
2. the desired sequence of learning activities, including adaptation and personalization aspects;
3. the desired way that learning activities are marked as completed (e.g., through self-assessment, a classical test or exam, by a teacher, an advanced assessment procedure or when a certain group result is attained);
4. the desired interaction between different persons in different roles (learners, teachers, designers, experts, assessors, mentors, etc.) and the interaction between these roles and learning objects and learning services (chats, wikis, forums, etc.);
5. the desired reporting of (aggregated) results to an e-portfolio or a student administration, and so forth.

The authored courses can be used for many different course runs in many different situations. Also, before they are used they can be adapted to local needs (e.g., by deleting some of the learning activities or changing aspects of the workflow).

The basic challenge with LD is in the authoring aspects: you can design highly complex courses

and implement many different pedagogical interactions, but this requires that you are able to design these interactions (most teachers are not highly skilled as instructional designers) and that you will need to learn to design and to use LD tools in order to produce the learning designs. In this chapter, we will introduce you into the fundamental principles behind LD. To give you a kind of advanced organisor: the basic ideas behind LD before it was developed was the question whether it would be possible to make a kind of standard notation, like the music notation, that enables you to write down learning designs (compose music) at one place and to interpret the learning designs in many places for different users (different musicians, orchestras, bands, etc., all can reproduce songs and music that has been written in a rather similar way). LD is introduced as such a kind of standard notation, which is machine readable (although it is also human readable) to help the users of computers to organize, adapt, and orchestrate their different learning and teaching activities and the access to learning objects and services to an efficient, effective, and synchronized whole for each individual user in any role. In order to explain how to create learning designs using LD clearly, we present the whole procedure to model a learning design by using an use case. We further discuss the issues to model complicated learning designs using LD. In summary, the purpose of this chapter is to answer three questions: why develop LD, what is LD, and how does one use LD?

BACKGROUND

This section discusses the theoretical background to develop LD and the context of the learning design. As a convention, we use “LD” to refer to the IMS LD specification and use “learning design” to refer to the description of a course, a workshop, a seminar, and so on. The central assumption behind LD is that the activities that learners undertake are central in any learning

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