

# Using IMS Learning Design to model collaborative learning activities

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# Using IMS Learning Design to model collaborative learning activities

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## Abstract

*IMS Learning Design provides a counter to the trend towards designing for lone-learners reading from screens. It guides staff and educational developers to start not with content, but with learning activities and the achievement of learning objectives. It recognises that learning can happen without learning objects, that learning is different from content consumption and that learning comes from being active. It recognises, too, that learning happens when learners cooperate to solve problems in social and work situations. In all this, it stresses that focus should fall on the learning in eLearning.*

## 1. Background

Significant investments have been made by universities, colleges, distance learning providers, and corporate training departments in the area of eLearning. Moving from early, tentative use of static HTML pages on web sites, the use of the internet as a delivery technology for education and training is now commonplace, with both distance and presential learning providers exploiting eLearning in their offerings. A standards-based IT infrastructure is in place in educational institutions around the world, simplifying the delivery equation and opening the doors to mainstream, large-scale, web-based education. Many different Virtual Learning Environments exist, including significant contributions from the open source community. Above the underlying IT-standards, rest a significant number of eLearning standards, specifications and reference models, designed to improve the interoperability between systems and remove islands of eLearning.

However, some have expressed uneasiness with e-learning, and are investigating how new information and communication technology developments, particularly in the area of collaboration and

cooperation, could be brought into eLearning offerings.

The IMS Learning Design specification [1] (IMSLD) is an open specification, freely downloadable, maintained by an international consortium of universities, system vendors and learning providers. At the heart of the IMSLD specification is a model which underlies many different behaviourist, cognitive, and (social) constructivist approaches to learning and instruction: People act in different roles in a teaching-learning process. In these roles, they work toward certain outcomes by performing learning and/or support activities within an environment, consisting of learning objects and services to be used during the performance of the activities. The approach separates learning objects and services from the educational method used in the unit of learning. Put succinctly, IMSLD allows instructional designers to say who should do what, when and with which support facilities in order to reach learning objectives.

IMSLD provides a notational system to describe 'Units of Learning' (UOLs), an abstract term used to refer to any delimited piece of education or training, such as a course, a module, a lesson, etc [2, 3]. The notation is capable of describing a wide variety of instructional models, or learning designs, such as Competency Based Learning and Problem Based Learning.

The specification provides a framework of elements that can be used to describe, formally to support machine processing, the design of any teaching-learning process. The creation of a UOL involves the specification of the learning design and also the bundling of all associated resources, either as files contained in the unit or as web references, including assessments, learning materials and learning service configuration information.

Using the specification, collaborative processes can be modeled in which multiple learners, acting in various roles, using various learning objects and

services work towards the attainment of learning objectives. This 'learning flow' is described using the concepts from the IMSLD specification, and becomes itself a resource to be interpreted by an IMSLD-aware player [4], able to be shared and re-used with others. Once a learning design has been set up on a runtime system, the player uses the method to make the appropriate activities and environments available to the people playing the various roles. Through this, it coordinates and synchronises multiple learners as they work through a learning design

The IMSLD specification was released in early 2003. Since then a number of tools supporting the language have emerged [5, 6], a book [3], special issues of journals [7, 8], a number of articles, and also projects dedicated to the use and promotion of the specification, for example, UNFOLD [9].

During the first years of experience with the specification, a number of issues have been identified to be addressed as its use scales up. We believe the following trends will likely emerge:

- The tooling used for creation of UoLs will likely less directly reflect the concepts in the specification and will tend more towards those of educational practice. As a result, templates will likely emerge which can be used by instructional designers as a starting point for modification and tuning;
- Greater harmonization between eLearning standards will occur following that seen between IMSLD and the IMS Question and Test Interoperability specification.
- A tighter integration of design-time and run-time perspectives on IMSLD will occur, so that designs can be critiqued and improved on the basis of log data [10].
- A broader run-time integration of components in an eLearning Service-oriented architecture and due to this ...
- ... a larger variety of communication and collaboration able to be integrated into learning processes, including forums, chat facilities, Wikis and online, multi-user, multi-role games
- New IMSLD-aware players will emerge, including micro-players allowing learning processes to be coordinated across mobile devices.
- IMSLD will find use not only in formalised, designed approaches to learning, but also less formal ones, typified by work in Personal Learning Environments [11]. IMSLD's role here will be in providing post-hoc

descriptions of learning processes, allowing unplanned sequences of activities to be described and shared in an interoperable manner. The work of Rasseneur, Jacoboni, & Tchounikine [12] on learners' appropriation of curricula for their own ends is interesting in this context

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