

## Chapter 13

# Managing Learning Activities in E-Learning Systems

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### ABSTRACT

*The advent of computers and later the Internet has led to trends in Computer Aided Learning (CAL). The learning process is rapidly transforming from traditional learning to electronic learning. Computer-based systems enable effective delivery and access to learning materials, at a time and place chosen by the student. This case explores Learning Activity Management (LAM) systems, which are new tools for designing, managing and delivering online collaborative learning activities. LAM systems provide instructors with a flexible environment in which to design, organize and monitor the learning activities of the learners. We describe components and key features of LAM systems and also explore the challenges that exist in this field.*

### INTRODUCTION

In recent years, computer-based systems have become widely used for learning purposes. They enable the use of a range of delivery modes (Web/GUI, text/multimedia) for effective delivery. Via the Internet, they enable learners to use the learning material at a time and place of their choosing. Electronic Learning (E-Learning) refers to the use of computers for delivering learning materials. Learning Management Systems (LMS) are Web-based

software applications used to plan, implement, and assess a specific learning process. LMSs allow learners to connect to and interact with the educational material through the Internet. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor learners' participation, and assess their performance. A learning management system may also provide learners with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums.

Learning Activity Management (LAM) systems are flexible learning design tools that enable instruc-

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tors to organize and monitor learning activities of the learners. These activities include assignments, quizzes, and also collaboration. Collaborative learning is a process during which learners collaborate with each other for solving problems. Collaborative learning is particularly useful in promoting team work in the learning process. Assessment is also an integral part of LAM systems; enabling instructors effectively evaluate learners' activities in the learning process. In this chapter we study learning activity management systems and the main components that such systems should provide in order for instructors and learners to effectively participate in the learning process.

## **BACKGROUND: LEARNING ACTIVITY MANAGEMENT (LAM) SYSTEMS**

Constructive learning is a process in which learners build new thoughts, ideas and concepts making use of their knowledge and experience (Beatty, 2003). An important aspect of constructive learning is that it gives responsibility and control over the learnt material to the learner. Constructive learning is enhanced by interaction with instructors and classmates, rather than simply interacting with content (Alexander, 2008). Traditional e-learning systems have focused on content delivery and individual interaction with this content. Learning activity management systems extend this by combining content delivery with collaboration. They aim to combine the benefits of e-learning with the collaborative aspects of traditional (classroom-based) education, thus resulting in a more effective on-line learning environment. Some LAM systems have already been built to realize the above ideals. We describe some of the more prominent examples and then discuss the remaining challenges in developing such systems.

Nor Azan (2007) has developed a LAM system named SPAP, based on ideas from the IMS Learning Design framework. In particular, it used

the Conceptual Model to provide a containment framework that can describe the design of teaching and learning processes in a formal way. SPAP allows teachers to plan, manage and monitor learning activities, and enables learners to carry out these learning activities. SPAP provides a set of seven activity tools based on teaching methods such as discussion, problem solving and simulation. SPAP includes five modules, the most important of which are the authoring and learner modules. The authoring module provides a graphical interface that allows teachers to describe a sequence of learning activities (a learning design) and save the design. The learner module guides students through the learning designs specified by the teacher, using a graphical interface to clearly indicate progress. It also gives them access to a course overview developed by the teacher in a synopsis module. A monitoring module allows the teacher to track the progress of all students through the learning activities.

Dalziel (2003) has developed a system called LAMS, which is perhaps the most complete LAM system currently available. Like SPAP, LAMS provides authoring, learning, and monitoring modules (which we describe in more detail below). Unlike SPAP, it has achieved widespread acceptance, due in part to its release as open-source software (Alexander (2008) notes that LAMS users number roughly 3200 in 80 countries). An additional factor in its adoption is that LAMS has been designed based on Learning Design standards so that designs may be shared, re-used, and re-purposed. Also, it has been designed so that it can work either as a stand-alone system or in conjunction with other Virtual Learning Environments (VLEs) and Learning Management Systems (LMSs).

The following example (from Dalziel (2003)) gives some idea of the capabilities of LAMS. It was initially designed for a class of 20-30 high-school history students, potentially located in more than one physical location, around the topic "What is Greatness?", and implemented using the LAMS system. The activity lasts for

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