Chapter 6.14
Effective Design and Delivery of Learning Materials in Learning Management Systems

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ABSTRACT

Learning Management Systems (LMS) enable effective design and delivery of learning materials. They 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. They enable tools for authors (instructors) to design learning materials that include text, html, audio, video, etc. They also enable learner activity management in the learning process. Moreover, they provide tools for effective and efficient assessment of the learners. This chapter explores learning management systems and their key components that enable instructors organize and monitor learning activities of the learners. It also introduces the authoring features provided by such systems for preparing learning material. Moreover, it presents assessment methods and tools that enable evaluation of the learners in the learning process. Furthermore, existing challenges and issues in this field are explored.

INTRODUCTION

Learning Management Systems (LMS) are Web-based software applications used to plan, implement, and assess a specific learning process. They enable learners to use the learning material at a time and place of their choosing. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor learners' participation, and assess their performance.

Constructive learning is enhanced by interaction with instructors and classmates, rather than simply interacting with content (Alexander, 2008). As a result, learners build new thoughts, ideas and concepts making use of their knowledge and experience (Beatty, 2003). An important aspect of

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constructive learning is that it gives responsibility and control over the learnt material to the learner.

Learning Activity Management (LAM) systems are flexible learning design tools that enable instructors to organize and monitor learning activities of the learners. These activities include assignments, quizzes, and also collaboration. One of the benefits of LAM systems is that they can reduce staff uptake. Additionally, higher levels of pupil motivation are expected using the coherent, integrated and structured LAM systems, compared to traditional courses. Moreover, the self-paced LAM environment encourages students with anonymous favors develop their confidence, autonomous learning, and meta-cognitive skills. As a result, the users of such systems become more inclusive from the traditional ones. Assessment is also an integral part of LAM systems, that enable instructors effectively evaluate learners' activities in the learning process.

In this chapter, we study learning management systems and the main components that such systems should provide in order for instructors and learners to effectively participate in the learning process. We present the functionalities that such systems can provide for organizing and monitoring learning activities of the learners. We also present the authoring tools used for preparing learning material, as well as the assessment methods and tools that enable effective evaluation of the learners in the learning process.

MANAGING LEARNING ACTIVITIES

Traditional e-learning systems have focused on content delivery and individual interaction with this content. LAM 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 ideas. We describe some of the more prominent examples and then discuss the challenges in developing such systems.

Dalziel (2003) has developed a system called LAMS, which is perhaps the most complete LAM system currently available. LAMS provides authoring, learning, and monitoring modules (which we describe in more detail below). 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 four weeks. In the first week, all students discuss their views on the topic in an online forum. In the second week, students are given access to a range of material on the topic, and asked to find an example web-site on the topic, which they then share and comment on to the whole class. In week 3, students are put into small discussion groups, where they chat interactively on-line to deal with questions provided by the teacher; one student acts as a "scribe" to record the discussion. The conclusions reached by each group are then posted for the whole class. Finally, in the fourth week, students individually write a report on the initial question ("What is Greatness?") which they submit via the system for marking. The activity concludes when the students receive marks and feedback from the teacher.