

## Chapter 42

# Evaluating a Learning Management System to Support Classroom Teaching

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### ABSTRACT

*New pedagogical approaches are required to prepare future professionals. The educational model must be in consonance with the information and communication technologies. They help to improve knowledge dissemination and reduce space and time limitations between teachers and students. They should also motivate students and stimulate communication and collaboration among students, improving the learning process. Currently, the Institute of Exact and Applied Sciences of the Federal University of Ouro Preto (IEAS/UFOP) has no institutionalized tools of information and communication for teaching support. This allows the identification of some problems and difficulties on the educational process, such as absence of a centralized way to provide and access didactic resources, unavailability of a good communication tool between teachers and students, and lack of easy access to academic performance information for self evaluation. This chapter presents the authors' experience in choosing and evaluating a Learning Management System (LMS) to support classroom teaching at the IEAS. The authors investigate how the use of a LMS may improve teaching in the following aspects: (1) availability of didactic resources; (2) class planning and following up; (3) teacher-student communication; (4) monitoring of the academic performance of students during the course; (5) collaboration among students.*

### INTRODUCTION

Technological development always brings changes to people's lives. The expansion of information and communication technologies and the dissemination of the Internet have created unprec-

edented connectivity. Besides, easiness to create and publish content is increasingly generating an enormous amount of information. Due to these and other factors, new paradigms of social interactions are emerging and becoming necessary (Cardoso and Castells, 2006; Takahashi, 2000).

DOI: 10.4018/978-1-4666-8619-9.ch042

Individual work is being replaced for teamwork, which is conducted collaboratively (Mills, 2003). Organizations are reformulating their strategies on conducting operational, business and administrative processes. This is happening regardless of the kind of organization - it could be an industry or service such as education, originating from private or government initiative (Castells, 1997; Castells, 1999).

Likewise, new pedagogical approaches are necessary to prepare future professionals (Anderson, 2008; Clark and Clark, 2009; Moran, 2000; Plomp, 2013). Learning is no longer individualized as well, and it is becoming collaborative, shared and collectively built (Duderstadt, 1997; Stahl et al., 2006). Therefore, education plays a new role aimed at continuous learning, information sharing and collective knowledge construction (Duderstadt, 1997; Laurillard et al., 2009; Plomp, 2013; Williamson, 2013).

The educational model must comply with information technologies - which can serve as cognitive 'prosthesis', helping increase socio-affective processes (Fagundes et al., 1999), disseminate knowledge, decrease limitations of time and space between teachers and students, and enhance learning through the use of multimedia / hypermedia resources (Morais & Cabrita, 2007). To promote the expected changes in educational process, information and communication technologies (ICTs) should be used as pedagogical tools to create an interactive environment that enables learners, faced with a problem, to investigate, raise hypothesis, test and refine their ideas, thereby building their own knowledge according to their individual learning style (Vieira, 1999). Students are no longer mere information receptors, they are rather builders of their own knowledge (Lê, 2002; Moran, 2003).

As these technologies allow the improvement of information communication and production, a first proposal would be to think about the processes of storing and organizing information and

communication as ways to enhance the teaching-learning process. The space extends beyond the classroom, into the virtual space (Moran, 2003). It brings the educational process closer to students' reality, once they already use these technologies in their everyday lives.

In this context, the teaching-learning process can be supported by many resources provided by ICTs. For example, Learning Management Systems (LMS) allow the integration of functionalities related to communication and content distribution. Although in general they are applied to distance learning, they could also be used to support classroom teaching, for example, by helping teachers manage didactic resources, facilitating communication with students, among other things.

In this sense, many institutions around the world use ICTs and the Internet to improve the education. Several e-learning (electronic learning) and b-learning (blended learning) initiatives have been developed. Many learning management systems have been created and used to support e-learning and b-learning activities (Hewagamage, 2007; Kalogiannakis, 2004; Ishitani et al., 2006; Ishitani 2009; Morais & Cabrita, 2007; Mortera-Gutiérrez, 2006; Silva et al. 2008, Wang et al. 2007). Some examples are: Moodle, LearnLoop, TelEduc, AulaNet, BlackBoard, WebCT.

Currently, the Institute of Exact and Applied Sciences (IEAS) of the Federal University of Ouro Preto has many problems and difficulties related to the educational process, such as the lack of a centralized way to provide didactic resources for students; absence of a good communication tool between teachers and students; need of fast and easy access to information on students' academic performance for self-assessment.

So, we propose the use of a learning management system to support classroom teaching at the Institute of Exact and Applied Sciences. We investigated and argued about how the use of a LMS can improve classroom teaching in the following aspects: (1) availability of teaching re-

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