Chapter 5
Personal/Cloud Learning Environment, Semantic Web 3.0, and Ontologies

ABSTRACT

In the era of digital world that we live in, a new vision for learning is required. Learning is essentially personal, sociocultural, distributed, ubiquitous, flexible, dynamic, and complex in nature. There are multiple challenges, opportunities, and movements in learning that must be considered in the development and implementation of online learning environments. From the emerging computational capacity as a virtualized resource pool available over the network, several benefits can be obtained with regard to the management of computing infrastructures, such as environmental sustainability and improved Personal/Cloud Learning Environment use. In fact, Personal learning environments, Cloud computing, Semantic Web 3.0 and Ontologies are relatively new terms that hold considerable promise for future development and research in higher education contexts. Motivated by the aforementioned perspectives, the purpose of this chapter is to explore and discuss how these terms can be understood towards a more personalized, sociocultural, open, dynamic and encouraging model to support/facilitate teaching and learning processes, fulfilling the integrated view of the educational context presented in Part I of this book.

INTRODUCTION

A Personal Learning Environment (PLE) has been considered a promising educational approach for both integrating formal and informal learning using social media and supporting student’s self-regulated learning in Higher Education (HE) contexts. A key characteristic of a PLE is that the learner develops an online identity, where the personalized learning environment provides possibilities that prompt the learner about what (not) to share, who they choose to share with, and how to effectively combine formal and informal learning. Additionally, Mobile and Cloud computing technologies have enabled the adoption of sophisticated devices, such as smartphones or tablets. In fact, the popularity of smart devices and mobile networks has considerably changed the way people access computers and network

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services. Considered the heart of a cloud that provides “cloud and machine intelligence” services to the Higher Education Institutions (HEIs), the Artificial Intelligence (AI) in education is mainly devoted to methods/techniques of teaching where the educators can freely share ideas/resources. In this way, intelligent Learning Management Systems (iLMS) offer greater learning value, by giving direct personalized feedback to the users. In general, to support teaching and to facilitate online learning, LMSs must provide intelligent learning features. Additionally, ontologies can offer significant opportunities in improving the way information is modeled and managed within a PLE or Cloud Learning Environment (CLE), serving to provide meaningful guidelines to learners and to support them in discovering new resources and information. The adoption of the ontology concept sets the backbone of the Semantic Web or Web 3.0, which is a transformation of the current Web from being machine-readable to machine-understandable. These perspectives hold the requisite for the improvement of smart learning environments that offer personal services with capabilities to learn, motive, have autonomy, and be totally dynamic.

BRINGING FLEXIBILITY INTO LMS VIA PLE BRIDGING

Generally, an essential shift towards a more open model for learning is needed. Bringing flexibility/extensibility into LMSs is extremely important, since it offers teachers and learners a free choice of educational technologies to their courses. Usually, LMSs are managed by universities and PLEs are controlled by learners. In fact, PLEs should be seen as a complementary technology that would augment the current capabilities of LMSs, providing more flexibility and customization to their users.

In particular, the PLE concept has emerged around 2001 to open new doors (Brown, 2001). A PLE is an environment where people and communities, tools and resources interact in a flexible way. Basically, the aim of a PLE is to offer personalized, customized, and modular solutions to integrate personal and shared learning spaces. Therefore, a PLE is located at the crossroads of individual (personal) and group-level (shared) dimensions of learning. PLEs represent a shift away from the model in which students consume information through independent channels, such as the library, a textbook, or an LMS, moving instead to a model where students draw connections from a growing matrix of resources that they select and organize. The use of PLEs may herald a greater emphasis on the role that metacognition plays in learning, enabling students to actively consider and reflect upon the specific tools and resources that lead to a deeper engagement with content to facilitate their learning. As a learning platform that is by definition always evolving, a PLE requires students to engage in ongoing decision making to maintain, organize, and grow their learning environments. The process of self-directed learning requires a degree of self-awareness, and it must be given time to mature. This is a perquisite for firing metacognitive processes, and even more, to apply metacognitive strategies. Some students, however, may have never taken time to think about their own metacognition or to reflect on how they learn the best. These less experienced students may not be ready for the responsibility that comes with building and managing a PLE. Furthermore, despite their ability to quickly learn new online tools and computer applications, many students lack the information fluency necessary to recognize when a writer speaks from authority, for example, or when a narrative is opinion. This is quite crucial in the effort to support a true constructive and reliable knowledge for the student via PLE. While the PLE offers the opportunity to sharpen these skills, instructors may find it useful to discuss the hallmarks of a well-thought-out argument and to underscore caution in accepting “facts” presented by peers and anonymous posters.