First Steps towards an Integrated Personal Learning Environment at the University Level

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Abstract. Personalization is seen as the key approach to handle the plethora of information in today’s knowledge-based society. It is expected that personalized teaching and learning will efficiently address learner needs. The education of the future will change as a result of the influence of Web 2.0 content typified by a steadily increasing supply of data. This means that the students of tomorrow will regularly have to deal with sharing and merging content from different sources. Therefore, mashup technology will become a very important lens by which to focus on individual learning needs and enable personalized access to particular information. The following paper describes the challenges of Personal Learning Environments at higher education institutions. In the first section, the concept of Personal Learning Environments is presented, while the second section discusses the new challenges that arise for learning with the help of Personal Learning Environments. The third section describes the technical background of Personal Learning Environments and the widget standard in general. In section four, a first prototype of a personal learning environment will be presented, which is integrated into the learning culture at the Technical University of Graz. A detailed description of the available widgets for the prototype, along with a first expert evaluation, is provided. Finally, the conclusion of the article consolidates the main points of the paper and present plans for future research together with the prospective developments.

Keywords: adult learning; architectures for educational technology systems; distributed learning environments.

1 Introduction

Since Tim O’Reilly (O’Reilly, 2006) referred to the booming possibilities of interaction and communication within the Internet as ‘Web 2.0’, a new era of the
World Wide Web began. Interaction among people, as well as content-sharing, has increased dramatically. Sharing and collaborating by way of social software has become a common activity. By the same token, communication and debate through social networks is nowadays almost as normal as e-mail. It is a fact that our social life and our working environment, along with our learning and teaching behavior, are increasingly influenced by Web 2.0 technologies, due largely to its ubiquitous availability and pervasive use (Holzinger et al., 2006; Klamma et al., 2007). Downes labeled the use of Web 2.0 technologies for teaching and learning purposes as E-learning 2.0 (Downes, 2005). Numerous research papers have established several different possibilities of didactical settings for this new approach (Ebner, 2007). Apart from web-based software – wikis (Augar et al., 2004), weblogs (Farmer & Bartlett-Bragg, 2005), or podcasts (Towned, 2005) – the integration of Web 2.0 elements into current learning and teaching scenarios generates a vast potential for creating new learning environments. Nowadays, not only social software like Facebook (social networking) or Twitter (micro-blogging) is important for learning (Ebner & Maurer, 2008), but also platforms for sharing different kinds of media, like YouTube (video), Slideshare, Scribd (presentations and documents) or Del.icio.us (bookmarks) make up for an integral part of the innovative teaching methods that strengthen informal learning processes (Mason & Rennie, 2007).

Considering the enormous number of rapidly growing applications intended for the purposes mentioned above. Efficient management of these tools can become extremely challenging. Therefore, it is understandable that teachers and learners may be overwhelmed by the extensive possibilities that Web 2.0 tools offer. Surprisingly enough, various studies on Web 2.0 technologies have shown that first-year university students are largely unaware of the existence of numerous Web 2.0 tools (Nagler & Ebner, 2009).

Personal Learning Environments (PLEs), also referred to as mashups, can be of great assistance in managing multiple tools, along with handling information and the cognitive overload that comes with it (Kulathuramaiyer & Maurer, 2007). “The possibility to connect different resources in one environment should help to maintain the overview of all activities. Mashups merge content, services and applications from multiple websites in an integrated, coherent way” (Tuchinda et al., 2008). Therefore, PLEs offer a new form of personalized learning (Wild, Mödritscher & Sigurdason, 2008).

This paper describes the challenges that Personal Learning Environments present for higher education institutions. In section two, new challenges for learning and the information overflow will be discussed, whereas section three will describe the technical background of Personal Learning Environments and the widget standard in general. In section four, a first prototype of a personal learning environment for higher education systems will be presented, which has been integrated into the learning culture at the Technical University of Graz. This section will also give a detailed description of the available widgets for the prototype and provide a first expert evaluation. Finally, the conclusion of the article will consolidate the main points of the paper and present the plans for future research, including prospective developments.