Chapter 3

Toward a Personal Learning Environment Framework

Mohamed Amine Chatti
RWTH Aachen University, Germany

Mohammad Ridwan Agustiawan
RWTH Aachen University, Germany

Matthias Jarke
RWTH Aachen University, Germany

Marcus Specht
Open University, The Netherlands

ABSTRACT

Over the past decade, it has been argued that technology-enhanced learning (TEL) could respond to the needs of the new knowledge society and transform learning. However, despite isolated achievements, TEL has not succeeded in revolutionizing education and learning processes. Most current TEL initiatives still take a centralized technology-push approach in which learning content is pushed to a predefined group of learners in closed environments. A fundamental shift toward a more open and learner-pull model for learning is needed. Recently, the Personal Learning Environment (PLE) concept has emerged to open new doors for more effective learning and overcome many of the limitations of traditional TEL models. In this paper, the authors present theoretical, design, implementation, and evaluation details of PLEF, a framework for mashup personal learning environments. The primary aim of PLEF is to help learners create custom learning mashups using a wide variety of digital media and data.

INTRODUCTION

There is a wide agreement that the new era is defined by rapid knowledge development, and that traditional learning initiatives failed to cope with the increasing complexity and fast-paced change of the new knowledge society. For example, Brown and Adler (2008) note:

In the twentieth century, the dominant approach to education focused on helping students to build stocks of knowledge and cognitive skills that could be deployed later in appropriate situations. This approach to education worked well in a relatively stable, slowly changing world in which careers typically lasted a lifetime. But the twenty-first century is quite different. The world is evolving at an increasing pace (p. 30)
In order to align with the rapid change of the new knowledge-intensive era, a new vision for learning is required. Learning is fundamentally personal, social, distributed, ubiquitous, flexible, dynamic, and complex in nature. Thus, a fundamental shift is needed toward a more personalized, social, open, dynamic, emergent, and knowledge-pull model for learning, as opposed to the one-size-fits-all, centralized, static, top-down, knowledge-push models of traditional learning solutions (Chatti et al., 2007). In this paper, we discuss critical factors that must be addressed to ensure that future learning models will endure, analyze why traditional technology-enhanced learning (TEL) initiatives have failed, and present an alternative TEL model based on the concept of the Personal Learning Environment. This paper also describes some initial theoretical steps towards a Personal Learning Environment Framework (PLEF) that can support learners in taking control over their learning experience by creating and managing their own PLEs. Mashups that refer to a reuse and combination of services stemming from different sources to create entirely new services, build the cornerstone of PLEF. Furthermore, we present, design, implement, and evaluate details of a first prototype of PLEF, around the concept of mashups by aggregation.

**TEL CHALLENGES**

There are several critical challenges, opportunities, and movements in learning that must be considered in the development and implementation of TEL environments. These include encouraging lifelong learning, valuing both informal and formal learning, and recognizing the different contexts in which learning takes place, as well as the fundamental changes in the perception, technology, and use of the Web in the past (Attwell, 2007a, 2007b).

**Lifelong Learning**

Lifelong learning refers to a society in which learning possibilities exist for those who want to learn (Aspin & Chapman, 2000). Learning is not restricted to the classroom and to formal learning inside learning institutions; rather, it is an activity that happens throughout life, at work, play, and home. In the modern knowledge-intensive era, lifelong competence development has become a major challenge to our educational systems that have not changed their educational policies and pedagogical models to support lifelong learning. There is an increasing demand for new approaches toward fostering lifelong learning perspectives (Klamma et al., 2007).

**Informal Learning**

An important theme in learning is the nature of informal and non-formal learning: “Once you step beyond traditional institutional boundaries you can find learning, which is driven by and for, ‘you, the learner’” (Klamma et al., 2007, p. 73). Cross (2006) argues that at work we learn more in the break room than in the classroom. We discover how to do our jobs through informal learning, observing others, asking the person in the next cubicle, calling the help desk, trial-and-error, and simply working with ‘people in the know’. Formal learning is the source of only 10% to 20% of what we learn at work. Informal learning is however not restricted to a corporate context. Much of our academic learning happens beyond the formal institutional educational systems. It comes from different informal channels; for example, through games, simulations, experiments, story-telling, and discovery. Outside the classroom boundaries, we use Google, communicate with peers, join online communities, work on problems together, and share learning resources (Chatti et al., 2007).