Chapter IX

Collaboration in Context as a Framework for Designing Innovative Mobile Learning Activities

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ABSTRACT

In this chapter we describe our continuing efforts related to the design, implementation and evaluation of innovative educational activities supported by ubiquitous computing in the AMULETS (advanced mobile and ubiquitous learning environments for teachers and students) project. We argue that the design of innovative mobile learning activities should be guided by collaborative learning scenarios in context supported by mobile and ubiquitous technologies. To support this claim, we propose a conceptual framework of collaboration in context that can be used when designing novel mobile learning scenarios. This framework provides the designer with opportunities to tackle the challenges of designing for innovative mobile learning activities. To illustrate our ideas, we present the results of three trials we have conducted with children and adult students since the spring of 2006. These mobile learning activities have been designed and implemented using our proposed framework. Working with the teachers and students gave us the opportunity to design learning activities at authentic settings using meaningful content that has relevance for the school curriculum. The outcome of our efforts suggests that outdoor learning experiences supported by ubiquitous technologies should be combined with learning activities in the classroom to provide learners with meaningful activities.
INTRODUCTION

Recent advancements in mobile, wireless, and positioning technologies, combined with contextual computing, are contributing to the development of new mobile applications and services. The rapid adoption of sophisticated mobile devices and applications has created new social tools for people to connect and interact; therefore changing the ways we communicate and collaborate. Educational environments are being subject to these changes, providing an opportunity for curriculum development that can use these socially based mobile devices for supporting different aspects of learning and teaching. Mobility offers new dimensions to support and promote meaningful learning activities that include features such as connectivity, social interactivity and context sensitivity (Klopfer et al., 2002). From this perspective, mobile technologies allow enhancing the learners’ context by the creation of embedded ubiquitous environments in authentic settings, thus providing innovative ways of interacting with them. They also present design opportunities for multiple kinds of collaboration to support different aspects of the learning process (Price et al., 2003).

One of the main assumptions we consider as a point of departure for the ideas to be presented in this chapter is the fact that in the coming five years, whether educators would like it or not, more and more students will bring mobile devices with wireless communication into the classroom. These devices can be in the form of tablet PCs, PDAs, cellular phones, smart phones or GPS devices. All these technologies and new forms of mobile communication and collaboration have been adopted by young people and integrated into their everyday lives. Clear indications of this can be found on sites such as www.youtube.com, www.flickr.com, www.blogger.com, and www.facebook.com. Lankshear and Knoble (2006) claim that schools ignore some of these trends and argue that mobile and wireless technologies and new media might be integrated into current school educational activities, as they are transforming and defining new literacies in teaching and learning. Thus, there are a number of challenging questions that deserve further exploration. What are the implications of using mobile computing and wireless communication for supporting teaching and learning? What new scenarios and applications will emerge? Which aspects and processes should be considered while designing new mobile collaborative solutions?

In this chapter we describe our continuing efforts related to the design, implementation and evaluation of innovative educational activities supported by ubiquitous computing in the AMULETS (advanced mobile and ubiquitous learning environments for teachers and students) project. We argue that the design of innovative mobile learning activities should be guided by collaborative learning scenarios in context supported by mobile and ubiquitous technologies in authentic settings. To support this claim, we propose a conceptual framework that can be used when designing novel mobile learning scenarios. This framework provides the designer with opportunities to tackle the challenges of designing for mobile computer supported collaborative learning (mCSCL) and mobile-learning (mLearning) environments. To illustrate our ideas, we present the results of three trials we have conducted with children and adult students since the spring of 2006. These mobile learning activities have been designed and implemented using our proposed framework. In the rest of the chapter, we will describe in further details how collaboration in context with mobile support can be used for the theoretical, conceptual and design aspects of our research activities, as well as for evaluating the results. We described the activities in the trials together with a brief explanation of the technology we have developed. We will conclude by discussing the outcomes of the trials in connection to the proposed framework and the challenges facing innovative mobile learning applications.