Chapter 8.6
Design for Mobile Learning in Museums

Nikolaos Tselios
University of Patras, Greece

Ioanna Papadimitriou
University of Patras, Greece

Dimitrios Raptis
University of Patras, Greece

Nikoletta Yiannoutsou
University of Patras, Greece

Vassilis Komis
University of Patras, Greece

Nikolaos Avouris
University of Patras, Greece

ABSTRACT

This chapter discusses the design challenges of mobile museum learning applications. Museums are undoubtedly rich in learning opportunities to be further enhanced with effective use of mobile technology. A visit supported and mediated by mobile devices can trigger the visitors' motivation by stimulating their imagination and engagement, giving opportunities to reorganize and conceptualise historical, cultural and technological facts in a constructive and meaningful way. In particular, context of use, social and constructivist aspects of learning and novel pedagogical approaches are important factors to be taken in consideration during the design process. A thorough study of existing systems is presented in the chapter in order to offer a background for extracting useful design approaches and guidelines. The chapter closes with a discussion on our experience in designing a collaborative learning activity for a cultural history museum.

INTRODUCTION

Use of mobile devices spreads in everyday human activities. These devices offer portability, wireless communication and connectivity to information resources and are primarily used as mobile digital assistants and communication mediators. Thus, it is no surprise that various attempts to use mobile appliances for learning purposes have been reported either inside or outside school (Roschelle, 2003). The term *mobile learning* or *m-learning* has been coined and concerns the use of wireless technologies, portable appliances and applications in the learning process without location or time restrictions. Practitioners' reports (Perry, 2003; Vahey & Crawford, 2002) and scientific findings (Norris & Soloway, 2004; Roschelle, 2003; Zurita & Nussbaum, 2004) communicate promising results in using these applications in various educational activities. The related bibliography proposes various uses of mobile appliances for learning. These Activities might concern access and management of information and communication and collaboration between users, under the frame of various learning situations.

A particular domain related to collaborative learning is defined as the support provided towards the educational goals through a coordinated and shared activity (Dillenbourg, 1999). In such cases, peer interactions involved as a result of the effort to build and support collaborative problem solving, are thought to be conducive to learning. On the other hand, traditional groupware environments are known to have various technological constraints which inflict on the learning process (Myers et al., 1998). Therefore, mobile collaborative learning systems (mCSCL) are recognized as a potential solution, as they support a more natural cooperative environment due to their wireless connectivity and portability (Danesh, Inkpen, Lau et al., 2001). While the mobility in physical space is of primary importance for establishing social interaction, this ability is reduced when interacting through a desktop system. It is evident that, by retaining the ability to move around it is easier to establish a social dialogue and two discrete communication channels may be simultaneously established through devices: one physical and one digital. Additionally, a mobile device can be treated as an information collector in a lab or in an information rich space (Rieger & Gay, 1997), as a book, as an organizing medium during transportation or even as a mediation of rich and stimulating interaction with the environment (i.e., in a museum). Effective usage of mobile appliances has been reported in language learning, mathematics, natural and social sciences (Luchini et al., 2002).

Furthermore, various technological constraints need to be taken in consideration during the design of activities which involve mobile devices. Such an example is the small screen, which cannot present all the information of interest while the lack of a full keyboard creates constraints in relation to data entry (Hayhoe, 2001). There is a need to provide the user with the possibility to 'go large' by getting information from both the virtual and physical world, while simultaneously 'going small,' by retrieving the useful and complementary information and getting involved into meaningful and easy to accomplish tasks (Luchini et al., 2002). In addition, despite the fact that technological solutions are proliferating and maturing, we still have a partial understanding of how users take effectively advantage of mobile devices. Specifically, in relation to communication and interaction, we need to investigate how mobile technology can be used for development of social networks and how it can provide richer ways for people to communicate and engage with others. In public spaces, like museums, a crucial question is if the serendipitous exchanges and interactions that often occur should be supported through mobile technology, how and where the interaction between people takes place and how is affected by this novel technology. Clearly, a better understanding of social activities and social interactions in public spaces should emerge to answer these questions.

Related Content

Web-Based Seamless Migration for Task-Oriented Mobile Distance Learning
Degan Zhang, Yuan-chao Li, Huaiyu Zhang, Xinshang Zhangand Guangping Zeng (2009). *Mobile Computing: Concepts, Methodologies, Tools, and Applications (pp. 473-487).*
www.irma-international.org/chapter/web-based-seamless-migration-task/26522

Social Media in Promoting HIV/AIDS Prevention Behaviour among Young People in Botswana
Tshepo Batane (2014). *Social Media and Mobile Technologies for Healthcare (pp. 264-279).*
www.irma-international.org/chapter/social-media-in-promoting-hivaids-prevention-behaviour-among-young-people-in-botswana/111589

Outsourced Secure Face Recognition Based on CKKS Homomorphic Encryption in Cloud Computing
Liu Jiasen, Wang Xu An, Chen Bowei, Tu Zhengand Zhao Kaiyang (2021). *International Journal of Mobile Computing and Multimedia Communications (pp. 27-43).*
www.irma-international.org/article/outsourced-secure-face-recognition-based-on-ckks-homomorphic-encryption-in-cloud-computing/284392

Beyond Mobile Learning: Identity Construction and the Development of Social Awareness
André H. Caron, Letizia Caroniaand Pascal Gagné (2011). *Mobile Technologies and Handheld Devices for Ubiquitous Learning: Research and Pedagogy (pp. 45-57).*
www.irma-international.org/chapter/beyond-mobile-learning/46558

Investigating Serendipitous Smartphone Interaction with Public Displays
Matthias Baldaufand Peter Fröhlich (2015). *Emerging Perspectives on the Design, Use, and Evaluation of Mobile and Handheld Devices (pp. 239-268).*
www.irma-international.org/chapter/investigating-serendipitous-smartphone-interaction-with-public-displays/133758