

An Evolutionary Perspective on Mobile Learning: From Research and Pilot oriented to Scalable and Sustainable

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Abstract: The field of Technology Enhanced Learning (TEL) has been continuously evolving during the last three decades. The introduction of computer-based training, and later on networked-based learning, mainly due to the advent of the World Wide Web, led to the definition of *e-learning*. Advancements in mobile and wireless technologies have also had an impact in educational settings, thus generating a new approach for technology-enhanced learning called mobile learning or *m-Learning* [Sh09]. The rapid development of these latest technologies combined with access to content in a wide variety of settings, allows learners to experience new learning situations beyond the school's walls. This latest view on technology-enhanced learning supported by wireless technologies and ubiquitous computing is referred to Ubiquitous Learning or *u-learning* [RP06]. While context is an important aspect of mobile learning, it is the central concept of u-learning, due to two important features of the learning environment, namely *context awareness* and *adaptivity*. The notion of *context awareness* means that the pedagogical flow and content that are provided to the learning environment should be *aware* of the situations in which the learner/s actually is/are. The term *context adaptivity* refers to the idea that different learning contents should be adaptable to the particular setting in which the learners are situated.

This latest view on technology-enhanced learning offers the potential for a new phase in the evolution of technology-enhanced learning, marked by a continuity of the learning experience across different learning situations. Chan and colleagues [Ch06] and Milrad et al., [Mi13] use the term "*seamless learning*" to describe these new situations. Seamless learning implies that students can learn whenever they are curious in a variety of situations, they can easily and quickly switch from one scenario to another using their personal mobile device as a mediator, and can maintain the continuity of their learning across technologies and settings. These scenarios include learning individually, with another student, a small group, or a large online community, with possible involvement of teachers, relatives, experts and members of other supportive communities, face-to-face or in different modes of interaction and at a distance in places such as classroom, outdoors, parks and museums. Recent studies on seamless learning have been extending from teacher-facilitated classroom or outdoor learning into nurturing autonomous learners [WL11]. Indeed, the ultimate motivation for learning scientists to promote seamless learning is to foster the habits of mind and abilities that support 21st century skills among students. Thus the aim is to design and enact not just episodic activities but programs to gradually transform learners into more self-directed individuals being able to carry out learning tasks not just anytime and anywhere, but perpetually and across contexts without external facilitations. Mediated by technology, a seamless learner should be able to explore, identify and seize boundless latent opportunities that her daily living spaces may offer, rather than always being inhibited by externally defined learning goals and resources [WMS15].

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Research with a particular focus on the field of mobile learning has gained much attention in the last 15 years. Since the late 90's, a substantial number of research projects on mobile learning have been conducted in both formal and informal learning settings. The analysis of the research literature in this field indicate that much of the global research efforts have concentrated on the design and development of a wide range of technological solutions to support learning about a particular subject matter. The outcomes of these research activities have contributed to a refined conceptualization of learning with mobile technologies in schools, museums and in field trips.

In this talk I will address and discuss those aspects related to innovation and sustainability in mobile learning. I will first introduce this research field in terms of perspectives and challenges in order to understand why it matters to study the sustainability of innovations in schools. Thereafter, I will turn the focus to a couple of our on-going research projects in order to provide a critical analysis on the barriers and constraints experienced by both researchers and teachers while integrating mobile devices and applications in elementary, secondary schools and university settings. Towards the end, I will discuss factors, stakeholders and lines of action identified when attempting to introduce and sustain innovative educational practices in Swedish schools.

References

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