Chapter 7
Investigating Undergraduate Student Mobile Device Use in Context

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ABSTRACT

This chapter reports on an in-depth one-year empirical research into examining five undergraduate student mobile device uses in context. Data collection methods include: student reflective e-journals, student artifacts, observations, interviews, field notes, and memos. Three complementary streams were involved in the data analysis. Seven interacting factors in context that could either facilitate or inhibit mobile device use were identified and discussed.

INTRODUCTION

Mobile devices have been increasingly used in education. Mobile devices are considered by a variety of researchers to have unique characteristics of portability, connectivity, convenience, expediency, immediacy, accessibility, individuality and interactivity. These characteristics make educational uses of mobile devices in relation to functions distinct from other technologies such as desktop or laptop computers. Many researchers claim that this technology use is highly dependent on the context (Sharples, Taylor, & Vavoula, 2007; Wali, Winters, & Oliver, 2008). In practice, numerous studies have been designed to exploit the capabilities and constraints of mobile learning systems in specific settings rather than build upon sound educational underpinings in a broader context (Patten, Arnedillo-Sanchez, & Tangney, 2006). Only a few empirical studies on mobile technology educational uses have addressed the concept of context in higher education (Jones & Issroff, 2007; Sharples et al., 2007). What is in context that influences the mobile device use has not been fully explored. This research endeavors to

work towards the direction of examining factors in context that influence student mobile device uses.

LITERATURE

In mobile technology educational practices, Seale (2008) posits that understanding the relationship between educational uses and technology is "all about understanding context" (p. 2). Mobile device uses have to be understood in "multiple virtual and physical contexts" (Seale, 2008, p. 2). In Wali *et al.*'s (2008) words, we need to make sense of the use in "context crossing and social setting - the intersection between context as change in location and context as change in social settings" (p. 55). More specifically, Gay and Hembrooke (2004) propose that context needs to be redefined as a "multidimensional construct that has overlapping and interacting layers" (p. 75). Thus, context includes "the external physical context, the context that the individual brings to the situation, the context of the tool or device, the information context, and the context that is created by the activity itself" (p. 75). Some studies have proposed conceptual frameworks for designing mobile learning environments from a socio-historical perspective (e.g., Uden, 2007; Sharples *et al.*, 2007, Wali *et al.,* 2008, Zurita & Nussbaum, 2007). These views on context in mobile device educational uses enrich the literature regarding the concept of context in theory. However, they also impose challenges on how to apply these theoretical views of context in mobile device educational uses. In practice, the majority of mobile device educational research has presupposed a specific setting where students have used mobile technologies to perform teacher/researcher-led tasks (e.g., Lan, Sung, & Chang, 2007; Motiwalla, 2007). Only a few empirical studies on mobile device educational uses have been carried out in a social context (e.g., Jones & Issroff, 2007; Sharples, Taylor, & Vavoula, 2007; Waycott, 2005), but they have not addressed the concept of context in student mobile device uses in higher education.

Study practice is embedded in social contexts (Cole, 1996; Lave, 1988). Lave (1988) makes a theoretical distinction between two aspects of a social context. What she calls the arena that constitutes the "objective" social context, to be described in physical, economic, sociological, cultural or political terms; setting, on the other hand, is used to refer to the context as experienced by a participant or set of participants with reference to a social context. Cole (1996) distinguishes between context as "that-which-surrounds-the-object" which is often represented as a set of concentric circles representing different levels of context (p. 135), and context as "that which weaves together" (p. 135). According to Cole, instead of considering context as a container of objects and behaviors, an "act in its context" (p. 136) understood in regard to the weaving-together metaphor requires a relational interpretation of an individual person, the tool and the context. He further states that to understand the human action in context, we need to analyze not only the individual person and the tool, but also his/her purposes and the environment in which the action is embedded. Humans do not act directly on the world; rather, actions are mediated by tools (Vygotsky, 1978). Because the individual interacts with the environment through the tool, the individual mind must be seen as distributed in the tool which is woven together, which also weaves together individual human actions in concert with and as a part of the changing events of life. These contexts emerge from the weaving together of various levels of contexts to form a particular pattern of learning activities mediated by the tool. The combination of goals, tools, and social context (setting and arena) constitutes simultaneously the context of a behavior and ways in which mind is related to that context. The context-as-weaving metaphor suggests that "[t]he relevant order of the levels of context will depend crucially upon the tools through which one interacts with the world, and

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