

## Chapter 3.5

# Enhancing Learning Through Mobile Computing

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### ABSTRACT

The mission of this chapter is to explore ways in which mobile computing via the employment of Tablet PCs can assist the human computer interaction in the design and project development process and thereby enhance learning. We follow the process of ethnographic action research and report on the learning, observations, and communications of students in a multimedia program who were given the use of a Tablet PC for their second year of their degree. We discuss the educational design and customized agent software developed

for this project and draw conclusions for wireless networks, and benefits and issues involved in enabling mobile computing and encouraging group dynamics among students.

### INTRODUCTION

It is interesting to consider how much people learn when mobile. When on the train traveling from home to university all manner of observations might influence the way a person thinks and reinforce some learning experience. It is also

often a good time to revise notes before an exam or interview. Similarly, when walking from one lecture to another or over to the cafeteria, students may exchange information that contributes greatly to their learning. In the study discussed in this book chapter, we observe and analyze the learning experiences of students who were each given a Tablet PC for a semester of their course.

Ethnographic action research is a methodology for investigating the impact of technology on a community. It was first devised in 2002 to explore the use of computers on communities in India (Tacchi, Slater, & Hearn, 2004). Its principles are that one change rarely impacts on only one individual, and changing one aspect may affect many other aspects of a student's life within his or her community.

## **BACKGROUND**

In this chapter we report our research into mobile computing and the design process. This research has been supported by HP Mobile Technology for Teaching Grant Initiative—2004 Higher Education, and we have undertaken exploratory ethnographic action research to explore and analyze to what extent Tablet PCs enhance learning within the context of students learning the design development process.

Formal RMIT student surveys (the top 10 student concerns are available through RMIT University) indicate that students would like to engage more fully with the University and fellow students in a manner that meets both their social and academic needs. Observations and conclusions drawn from this research indicate that students:

- undertake more hours of paid employment to support their study costs, resulting in increased pressure to maximize time and resources in academic hours;

- want to interact with the University in ways that best suit their personal circumstances and preferred learning practices; and
- have limited amounts of quality contact time with fellow students on campus.

Tablet PCs have the potential to facilitate students' engagement with the University and fellow students in a manner that does meet their social and academic needs, and our research explores the extent to which this may occur through the use of mobile computing devices.

We chose students from a multimedia design degree (Bachelor of Design [Multimedia Systems]) for this study because they spend considerable time engaged in group projects. It is also a challenging use of mobile technology as students spend time generating, analyzing, and collaborating around images. The students are diverse, with academic interests ranging from creative media design to software development. The aim of this study trial is to explore new methods for applying mobile technologies within both formal and ad hoc study groups. Students from the multimedia design program are generally expected to work in their groups both in and outside of the classroom on design projects. Interaction between students is not moderated; rather it is supported by a learning program that emphasizes team skills. Students enrolled in this program are typically local school leavers and have completed Year 12 Mathematics and English. A very small proportion is international students, mainly drawn from China and India. The students are enrolled in two design courses that require teamwork and collaboration for one semester.

Applications used in multimedia design are typically central processing unit (cpu) intensive and require a large display screen with keyboard, mouse, and WACOM (registered brand name) Tablet as input devices. The Tablet PCs with digitized screen, and pen and ink technology present an opportunity to explore the extent to which

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