Chapter 9

Historic Monument Education: The Impact of a Collaborative Inquiry-Based Mobile Learning Strategy on Social Relationship Development

Ju-Ling Shih
National University of Tainan, Taiwan

Chien-Wen Chuang
National University of Tainan, Taiwan

Gwo-Jen Hwang
National Taiwan University of Science and Technology, Taiwan

ABSTRACT

The aim of this research was to design an inquiry-based mobile learning strategy that integrated the physical environment and digital resources to enhance elementary students’ learning of historic monuments. The students were situated in both the real world and the virtual world to extend their learning experiences. Based on collaborative learning principles, students used the handheld device, PDA, to do their investigations. This research utilized the Peace Temple in Taiwan as the teaching and learning site and invited 32 fifth graders to participate in the learning activities. Through pre- and post-class questionnaires, as well as observations and focus group interviews, both qualitative and quantitative data about students’ social relationships were collected and analyzed. The results showed that students’ social relationships varied at different stages with different tasks. Inquiry-based mobile learning is shown to have positive effect on students’ learning performances and learning satisfactions.

INTRODUCTION

In traditional classroom teaching where teachers conduct transmissive instructions, students are often not involved in sufficient learning activities. This results in a more passive learning attitude and less learning transfers. For this reason, we aimed to use an inquiry-based mobile learning strategy to supplement classroom learning. The strategy integrated both the physical (real world) and digital environments (virtual world) to allow for active knowledge construction to take place with the students.

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In order to conduct inquiry-based learning, the students were situated in an authentic environment to interact with real objects in the real world. They go through problem-solving processes, explore the learning context, conduct observations, and gain experiences in the everyday life environment. Situated learning theories suggest that knowledge construction and learning can only happen in situ and through the interaction of people and their social cultural environments. However, the teacher is unable to attend to many students in situated learning contexts, thus providing individual support is weak. With digital systems and tools, such as the PDA, students can get individual guidance when they are distributed in the field. In other words, the PDA is able to substitute the teacher’s role and the pre-designed digital resources in the system work as learning scaffolds for the students.

Mobile devices with wireless communication services have enabled students to retrieve learning resources disregard of their locations. Due to the powerful functions and high portability of mobile devices they are used in numerous formal and informal learning situations to enhance learning effectiveness. The many formal learning situations from different fields around the world that widely use mobile devices include the natural sciences (e.g. Lai, Yang, Chen, Ho, & Chan, 2007), social sciences (e.g. Fischer & Konomi, 2007), mathematics (e.g. Zurita & Nussbaum, 2004) and languages (e.g. Cui & Bull, 2005), just to list a few. Informal learning situations include those in indoor settings, for example, museums, learning centers, laboratories and home, and outdoor settings, for example, parks, city centers and woodlands (Rogers, Price, Randell, Fraser, Weal, & Fitzpatrick, 2005). Other informal learning situations include bird-watching (Chen, Kao, & Sheu, 2003) and museum learning (Burgard et al., 1999). Among these, the Ambient Wood project led by Yvonne Rogers in England (Rogers et al., 2004) and butterfly learning with expert system on PDA led by Gwo-Jen Hwang in Taiwan (Chu, Hwang, Huang, & Wu, 2008) are eminent natural science mobile learning projects that led to positive learning results. Therefore, mobile technologies have fulfilled educational dreams by providing the possibility of creating innovative learning experiences.

In order to investigate the possibilities of applying mobile learning strategies to social science courses in elementary education, this research utilized the Peace Temple in Tainan as an example and invited 32 fifth graders to participate in the instructional activity. In this research, students were situated in the authentic learning environment where they could interact with the physical environment, their peers, and the digital devices. The objectives of learning local historic monuments were to let students to get familiar with local environments, cultures, people, and activities. The investigation was done by physically participating in it, and through observations and interview activities. Field inquiry instructional strategies were considered appropriate for social science learning. When students were situated in the learning context where they were interacting with the environment and their mobile devices, they were immersed in individual learning. In order to increase students’ social interactions as well as to allow peer support to happen, collaborative learning strategies were implemented. Meanwhile, teachers could detect individual difficulties more easily.

Collaborative learning has also been proven to have positive learning effects on information-mediated instructions (e.g. Gokhale, 1995; Dillenbourg, Baker, Blaye, & O’Malley, 1996). When students are placed in a group, they have common goals, resources, and tasks to work toward. Hence, peer-interaction frequencies and learning motivation increase more than individual learning. In this research, we define students’ interactions with peers as their social relationships.

This research first situated students in both the real world and the virtual world to extend their learning experiences; secondly, it designed educational activities between the field and the digital system to demonstrate the practices of
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