A Two-tier Test Approach to Developing Location-aware Mobile Learning Systems for Natural Science Courses

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Abstract

The advancement of wireless and mobile technologies has enabled students to learn in an environment that combines learning resources from both the real world and the digital world. Although such an approach has been recognized as being innovative and important, several problems have been revealed in practical learning activities. One major problem is owing to the lack of proper learning strategies or tools for assisting the students to acquire knowledge in such a complex learning scenario. Students might feel excited or engaged when using the mobile devices to learn in the real context; nevertheless, their learning achievements could be disappointing. To deal with this problem, this study presents a mobile learning system that employs Radio Frequency Identification (RFID) technology to detect and examine
real-world learning behaviors of students. This study also utilizes each student’s responses from a twotier test (i.e., multiple-choice questions in a two-level format) to provide personalized learning guidance (called two-tier test guiding, T3G). The experimental results from a natural science course of an
elementary school show that this innovative approach is able to improve the learning achievements of students as well as enhance their learning motivation.

Keyword：Mobile learning, Ubiquitous learning, Two-tier test, Context awareness