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Motivational strategies in a mobile inquiry-based language learning setting

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ABSTRACT

This study examined how mobile inquiry-based learning (M-IBL) influenced students' learning motivation and achievement in accordance with motivational theory. It bridges a research gap by investigating the learning effectiveness of motivational design in M-IBL in a formal English as a Foreign Language (EFL) /L2 educational context. Two entire classes were recruited to participate in a six-week study. The experimental group undertook M-IBL that was embedded with motivational strategies (MSs) containing motivational elements of attention, relevance, confidence, and satisfaction (ARCS). In contrast, the control group were provided with M-IBL without MSs. The results indicated that although there was no significant difference in learning achievement between the two groups, the students who received M-IBL instruction with motivational enhancement had significantly greater learning motivation than students who received M-IBL instruction without MSs. When analysing the components of the ARCS model separately, it was found that the students who participated in M-IBL with embedded ARCS MSs showed a significantly higher level of motivation in the dimension of ARCS-relevance, ARCS-confidence, and ARCS-satisfaction than those who participated in M-IBL without MSs. In light of this, instructional design suggestions that incorporate motivationally enhanced strategies for M-IBL in language learning contexts are provided.

1. Introduction

Mobile technology has attracted a great deal of attention from educators with regard to integrating both traditional and innovative ways of teaching and learning into the curriculum as well as providing adaptability and utility across a wide range of educational learning activities in diverse learning areas. Similar to other subject areas, language instructors have widely applied mobile devices in designing language courses so that learners can access resources and benefit from various educational experiences (Kukulska-Hulme & Traxler, 2007). The development of mobile applications has generally adhered to pedagogical approaches, from the content delivery technique with basic drill exercises (e.g., Song & Fox, 2008), to interactivity with teacher-learner interactions or systematic feedback (e.g., Cooney & Keogh, 2007), and constructivism with collaborative frameworks (e.g., Nah, White, & Sussex, 2008).

Although most educators seek effective ways to integrate mobile technology in language courses, instructional designs that follow motivational strategies and facilitate learning motivation in mobile language learning activities are scarce. Some

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studies have shown that mobile-based learning activities for different learning contexts have enormous potential for enhancing student engagement, motivation, active learning attitude, and course retention (e.g., Ciampa, 2014; Joosten, 2010; Schwabe & Göth, 2005). However, course instructors might ignore motivational enhancement in favour of instructional design, and inconsistently assume that the novelty effect of mobile technology is sufficient to stimulate student motivation (Huett, Kalinowski, Moller, & Huett, 2008; Jones, Issroff, Scanlon, Clough, & McAndrew, 2006). According to Malone and Lepper (1987), motivation is a fundamental element for student involvement in any type of learning task; what and how effectively students learn may be affected by their level of motivation. Ushioda (2013) also asserted that whatever the properties or affordances of mobile technologies or applications for language learning, a key point is the motivation that students bring to the learning, and how this is facilitated and supported. Although there is abundant research on motivational theories, few studies have shown empirical evidence regarding how well these theories apply in instructional design for mobile assisted language learning (Tran, Warschauer, & Conley, 2013).

In other words, the question is, what theory helps instructors understand how to design mobile-based learning activities that improve learner motivation and have a positive impact on learning? More specifically, how can a learning task that promotes learners' engagement with mobile technology and facilitates their motivation be designed on the basis of motivational theory? Tran et al. (2013) highlighted that in order for this to happen, there is a need to identify and investigate the motivational components and processes of implementation that are required in mobile-based language instruction.

The goal of the present study is clear and practical. A learning activity called mobile inquiry-based learning (M-IBL) was used to support learner motivation in language learning in the present study. M-IBL has been developed to engage learners in observing data to answer questions (Looi et al., 2011; Shih, Chuang, & Hwang, 2010). It is designed to interact with the physical environment in that it allows students to leave the classroom to engage in simultaneous interactions with the learning environment. In contrast with lecture-type learning where students are passive and receive knowledge, learners are guided to acquire knowledge through the learning materials. The idea of inquiry-based learning is based on a concept from constructivist literature (Cunningham & Duffy, 1996). However, problems regarding sustaining learner motivation could be a challenge in the context of M-IBL, especially when the learners are working independently in a real context without the assistance of their instructors (Shih et al., 2010). Students might feel isolated or lack the motivation needed to complete the requirements of the task.

Therefore, the current study, in addition to immersing learners in the mobile learning context, focuses on using instructional design in learning activities in accordance with motivational theory to promote active learning and motivation. In contrast with theories such as achievement goal theory or self-determination theory, it is assumed that instructional design plays a crucial factor in stimulating student motivation. Keller's (1979, 1987, 2010) attention, relevance, confidence, and satisfaction (ARCS) theory is feasible for use in the current study because its main focus lies in instructional design. The model is an attempt to integrate divergent motivational theories (e.g., behavioural, cognitive and affective learning theories) but patiently falls under an expectancy value framework. Keller (1987) believed that learner motivation can be affected by external conditions, and he argued that the essential components of ARCS help course developers to apply strategies that fit in instructional contexts. Thus, the four components of ARCS serve as the overall framework for the motivational strategies used in the study. Motivational strategies were used to deliver ARCS-based motivationally enhanced messages to students. These enhanced messages tailored to be embedded in the learning content were displayed on students' mobile screens to support their learning when they conducted inquiry tasks. The purpose of ARCS, therefore, is to deploy motivational strategies that are manipulated by instructors to improve the motivational appeal of instruction.

Many studies have included Keller's (1987) ARCS model in their investigations. However, the majority adapted its questionnaires or cited the article to explain the effect of motivational improvement (e.g., Liu & Chu, 2010; Moses, 2008; Su & Cheng, 2014). Rather than simply using the questionnaires to assess motivation, the present study considered a holistic integration of ARCS motivational strategies, tailoring a task embedded with ARCS MSs. In other words, it highlighted Keller's (1987) ARCS MSs for instructional design. Through the realisation of the experiment, it was anticipated that meaningful activities would be created, students' interest and motivation would be facilitated, and thus, active learning would be promoted. Specifically, this study aimed to explore the role of embedded ARCS motivational MSs in M-IBL in enhancing learners' motivation and learning performance in foreign language learning.

2. Literature review

2.1. Mobile technology and inquiry-based learning

Inquiry-based learning (IBL) is grounded in the central tenets of constructivism, which provides learners with opportunities to construct meaning by acquiring information from the outside world and developing a personal understanding of it through exploration, investigation and observation in their learning environments (Feletti, 1993). 'Learning by doing' with open-ended, student-centred, and hands-on activities encourages students to actively participate rather than be passive recipients of knowledge in a traditional teacher-centred model.

IBL is traditionally developed in science study (Shih et al., 2010). However, its value has been used in English as L2 instructions. Research successfully demonstrates the combination of mobile technology and IBL approaches for language instruction: for example, context-aware mobile learning or contextualised mobile-assisted language learning (Liu & Chu, 2010; Tai, 2012). Studies show that M-IBL reflects the epistemologies of language learning, mainly stemming from: (1) inquiry that