



Investigating teachers' adoption of signature mobile pedagogies



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ABSTRACT

This study investigated how teachers are using distinctive pedagogical features of mobile learning: collaboration, personalisation and authenticity. The researchers developed and validated a survey instrument based on these three established constructs (Kearney, Schuck, Burden, & Aubusson, 2012) and used it to interrogate current mobile learning practices in school and university education. This paper focuses on data from school teachers ($n = 107$). Findings indicated that teachers' perceptions of authenticity were high but aspects of online collaboration, networking and student agency were rated surprisingly lower than expected, given the rhetoric about enhanced connection and flexible learning opportunities afforded by mobile technologies. Device ownership was identified as one factor influencing adoption of these mobile pedagogies. Implications for effective use of handheld devices in teaching are addressed.

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1. Introduction

Mobile learning (m-learning) considers the process of learning mediated by handheld devices such as smart phones, tablet computers and game consoles (Schuler, Winters, & West, 2012). The ubiquity, flexibility and increasingly diverse capabilities of these devices have created considerable interest from educators in using them to enhance pedagogy. However, despite predictions about transformational teaching practices (Johnson, Adams, & Cummins, 2012; Norris & Soloway, 2011), the widespread, effective application of these mobile technologies has not yet been realised (Milrad et al., 2013). Although considerable research has been carried out on the technical affordances of mobile devices, typically informed by instructionist models of learning (Frohberg, Goth, & Schwabe, 2009; Murray & Olcese, 2011), there is an ongoing need to examine pedagogies that are suitable for m-learning to inform teacher practice, policy makers, curriculum developers and teacher education (Goodwin, 2012; Pegrum, Oakley, & Faulkner, 2013; Traxler, 2008). This study addresses this need by interrogating teachers' use of distinctive pedagogical features of mobile learning environments: authenticity, personalisation and collaboration (Kearney, Schuck, Burden, & Aubusson, 2012). It draws on analysis of survey data collected from mainly Australian and European teachers, with a particular focus on these signature mobile pedagogies, to highlight areas for future development.

2. Background

2.1. Theoretical framework

Research studies have examined m-learning through various theoretical perspectives and frameworks such as activity based approaches, authentic learning, action learning and experiential learning (Sharples, Taylor, & Vavoula, 2007). Some studies have adopted a socio-cultural perspective, where learning is considered as a situated, social endeavour, facilitated and developed through social interactions and conversations between people (Vygotsky, 1978), and mediated through tool use (Wertsch, 1991). For example, Koole's (2009) FRAME model takes into consideration both the technical characteristics of mobile devices as well as social and personal learning processes. She refers especially to enhanced collaboration, access to information and deeper contextualisation of learning. More recently, Kearney et al. (2012) developed a pedagogical framework of mobile learning to extend Koole's model, including understandings of "mobile pedagogy" which

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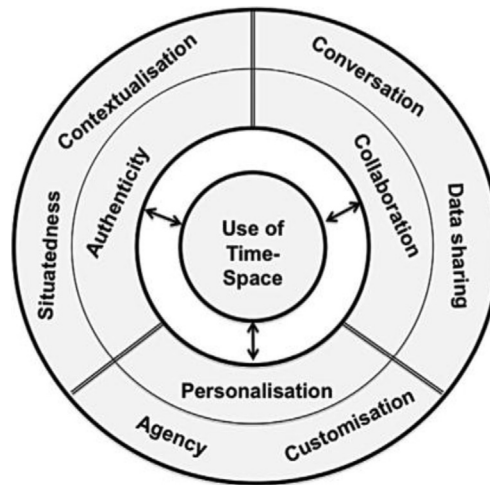


Fig. 1. Framework comprising three distinctive characteristics of mobile learning experiences, with sub-scales. From Kearney et al. (2012, p.8).

draw on socio-cultural understandings. This framework was developed and tested during two mobile learning projects located in teacher education communities (Schuck, Aubusson, Kearney, & Burden, 2013). It was validated through inter-researcher validation, using feedback from other mobile learning researchers; and intra-researcher validation, through discussions amongst the designers of the framework. Also, each iteration of the framework was tested in the context of a range of project initiatives (Kearney et al., 2012). The framework privileges three distinctive features of m-learning: personalisation, authenticity and collaboration. How learners ultimately experience these pedagogical characteristics is influenced by the 'time-space' configuration of the learning context (Ling & Donner, 2009): the organisation of the temporal (scheduled/flexible; synchronous/asynchronous) and spatial (e.g. formal/informal, physical/virtual) aspects of the m-learning environment (Traxler, 2009; Tubin, 2006) as depicted in Fig. 1. This configuration is often described in the literature through words such as 'anywhere, anytime', 'on the move' and 'multiple contexts' (Mifsud, 2014).

The rationale behind these scales is provided through the use of subsidiary themes under each of the central features, which pinpoints the critical features of m-learning from a pedagogical perspective. The personalisation feature has strong implications for ownership, agency and autonomous learning. It consists of the sub-themes of agency and customisation. High levels of personalisation would mean the learner is able to enjoy a high degree of agency in appropriately designed m-learning experiences (Pachler, Bachmair, & Cook, 2009) together with the ability to customise and tailor both tools and activities, leading to a strong sense of ownership. The authenticity feature highlights opportunities for contextualised, participatory, situated learning. The sub-themes of contextualisation and situatedness bring to bear the significance of learners' involvement in rich, contextualised tasks (e.g. realistic setting and use of tools), involving participation in real-life, in-situ practices. Learners can generate their own rich contexts (Cochrane, 2014; Pachler et al., 2009) with or through their mobile devices. The deeper contextualisation of tasks in these physical or virtual spaces can be supported by geo-location and data capture facilities (Brown, 2010). Thirdly, the collaboration feature captures the oft reported conversational, connected aspects of mobile learning. It consists of conversation and data sharing sub-themes, as learners engage in negotiating meaning, potentially forging rich networked connections with other people and sharing information and resources across time and space.

This framework has recently been used to inform research on m-learning in school education (Burden, Hopkins, Male, Martin, & Trala, 2012), teacher education (Kearney & Maher, 2013), and other areas of higher education (Kinash, Brand, & Mathew, 2012). For example, Viberg and Grönlund (2013) used the framework to develop a survey instrument in their examination of students' attitudes toward mobile technology use in and for second and foreign language learning in higher education. Their findings showed most respondents (345 Chinese and Swedish university students) held positive attitudes towards m-learning, with personalization being most positive (83%), followed by collaboration (74%) and authenticity (73%). While Green, Hechter, Tysinger, and Chassereau (2014) used the framework to inform the development of their own instrument—the 'Mobile App Selection for Science' (MASS) rubric—to aid teachers' rigorous selection and evaluation of K-12 science applications (or 'apps').

2.2. M-learning pedagogies in school education

Studies of m-learning in school contexts have typically used case studies to interrogate practices, highlighting a range of pedagogical affordances. A major study in Scotland by Burden et al. (2012) involving eight schools and around 365 students found significant benefits for students, teachers and parents, such as more collaboration between teachers and students, increased peer coaching and more effective feedback. Personal 'ownership' of the device was identified as a crucial factor influencing these benefits. They found that the mobile devices raised challenges for teachers, including a need to find a balance between providing complete autonomy and choice for learners, and the need to scaffold learning tasks. Ownership and learner agency were key issues discussed in other studies. Hughes' (2014) case study of four Grade 6 and 7 Canadian classes explored how use of mobile devices mediated a multiliteracies pedagogy to enhance student voice, agency and identity in the context of their learning communities. Jones, Scanlon, and Clough (2013) used two case studies to investigate learner control and how mobile learning can support inquiry-learning in informal and semi-formal settings. Participants included 14 and 15 year old Geography students in an after-school Geography club. A resultant framework was proposed for considering the dimensions of learner control, location of learning and supports. While Bjerede and Bondi (2012) reported on a study with 27 Grade 5 students, finding a shift from instructionist teaching practices to a culture where the teacher and the students became co-learners.

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