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Mobile Learning within a New Zealand Context

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Abstract. Cutting-edge technologies play a critical role in supporting and innovating teaching and learning. However, gratuitous use of such technologies could adversely impact instructional efficacy. What is needed is the application of technology based upon theory-driven, research-informed methods. Particularly in recent times, there has been a growing interest in mobile learning supported by portable devices. The study described in this proposal investigates the impact of mobile learning in Orewa College, Auckland that has adopted a Bring Your Own Device (BYOD) plan for portable devices acquisition. Our research study will focus on the influence of mobile learning on student learning outcomes and teaching practices and the implications of these findings on mobile learning pedagogy.

Keywords: Mobile Learning, Portable Devices

1. Introduction

Much emphasis has been placed on and resources dedicated to encourage schools to integrate a range of digital technologies to improve teaching and learning. However, Traxler (2010) cautions that education has had a history of 'parasitic' relationship with technology, where devices originally intended for the corporate environment have been 'forcibly transplanted' to support educational purposes. Such gratuitous use of cutting-edge technology might potentially have the counter effect of adversely impacting instructional efficacy. But then, given the centrality of new technologies to life in the twenty-first century, it will be foolhardy to ignore the capabilities of technology in supporting and innovating learning to reach out to a diverse audience of learners of differing academic caliber (Melhuish & Falloon, 2010).

What is therefore needed is the systematic evaluation of the utility of technological innovations within educational contexts based upon theory-driven, empirically evidenced, practice-based research methods. This will then ensure that the technology-mediated learning environment will serve as a catalyst for sustained positive changes in the ways teaching and learning are enacted both within and outside the classroom.

Particularly, there has been a growing call in recent times for flexible, customized learning enabled by mobile computing devices. Mobile technologies have stimulated the reconceptualization of what constitutes learning 'space' since they engender a dimension of learning that is free from the constraints of fixed time and place. This has led to the exploration of the potential of emergent mobile technologies such as handheld devices as effective educational tools in facilitating mobile learning. The myriad of handheld devices includes personal digital assistants, MP3 players and in recent times iPads, iPod touches, iPhones and Android devices.

These are early days of the adoption of mobile devices for educational purposes and so not surprisingly a search of the literature databases reveals a paucity of research that has been carried out in this area internationally. The newness of iPads creates a research phenomenon unique and unstudied in an educational environment. They observed that even though schools and universities in the United States have been investing in iPads in a variety of ways, the adoption of iPads has not been researched in an academic environment. Our study is seminal from a New Zealand educational research perspective since very few studies have been reported on the multi-modal impact of portable devices, such as iPads, on learning gains, quality and outcomes in a New Zealand schooling context. This research is, therefore, of strategic importance in New Zealand at this time and looking forward.

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In addition, rather than schools providing the mobile devices for its students and teachers as is usually the case (one to one model) with the provision of follow-up technical assistance services, Orewa College, Auckland, the research site of our study, instead adopted a unique Bring Your Own Device (BYOD) plan for mobile devices acquisition. Parents were required to buy a portable device for their Year 9 child at Orewa College and teachers purchased portable devices at a subsidized rate. Our research study will focus on this BYOD culture that has emerged in this school and its impact on enhancing and advancing learning and teaching.

2. Theoretical Underpinnings

Our research study will fundamentally be predicated upon Sharples, Taylor and Vavoula's (2005) theory of mobile learning that is an expansion of Engstrom's activity theory (1999). Their theory of mobile learning conceptualizes learning as a cultural-historical-activity system, mediated by tools that both constrain and support learners in their goals of transforming their knowledge and skills. They posit that the interactions of tool mediated activities and the three key constructs - control, context and communication - create an integrated system of learning and learners that are framed by cultural practices and historical practices. The theory of mobile learning views learning as being mediated by technological (human-computer interaction, physical context and digital communications) and human semiotic (social conventions, community and conversation) perspectives.

3. Research Questions

- How has incorporating mobile devices enhanced students' learning outcomes?
- What impact has incorporating mobile computing devices had on teaching practices?
- What strategies and approaches in the use of mobile computing devices advance learning and teaching and are sustainable, transferable and reproducible in other educational contexts?

4. Research Site

Orewa College will be the site of our research study. The school made a decision in 2012 that all students in Year 9 had to bring a mobile computing device to school for their education. This decision was made in light of the belief that 1:1 student-computing device ratio could enhance learning engagement and improve pedagogical outcomes. The school decided to start their mobile learning initiative with Year 9 students before attempting to roll it out to other levels. This was due to Year 9 students being a smaller cohort and the first year in this school where students are not in a homeroom situation. The school was equipped with necessary infrastructure to support mobile learning – high-speed fiber connection to the Internet and reliable high-speed wireless technology covering the school site. Affordable computing devices were made available to students though the school. The iPad2 device was selected by Orewa College over other mobile computing device options since it is light, portable, robust and had longer battery life, and offers of a large gamut of free downloadable applications. Subsequently nearly 95% of all students acquired an iPad2 device.

5. Research Design

One of the chief aims of this study is to investigate how mobile computing devices; particularly iPads can be integrated within curricular design and developmental processes to enhance teaching and learning. In an attempt to move beyond the limiting boundaries of fixed classroom locations and curricular classroom hours, handheld computing devices such as iPads are seen as tools that could enable teachers to optimize student learning. Rather than 'force-fitting' a new technological application into an instructional context that it was not originally intended for (which has been the main cause of the failure of many educational technology initiatives in the past. In this study we will be adopting a systematic approach of examining the organic alignment between the pedagogical demands of subject-specific disciplines and the educational affordances of iPad devices.

A mixed-methods (Creswell, 1994) case study approach will be adopted in this study that will integrate high quality qualitative and quantitative research protocols (Creswell, 1994). Both qualitative and

quantitative techniques will be used during the data collection and analysis phases to add richness and rigour to the design of the study and ensure corroboration, elaboration and triangulation of research findings. A case study approach involving Year 9 students and their teachers at Orewa College will be the focus of this study. Yin (2003) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1984).

6. Research Findings

In my presentation I will be looking at the preliminary findings of our study from observations me and my team members have made from visiting the research site. We are yet about to embark on formal data collection and analysis to be able to report on detailed findings – hence at this stage we are only able to share our baseline findings of the study.

7. Conclusion

Cutting-edge and emergent technologies augment face-to-face teaching. The impact of technology in the educational arena is an undeniable reality. What is needed is research evidence-informed pedagogical frameworks for effectively teaching with such technology. Gratuitous use of technology for the sake of technology will not necessarily improve teaching and learning processes. Nor will highly academic research impact on practicing teachers' uptake and implementation. This project will provide exemplars of the innovative use of mobile technology in enhancing the quality of teaching and learning. This case study will also provide insights into how portable devices can be integrated into the various disciplinary strands of curriculum design to deliver flexible, customised, and self-paced learning.

8. References

[1] Creswell, J. (1994). *Research design: Qualitative and quantitative approaches*. California: SAGE Publications.

[2] Melhuish, K. & Falloon, G. (2010). Looking to the future: M-learning with the iPad. *Computers in New Zealand Schools, 22(3)*, 1-16.

[3] Yin, R. K. (1984). *Case study research: Design and methods.* Newbury Park, CA: Sage.

[4] Yin, R. K. (2003). *Case study research, design and methods*, 3rd ed. Newbury Park: Sage Publications