Mobile learning in early childhood education:
A school-university partnership model.
Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signed:

Date 27/11/17
Abstract

Mobile learning (mLearning) devices are ideal for 21st century learning. mLearning devices are light and, therefore, mobile so that young children can use them anywhere. Examples of mLearning devices are tablet computers, programmable robots such as Bee-Bots and robotic Lego. The term 21st century learning is used around the world and includes the skills of collaboration, communication, new literacy, creativity, critical thinking, and problem-solving. New literacy has emerged because of new technologies and being literate in the 21st century now includes being digitally literate. However, mLearning is not widely used in early childhood education despite the fact that schools are investing in hardware, software, and infrastructure. This thesis reports on the results of a three-year study investigating the synergy between pre-service and practising early childhood teachers using a community of practice approach. The pre-service teachers presented technology rich lessons at partner schools as part of an Information and Communications Technology unit they complete during their studies. The lecturer assisted the pre-service teachers in preparing lessons. The pre-service teachers, who lacked pedagogy and classroom experience, were provided the opportunity to teach “real” children as opposed to teaching each other. The practising teachers, who exhibited excellent pedagogical skills, provided curriculum content and pedagogical feedback to the pre-service teachers and at the same time had the opportunity to observe the developmentally appropriate use of technology in their classrooms. Research findings included how technological knowledge of the participants changed and how the school-university partnerships developed. The pre-service and practising teachers’ dispositions towards mLearning became more positive with the practising teachers increasing
their technological knowledge and the pre-service teachers increasing both technological and pedagogical knowledge. Five themes emerged from the results as being central to successful school-university mLearning partnerships. These themes are presented as a chain model where each theme or chain link is important to the survival of the school-university mLearning partnership. The themes identified as pivotal to mLearning partnerships included an enhanced sense of community, cross fertilisation of knowledge and skills, more informed leadership, development of professional knowledge, and closer relationships between partners.
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Glossary

Australian Curriculum Assessment and Reporting Authority (ACARA)

Australian Curriculum Assessment and Reporting Authority (ACARA) is an independent statutory authority that is responsible for Australian National curriculum, national assessment, and national reporting.

Australian Institute for Teaching and School Leadership (AITSL)

The Australian Institute for Teaching and School Leadership (AITSL) provides national leadership for the Australian, State and Territory governments in promoting excellence in the profession of teaching and school leadership.

Android

Android refers to a computer operating system for a mobile device that has been developed by Google as opposed to Apple.

App

App is the abbreviated from of the word application. An app is a digital product that can be downloaded onto a smartphone, tablet or another electronic device (Macquarie Dictionary, 2015). An app typically refers to software used on a smartphone or mobile device.
Bee-Bot

A Bee-Bot is a brightly coloured programmable robot that is attractive to young children. Bee-Bots are particularly useful for teaching directional language, mathematics, and programming to young children.

Blog

A blog is an abbreviation for a "weblog", which is a website used to record information, in the form of text, images, media and data.

Bring Your Own Device (BYOD)

BYOD refers to students rather than schools purchasing hardware such as tablet computers or laptops.

Chatter Block

The Chatter Block is a cube that can be used to create stories. Each face has a clear pocket to put a picture. The Chatter Block can record a message on each of six faces. The Chatter Block is ideal for writing stories, communicating information, speaking and listening and as a phonic resource.

Digital Education Advisory Group (DEAG)

An Australian government advisory group to continue the work of the digital education revolution.

Digital Microscope

The digital microscope used in this research was simple to use and has a magnification of × 43. A computer screen captures the images for sharing via a USB.
**Early Childhood Education (ECE)**

The phase of education from the age of zero to eight years old.

**Electronic book (e-Book)**

A digital book that can be interactive and can include text, images, audio and video.

**Elementary**

A stage of children’s education commonly used in the United States. It is the primary stage education for children between the ages of 5 or 7 and 11 or 13.

**Humanities and Social Sciences (HaSS)**

A learning area in the Australian curriculum that includes, geography, psychology, and economics.

**Independent Public School (IPS)**

A term used in Western Australia for a Department of Education school where the Principal has increased flexibility and responsibility to make a range of decisions about school operations.

**Intensive Unit**

A unit of study that is delivered over a short period such as four consecutive days rather than over a more extended period with weekly sessions.

**Interactive whiteboard (IWB)**

A large interactive display board that is connected to the Internet.
**Kindergarten-Year 12 (K-12)**

K-12 is a shortening of kindergarten-Year 12 which are the first and last years of formal and normally compulsory education in countries such as Australia, Canada, and the United States.

**iPad**

An iPad is a multipurpose touch screen mobile computing device. A key educational feature of the iPad is the ability to be a producer of learning not just a tool for information consumption.

**Metal Detector**

The metal detector used in this study is a simple to use brightly coloured device used for detecting metals. It has a range of 40mm and holds a charge for three hours use.

**Mobile Learning or mLearning**

mLearning is a relatively new term because it is the fastest growing area of ICT in education, and consequently definitions are continuously changing. Traxler (2010) defined mLearning as "any educational provision where the sole or dominant technologies are handheld or palmtop devices." For this study, mLearning devices include devices that are mobile and readily picked up and moved by the learner, for example, tablet computers and Bee Bots.

**NVivo**

NVivo is software that supports qualitative and mixed methods research. It is designed to help organize, analyze and find insights in unstructured, or qualitative data like interviews, open-ended survey responses, articles, social media and web content.
Parents and Citizens Association (P & C Association)

Name given to the parent body at Department of Education schools in Australia. The P & C Association is responsible for fundraising to purchase additional mLearning resources for a school.

Pre-Primary (PP)

PP is the first year of compulsory education for children in Australia who are aged between four and five years old.

Pre-Service Teacher (PST)

A PST is a student teacher completing a University teacher training course.

Professional Experience

Field experience is undertaken by PSTs during teacher training course.

Quick Response (QR) Code

A two-dimensional barcode image that can be scanned using a device such as a smartphone or a tablet computer which has a QR code reader to take you directly to a website.

Recordable Rainbow cards

These are recordable A6 cards that come in bright colours. The cards can be decorated and wiped clean, and messages can be recorded on them.

Recording Pegs

These brightly coloured pegs can be clipped onto a variety of surfaces or attached magnetically. They are used to record and play a ten-second message. They can be used inside and outside to make talking displays.
School of Education (SoE)

A teacher training facility operating as a school within a University.

Smartphone

A smartphone is a mobile phone connected to the Internet. The Apple version is called the iPhone, and there are various Android versions. A smartphone can take photos, record audio, and video, make notes and integrate all these features easily with the Internet.

SPSS

Statistical Package for the Social Sciences (SPSS) is a software package used for statistical analysis in fields such as health and education.

STEM (Science, Technology Engineering and Mathematics)

A group of subjects containing science, mathematics, technology and engineering.

Story Sequencer

The Story Sequencer is used to create talking stories or timetables. Each of the sequencer's six frames becomes a place to store a picture and a short message. It is easy to use with a simple on/off button.

Talking Butterflies

These recording devices transform into a range of winged creatures. They are simple to use, just record and play and allow up to 500 playbacks before the battery needs replacing.

Teacher Education Ministerial Advisory Group (TEMAG)

The Australian government has established a Teacher Education Ministerial Advisory Group to provide advice on how teacher education programs could be improved to better
prepare new teachers with the right mix of academic and practical skills needed for the classroom.

**TPACK**

TPACK refers to technological, pedagogical and content knowledge which are required when teaching with technology (Koehler and Mishra, 2009).