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## Adult educators' authentic use of smartphones to create digital teaching resources

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The development of digital resources set in authentic contexts using mobile technologies is reflected in this study. The research involved adult educators creating teaching episodes or digital narratives using smartphones, as part of a postgraduate subject designed to introduce these learners to technological applications in adult education. The study involved interviewing students to determine the affordances of the technology in this context and the pedagogical strategies suited to such an approach.

Keywords: mobile learning, mobile phones, adult education, authentic learning

### Introduction

This paper describes part of a wider project involving teachers and students in the Faculty of Education at the University of Wollongong using mobile devices as tools in the learning of a variety of subjects. Patten, Sanchez and Tangney (2006) list a number of categories that describe ways in which mobile technologies can be used in education.

- Administration, e.g., the use of calendars, exam reminders, grading software;
- Referential, e.g., dictionaries, e-books and office applications;
- Interactive, e.g., quizzes, response software;
- Microworlds, e.g., simulations, games;
- Data collection, e.g., data logging, note taking, audio recording, eportfolios
- Location aware, e.g., augmented environments, gps navigation and tagging; and
- Collaborative, e.g., pod/vodcasting, blogging, instant messaging.

The aims of this research were to evaluate pedagogical strategies for the use of the Palm Treo 680 smartphone (combined mobile phone and personal digital assistant) as a cognitive tool, and to observe and document students' use of the devices as they completed an authentic task relevant to their professional context. The task focussed upon the creation of a digital narrative or teaching episode that could be used as a curriculum resource in the students' own teaching and training environment. Creating a teaching episode relies on using the functionality of the device beyond telephony, including the video and picture taking functions of the smartphone.

The use of video in education has undergone a significant change in recent years. The New Media Consortium 2008 *Horizon report* recognised the emerging trend of 'grassroots video' in education:

Over the past few years, the ways we produce, use and even think about video have undergone a profound transformation. Literally millions of videos are just a click away for any Internet-connected user. As the numbers and quality of user-produced clips have increased, our notions of what constitutes useful or engaging video have been redefined - and more and more, it is a two to three minute piece designed for viewing in a three inch browser window or on a mobile phone. That same phone is often the video capture device, with surprisingly high quality when viewed on a small screen. (NMC & Educause, 2008, p. 10)

This use of mobile technology has spawned a number of pedagogical approaches one in particular that uses the technology to create digital narratives (McGreen & Arnedillo Sanchez, 2005) or stories where learners collaboratively plan a story, either fictional or non fictional, then create and edit the story using digital technologies, (for example, using digital cameras, video recorders, mobile phones, movie editing software), and finally sharing the story through social networking sites such as YouTube. The major

reasons for this increased trend has been the ubiquitous nature of the technologies and the low, if any, cost of production and distribution (NMC & Educause, 2008).

## Context

The teaching episode task was part of the assessment of a semester course in Adult Education titled the *Design and Use of New Technologies in Adult Education/VET and Higher Education*. The subject was divided into four equally weighted modules each having a separate assignment. A module on mobile learning required students to develop an authentic resource in the form of a digital narrative or a teaching episode that would highlight a skill or concept required in their profession, and that could be used by them in a teaching or training environment. This task formed the context for this research—an approach described by Patten, Arnedillo Sanchez, & Tangney, 2006, p.303) as one that “embodies a collaborative, contextual, constructionist approach to learning with handheld devices”.

The research was carried out with a class of 14 students with varied professional backgrounds, each with the intention of entering or furthering their careers as teachers and trainers in the university, vocational education, or adult and community education sectors. These students could enrol in the subject as on-campus or distance students and, as with all postgraduate subjects, access a subject website that was developed and maintained using the Janison learning management system (LMS). This enabled the provision of electronic resources, group email and communication via threaded discussion boards.

## Research questions and methodology

The research focused on the following questions:

- How do adult educators use a smartphone in creating a teaching episode within an authentic learning environment?
- What are the affordances of a smartphone for creating a teaching episode? What was possible with a smartphone that would have been difficult or impossible without it?
- What pedagogical strategies were required to assist the students’ use of the smartphones as cognitive tools for their teaching episodes

Students were required to engage in the module readings and complete the following assignment task.

Create a 2-3 minute teaching episode (digital narrative) following the procedure below:

- Choose an adult education skill you teach
- Write a storyboard demonstrating the skill
- Capture and create pictures and videos using the smartphone
- Download multimedia into movie editing software (e.g., iMovie)
- Record audio narration, and insert music and sound effects (e.g., using GarageBand).
- Upload and share video using social networking software (e.g., TeacherTube)

To assist in completion of the assignment, students were given the option of attending a workshop on using a smartphone to gather multimedia data such as audio, pictures and video and then to incorporate these into iMovie video editing software. Students were given resources on developing a storyboard to assist in planning the task and to post this to the LMS subject forum for peer feedback. The subject was organised in such a way that time to complete this assignment was in the final three weeks of the semester, however, the smartphones were given to students three weeks prior to this to enable them to use the devices for a total of six weeks. The idea was that students would be given sufficient time to use the phone as their own, investigating and exploring its wide range of applications, along with taking the option to use it as their regular phone by inserting their own SIM cards.

Following the completion of the subject, after grades had been finalised, all students were interviewed individually about the activity. Each interview lasted approximately 20 minutes, was digitally recorded and involved the following questions:

- Can you describe your use of the smartphone in your creation of a teaching episode?
- What were the advantages of using the device?
- What were the disadvantages or challenges of using the devices?
- What were the most difficult aspects of creating a teaching episode?
- What were the most positive aspects of the task?

- How would you use smartphones with your students/colleagues?
- How useful were smartphones as a tool for teaching?
- What advice would you give to other adult educators wishing to conduct similar teaching episode activities?
- What principles of good use can you suggest that have emerged out of your use of smartphones during the course of the activity?

Each student's teaching episode was viewed and analysed along with postings to the LMS forum.

## Results

The results of the interviews and observations of the final products will be considered in relation to each of the research questions:

### **How do students use a smartphone in creating a teaching episode within an authentic learning environment?**

Even though the majority of students found the task initially quite overwhelming, each student managed to successfully create a digital teaching episode in either iMovie or Moviemaker and were surprised at how easy and rewarding the task became. One student commented that: "Had I not done it I would have thought it much harder to do". To complete the task they needed to use the smartphone (or their own mobile phone if distant student) to save photos, video and audio on the device or an SD card, download the multimedia to a computer via a USB connected card reader, insert the multimedia into movie editing software and add sound where appropriate.

Roles in the episodes involved not only the students themselves, but also colleagues, other students and in some cases family members. A wide range of topic areas was developed reflecting the diversity of the group. These topics included: risk analysis, medical procedures, using explosive tools, oriental massage, navigation and customer service. The students' products incorporated audio, pictures and text, and were in general either demonstrations of a skill or developing skill awareness. One student's video, for example, involved developing an awareness of the citizenship test requirements for immigrants to the USA. Engaging graphics, and interviews with US citizens trying with difficulty to answer the questions, added humorous elements to the resource. All students managed to successfully submit their finished product to a social networking site such as YouTube, TeacherTube and Blip TV. On reflection, students commented on their enjoyment of the learning process and how rewarding it was to achieve such an outcome, as expressed by one student: "I never thought that by using a phone you could create something as good".

### **What are the affordances of a smartphone for creating a teaching episode? What was possible with a smartphone that would have been difficult or impossible without it?**

Students saw the portability and ease of use as the smartphone's main advantages as one student indicated she could "easily pull it out, use it, get what I needed and transfer it to my computer." Other benefits included spontaneity of use; as one vocational education teacher commented: "I see somebody doing something that is so good and so current that I don't have the opportunity to go and get the camera so I have my phone in my hand and go on and record it". The expansion card enabled adequate memory for the purpose and the picture quality for the purpose was also seen as sufficient which surprised one student who said that when "I was shooting it (the image) it didn't look as clear on the phone but when I transferred it to the computer it was very clear".

The main disadvantages centred on the lack of video format compatibility between the smartphone and PCs; the incompatibility between the mobile image aspect ratio and that used with the video editing software; lack of resolution in low light situations; and some audio recording difficulties. Two students noted that they had difficulty in capturing high-pitched children's voices. Another student observed that: "Sometimes when you're filming and somebody's talking at a slightly different angle you don't pick up the audio as well". Another perceived disadvantage was that the smartphone video does not have a zoom. Students also expressed the view that taking video or photos with the smartphone could be done spontaneously without the planning that would be needed if one relied on a digital camera or video. And in some situations, the smartphone was seen as less imposing on the people and situations being filmed than other devices might be.

## **What pedagogical strategies were required to assist the students' use of the smartphones as cognitive tools for their teaching episodes?**

Because the device was new to most students they reacted positively to being able to 'play around' with the device before having to concentrate on the assignment. In the words of one student: "Having the time to play with it, to see what it does made one more comfortable with it so that when it was time for the assignment it felt like an easier process". One student commented on how cumbersome the smartphone phone initially appeared, but after having the time to use it, he found that the displays were easier to read and texting much easier than his current mobile phone saying that his "perception totally changed when I was actually using it to when I was given it to evaluate (initially)". Planning the task, for example, using storyboarding, was seen as essential for successful completion of the task. Most students preferred the problem solving 'deep end' approach rather than a step by step demonstration of the task. However, some indicated the need for some advance warning of the problems they were likely to encounter.

On reflection, and as a result of similar workshops with adult educators it may have been even more motivating for students to conduct an initial group activity where students create a fictional digital narrative or story, by first constructing a storyboard using prompts. This way the students quickly get to know how to take and save pictures and videos and to piece them together using movie editing software to create an outcome that can be displayed to others in the class. However, this option maybe less effective for those studying at a distance. Students indicated a number of pedagogical affordances of the smartphone such as using it to evaluate their students' skills: "Being able ... to film each other or for me to film them then evaluate it themselves, will give them that perspective they don't normally have". Some students also saw the benefit of being able to carry out assessments in real situations for example on a building site. Others suggested engaging their students in similar digital narrative projects in order for them to learn about technology. Creating teaching episodes for professional development was seen as useful albeit time consuming.

Students suggested some guiding principles that involved 'keeping it simple', getting only one message across in each scene and 'getting used to' the technology by having the time to find out what you can and can't do with the smartphone. One student recommended to look around at what others are doing, around the world and locally, using video sharing sites for inspiration. Planning was seen as critical, especially if there were only limited chances for filming. Lighting and audio were seen as important considerations as well as the form the presentation would take. Students also suggested taking advantage of spontaneous situations and being aware of the need for participants' consent. Being able to share concerns and issues with other students on the LMS forum was seen as important allowing for the sharing of ideas and recognising that others had similar problems. As one student noted: "To see that others had the same problem meant that I didn't have to persist down that path".

## **Conclusion**

The students saw the affordances of multimedia available on the smartphone as powerful enablers for the task. Most agreed that they would continue to develop similar tasks for professional purposes for students in their own classes. One student is now planning an activity for her neophyte nursing students that would involve them capturing video of nursing procedures for placement on a workplace intranet.

One of the main affordances of the technology suggested by the students appeared to be its facility for spontaneous use, for example, in recording 'street interviews'. However, only a few of the teaching episodes seemed to utilise this approach. Similarly, few of the episodes involved using the technology in circumstances where the learner was mobile. It may be that the nature of the task and the requirement for planning would seem to reduce the need for both these affordances to be exploited. Nevertheless, for adult educators who are overly familiar with teacher-centred transmissive approaches to teaching and learning, this activity provided an introduction to the application and awareness of authentic learning enabled through mobile technologies, albeit in contexts where learner mobility was not emphasised. Future implementations will suggest to students that they try to use the device to capture multimedia for their resource in situations where they are mobile, recognising the current view of mobile learning as the convergence of mobile technologies and the mobility of the learner (Sharples, Taylor & Vavoula, 2007). Although planning is important and valued, as in creating storyboards, the ability to capture spontaneous events would also exploit one of the main affordances of the smartphone.

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