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iPods in early childhood: Mobile technologies and story telling

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Mobile technologies are making inroads in many aspects of education. The potential of many of these devices is being explored in a range of educational environments but early childhood educators are not commonly early adopters of these new technologies. This paper examines the process and impact of iPods on these students' creation of original digital stories to support their understanding of how young children learn. The pedagogical approach is described in detail together with observations on the process, lessons learned, and extensions of the activity into other discipline areas.

Keywords: iPod, talking picture books, digital stories, early childhood, preservice teacher education

Pedagogical uses for iPods

The increasing availability and ubiquity of mobile devices means that educators interested in learning technologies can no longer ignore their pedagogical potential. The use of mp3 players, especially when fitted with recording devices, provides multiple affordances for use in higher education learning contexts. However, the literature available on the use of mp3 players, such as iPods, appears largely limited to papers that: provide descriptions of the technologies and their affordances (such as Beldarrain, 2006; Clyde, 2005); review students' access to and daily use of technologies (such as Switzer & Csapo, 2005); describe administrative or practical uses for devices in university life (such as Belanger, 2005; Calhoun, 2005) or describe low level pedagogical uses such as podcasting of lectures or lessons (McCombs, Houk, Higginbotham, Johnson, & Liu, 2006; Pownell, 2006; Scott, Nishimura, & Kato, 2006).

This project set out to create a learning experience for early childhood preservice teachers where iPods were used—not for delivery of course material or for administrative functions—but as cognitive tools (Lajoie, 1993; Kim & Reeves, 2007). The project described here was part of a larger project entitled *New technologies, new pedagogies* that sought to investigate the pedagogical uses of mobile learning in higher education (cf. Herrington, Mantei, Herrington, Olney & Ferry, in press). A number of teams created pedagogies to implement appropriate use of a mobile device in different subject areas in higher education. For the project as a whole, the main research question for this phase was: What pedagogical strategies facilitate the use of m-learning devices in authentic learning environments in higher education? For the early childhood ICT context, the specific research questions were:

- How do students respond to the use of mobile devices within an authentic learning environment?
- What are the affordances of an iPod for creating resources for early childhood learners? What was possible with an iPod that would have been difficult or impossible without it?
- What pedagogical strategies were required to assist the students' use of the m-learning devices as cognitive tools for their digital books?

The data collected included: reflective journals, interviews with students (6 group interviews), observation, and products (students' talking books, and Powerpoint presentations).

The students in the course were first year students studying a compulsory introductory subject on learning and teaching with ICTs in early childhood. The learning experience was designed to address a common problem in ICT-based classes. Subjects or courses that seek to enhance pre-service teachers' use of educational technologies often end up focusing on the tool itself rather than its use in learning (teaching 'hammer' rather than 'carpentry' to quote Oppenheimer, 1997). Typically, 2-3 weeks might be spent on learning how to use software like Powerpoint or Word, before moving on to the next tool. Such learning usually proves to be transitory and lacking in transfer.

The rationale behind the project was to use a central authentic and complex task to encompass learning a range of different technological tools, and to create a genuine product to share with other pre-service early childhood educators and their own students. The project was based on authentic learning principles, specifically: authentic context, authentic task, expert performance, multiple perspectives, collaboration, reflection, articulation, scaffolding, and integrated assessment (cf. Herrington & Oliver, 2000; Herrington & Herrington, 2006). These principles were used to guide the design of the activity and its implementation.

The teaching and learning activity

The task was a complex one that comprised six weeks' work in a 13 week semester (Weeks 4-9). Students were required to research and write a story suitable for young children, and to then use iPods and a range of other technologies and software as necessary to create a digital talking book. The task required the students to maintain an electronic learning journal to document issues they experienced in the design and creation process and also to share their findings as part of a group presentation. There were three classes of approximately 18 students each, and eight iPods available for each class.

In the first of the six sessions, students were introduced to the task of creating a talking book for very young children, and to the iPod and its features. The construct of 'cognitive tool' was also introduced, including discussion of how the device could be used to create a book, where students might invent new ways to use the device in context. Practical aspects of the exercise were then addressed, including determining the technology that would be available to students. This involved the following:

- Determining the ratio of iPods to students (1 x iPod per group of 2-3 students)
- Video and still cameras needed to be sourced, or students could volunteer to use their own
- Computers (a Macintosh lab), and additional software were also required for story-book construction: (e.g., Powerpoint, GarageBand, iTunes, iMovie, iPhoto, Word, ComicLife and a range of image manipulation software programs).

Students formed into collaborative teams or pairs to create the digital story book. In order to assist with the creation of a genuinely engaging and appropriate story, an author of children's books was invited to do a guest lecture for the class. In creating their stories, each group followed a different procedure but typically the processes included:

- Researching and choosing a suitable topic
- Brainstorming ideas for the story (using brainstorming software Inspiration, or pencil and paper concept maps)
- Writing and storyboarding the story
- Capturing and creating pictures and videos, or illustrations, as required
- Creating the 'pages' of the story (e.g., in Powerpoint)
- Recording audio narration (using iPods with attached microphones), and inserting music and sound effects (e.g., using GarageBand)
- Combining all elements, together with credits, using Powerpoint, or iMovie (or similar) software.
- Creating a standalone movie file by saving the Powerpoint story as a .mov file, or exporting the digital story from software such as iMovie, ready for publishing as a podcast, or sharing by display on the iPods.

Many students tested their stories on friends, classmates, family and in a number of cases, their workplaces, including childcare centres and preschools. For their class presentations, the students shared their stories, using Powerpoint presentations, movie demonstrations and explanations using a reflective journal on the process and product of creating the story (e.g., as a podcast, blog, comic or webpage).

The iPods were successfully used not only as a presentation medium for the talking picture books, but also as a tool for their creation. A range of other software programs was also required to support the construction of the stories, including presentation software, audio production and editing software, video editing software, word processing programs and software to enable the creation and sharing of reflections. In this manner students were in a position to become competent users of a range of technologies and applications (the subject of the course) while creating an authentic product that could be used in their future learning environments.

The design of such learning activity for the pre-service early childhood educators is consistent with the child-centred philosophy of early childhood classroom where the children need to be active participants

of their own learning engaging in a variety of hands-on activities (NAEYC, 1996a). At all times, it was stressed that in pedagogical use of technology, learning is most powerful when the technology is used by the learner to create meaningful products. Thus the pedagogical aim of creating talking picture books was twofold: the exercise was not only about the creation of resources for a teacher to deliver, but also for the preservice early childhood educators be able to participate in the kind of activity that they would assist young children to perform, that is, that the children would be involved in creating the digital books with the teacher's assistance.

Digital reading books have been increasingly introduced in the education of young children 'despite a relative lack of research which has informed their design, use, or demonstrated their effectiveness' (Wood, 2005, p. 170). The skill and knowledge on how to create their own digital reading books will be of a great value for early childhood educators as they would be able to use the technology to create the teaching resources suitable for the individual interests and needs of particular children in their care. Children's participation in the creation of such books will allow for their active engagement in the learning process in close collaboration with their teachers. This process might be part of such authentic everyday activities as creating a birthday gift for another member of the group, or making a report on their excursion to the zoo. Thus, the technologies would become 'integrated into the regular learning environment' of young children and would be 'used as one of many options to support children's learning' (NAEYC, 1996b). The level of children's engagement in the creation of a talking book might differ with age: while younger children might only contribute some ideas to the story, older children could participate in taking photos, recoding sounds, creating the design and so on.

The authentic nature of the task was also emphasised to pre-service early childhood educators by providing input from children's authors and visiting speakers which provided a focus on the quality of their original stories rather than the technology.

Recommendations for use

Practical lessons were learned in the implementation of the technology. Without the benefit of a pilot implementation (such as that conducted by Scott et al., 2006 with 6 students before implementing with 600 students) it was inevitable that there was much learning and adjusting that occurred as the course progressed. For example, the issue of devices being damaged or lost is an important one, and much was learned about the logistics of providing on loan a large number of small, expensive, easily mislaid devices. Our solution was to request that the assignment (that is, the digital story) be submitted on the iPod itself, which greatly assisted the timely recovery of the devices.

During the planning and implementation stages of the research it became apparent that if we wanted the iPods to become cognitive tools to afford university students' learning, they would have to be used in combination with a number of other technologies and software such as presentation, audio and video production and editing software. A connected issue, however, which we needed to address as we became aware of it, was the apparent need for students to learn how to use the iPods. Because of the apparent popularity of iPods, we perhaps naively believed that the students would require little help with learning how to use the devices. However, many students had either not used mp3 players, or they required assistance with other aspects such as the use of the microphone, or file transfer between the computer and the device. In the initial stages of the project, it may be useful to provide print or web-based assistance on the devices themselves, and to show students inbuilt help screens and contextual support in software such as iTunes.

The sharing of the resources was a largely untapped and potentially rich source of ideas and resources for the students in the course. While students did present their stories to each other in presentations in class, making their stories available to each other in downloadable form was always intended but did not eventuate in the first implementation. In future implementations, the course will use a 'contribution-oriented pedagogy' (Collis & Moonen, 2005) where with permission, students will be able to use and possibly reuse others' work, as a community of learners.

Extensions and other uses

Requiring students to create digital resources of this nature is a powerful tool for articulation of learning and understanding. By focusing on different content in the podcasts, this activity could be readily adapted for use in other subject areas. For example, students could:

- Create stories to explain scientific or geographic concepts, such as tides or phases of the moon

- Demonstrate procedures, such as how to mitre corners in woodwork to create a picture frame, or how to sew a pencil case
- Explore composition of photographs, such as to explain the effect of the rule of thirds or golden mean
- Capture indigenous stories and folk traditions
- Tell a story in a foreign language that a student is learning
- Compose a piece of music and accompany with images, such as in a music video clip
- Demonstrate fundamental movements in sport, such as a tennis serve, volley, or backhand.

Conclusion

This project demonstrated a way of using iPods as cognitive tools to support a learning experience of early childhood preservice teachers studying a compulsory introductory subject on learning and teaching with ICTs. The iPods were used to complete a complex authentic task which resulted in a genuine product in the form of digital stories to share with other preservice early childhood educators and young children in their care. The iPods were successfully used in combination with a range of other technologies as a presentation medium for the talking picture books as well as a tool for their creation.

On completion of the project the participants, pre-service childhood educators, were interviewed in their groups about their experience of using iPods in their learning, and observations were made on the completion of the task. These data are yet to be analysed and reported, but a preliminary analysis of the participants' responses demonstrated that they were initially unsure of the place of such technologies in early childhood pedagogy. However, on completion of their innovative and quite diverse digital stories, they appreciated the opportunity to explore the pedagogical uses of these mobile technologies and associated information computer technologies. The task allowed them to experience authentic learning principles and gain a critical understanding of the place of these technologies in early childhood education.

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