CulturePad: Linking indigenous communities to schools and education through the use of mobile technologies

Alistair Campbell
Edith Cowan University, Perth, WA

Jeremy Pagram
Edith Cowan University, Perth, WA

Martin Cooper
Edith Cowan University, Perth, WA

Abstract: Information and communications technologies (ICT) are seen as crucial in improving educational opportunities and outcomes for children in remote communities. Yet these technologies are often viewed with suspicion by Indigenous communities in allowing access to material seen as potentially damaging to local culture such as gambling and pornography. This paper will discuss a project that attempted to forge strong links between community and school by engaging Indigenous children in literacy learning activities aimed at preserving local Indigenous culture through the use of mobile technologies. The results indicated that to achieve these aims the key school personnel were the Aboriginal Education Workers as they form the link between the school and the local community.

Introduction and Background

This study investigated the potential of linking local Indigenous communities and schools in an educational project designed to preserve aspects of Indigenous culture through the use of mobile and online technologies. Students and teachers in two Kimberley communities were engaged in the project that made use of text, pictures, audio and video files collected using a mobile device. The overall aim was to enhance the education of young children in remote communities through purposeful, appropriate use of information and communications technology (ICT). The intention was to build stronger connections between school and community through the targeted implementation of a custom-built Filemaker Pro database on the Apple iPad tablet computer that would enable students to use visual, artistic and storytelling activities to engage with and record cultural knowledge and artefacts within their local community whilst also building crucial skills in ICT and literacy.

Technology has sometimes been viewed with suspicion by Australian Indigenous people as potentially damaging to their culture by allowing access to unwanted services such as gambling and pornography. Hence, the linking of community and school in order to gain support for technology is key and this was a major part of this study. It was anticipated that the results would help to determine the ways that technology can be most effectively integrated into remote schools.

Literature review

Closing the gap between the lives of Indigenous Australians and the rest of the population has been a high level priority of Australian Governments for a number of years. Education plays an ongoing and vital role in working to achieve this goal.

Families, particularly parents and carers, are the most important influence in a child's life and instil critical values that encourage them to fully engage in schooling and contribute to their communities. Therefore partnerships between students, parents and local communities have the potential to maximize student engagement and achievement. With regard to Indigenous young people, the MCEETYA Four Year Plan (2009-2012) stated:

> …the development of partnerships between schools and Indigenous
> communities, based on cross cultural respect, is the main way of achieving
> highly effective schooling for Indigenous students (p. 5)

The report goes on to say that the Australian Government would support projects that facilitate school-community partnerships, particularly for schools that have a low socioeconomic status and high numbers of Indigenous students. These school-community partnerships have the potential to help students better understand

their own culture though interaction with their traditional cultures. Furthermore, there is both international and Australian evidence that the wellbeing of indigenous peoples is enhanced when they maintain their traditional cultures (Colquhoun & Dockery, 2012).

This project set out to enhance the education of children in remote communities by connecting school and local-community through the use of a custom Filemaker database for the Apple iPad that stored cultural stories through text, pictures, audio and video. By connecting community and school via the technology and using the technology to record and thus protect local culture, it was hoped that the community would feel ownership of the technology and actively promote its use for educational and cultural pursuits. Ideally, the school will build upon this and integrate technology-use into the curriculum.

Previous implementations of ICT into education in Western Australia have tended to be driven by government and private external bodies into the school system (e.g. MCEETYA, 2010; Nugroho & Lonsdale, 2009). While this process is both appropriate and logical in city areas, in remote Indigenous communities this approach is likely to fail (e.g. Gunstone, 2012; Vass, 2012). There are perhaps two main reasons. The first, and perhaps most important, is that the community is not involved and that many elders see technology as a threat to their culture (Sayed, Soar & Wang, 2012). The Internet in particular may be seen as a source of pornography and gambling - further polluting and destroying traditional values (Dyson, Hendriks & Grant, 2007). A second reason ICT implementation in remote communities fails is that the school is commonly not seen as being truly part of the community (Schwab & Sutherland, 2001). It is often fenced off from the community with staff having separate lives to community members, and the values taught are often different from those of traditional culture. Community schools are often a place of continual challenge where, being difficult to staff, teachers rarely remain for extended periods. Previous ICT initiatives such as 'one laptop per child' have been hampered by these difficulties (Nugroho & Lonsdale, 2010). Thus, in the remote schools recently visited by our research team, the computers were often found shut in cupboards and, therefore, not being used.
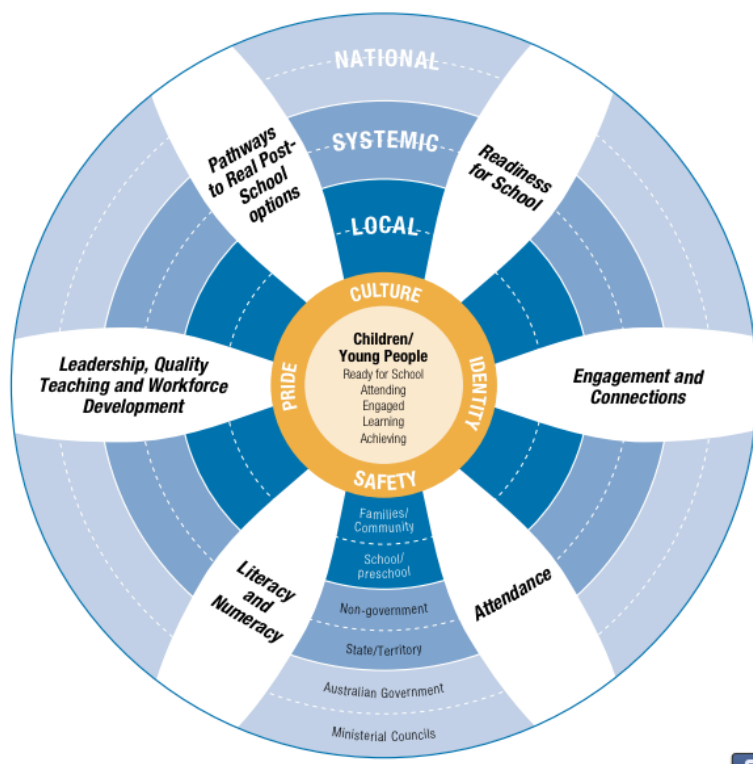
Conceptual Framework

Figure 1: The conceptual framework.

Figure 1 shows the overall framework that is used for Aboriginal Education. This project targeted the Engagement and Connections element. The Engagement and Connections activity was aimed at developing a partnership between the school and community, as well as between both the school and community, and the ECU

research team. The collection of stories via the iPad database was aimed at supporting cultural identity and pride within the safety of the local environment. This was combined with the concept of a place-based curriculum. This is a curriculum which:

- Emerges from the particular attributes of a place (in this case the local community)
- Is inherently multidisciplinary (students will learn about local culture, local understandings of the world, as well as technology, etc)
- Is inherently experiential (it will involve the students in participatory action)
- Connects place with self and community.

(adapted from Woodhouse & Knapp, 2000)

Methodology

This study demonstrated a novel approach to the introduction of technology to the Indigenous student's classroom. A key aspect of the methodology was to ensure the local community had sufficient ownership of, and input into, the project. In this regard there have been many research designs proposed for working with Indigenous communities. A development-evaluation design as shown in Figure 2 was considered appropriate. For this project we intend to use the model laid out in *What Works. The Work Program. Sustainable School and Community Partnerships* – a research study published by the National Curriculum Services in February 2013, based on an initiative funded by DEEWR.

Figure 2: Development-evaluation research design.

Two schools and associated communities from the Kimberley region were recruited. From each school one class (approximately 20 students) and their teacher were invited by the Principal to be involved in the project. The schools are members of the Association of Independent Schools of WA (AISWA). Key members of the local community (elders) were contacted either through the school Aboriginal Education Workers (AEW) or through our own Indigenous Advisor.

The study had a development-evaluation research design that employed qualitative research methods. Data were collected from the school principal, teachers, school Aboriginal education workers and students. These data consisted of pre and post-surveys, interviews, focus groups, and observational school visits. Researchers spent at least one day in the community on each visit. Interviews were audio recorded.

The focus of the data collection was on the implementation process and educational outcomes, not the 'stories' themselves. That is, the actual 'stories' collected on the iPads will remain the property of the students and local community. This approach acknowledged that the local Indigenous people own their culture and stories. What the researchers were interested in was how well the technology could be integrated into learning via the community partnership and curriculum in place model.

In summary, the method for this project involved:

- Community consultations.
- Consultations with local primary schools
- Trial and refinement of an iPad-based Filemaker Pro database

- Ongoing engagement with the community at all levels of the project
- Development and establishment of an agreed partnerships between relevant stakeholders

Table 1: 2014-2015 Implementation and Data Collection Summary

Stage	Actions and data collection
Development of a custom Filemaker Pro CulturePad app to run on Apple iPad Tablet Jun-Dec 2013	Testing proof of concept Filemaker CulturePad app that can contain audio, video, text, and images.
April 2014: School consultative phase	Researcher and AISWA officer attended AISWA principals' conference to negotiate interest in project. Identify key themes and actions.
Further development of custom Filemaker CulturePad app based on previous meeting and telephone communication with schools.	
Visit 1: August 2014, schools	Researchers (including application developer) held discussions with principals and staff (including AEWs) regarding further refinement of Filemaker app and possible content.
Trialing of CulturePad app, revision, phone support and further development. Decision made to develop multiple apps customised for each school's requirements.	
Visit 2: October 2014, school.	Researchers (including application developer) carried out interviews with principals and staff to obtain their feelings about the project and understand what more they would like to gain from the project.
Trialing of CulturePad app, revision, phone support and further development.	
Visit 3: May 2015, school.	Researchers (including application developer) held discussions with principals and staff (including AEWs) regarding refinement of Filemaker apps and possible content. Indigenous consultant interviewed students and AEWs in focus groups regarding use of Filemaker app.
Trialing of CulturePad app, revision, phone support and further development.	
Visit 4: Sept 2015, school.	AISWA officer visited schools to work with AEWs in implementing and discussing the future development of the project.
Trialing of Filemaker app classroom, revision, phone support and further development.	
Visit 5: Nov 2015, School visit	Researcher (developer) visited school for a final development meeting.

Applications Developed

Initially the researchers set out to develop one application to support cultural integration between school and community. However, in early discussions with schools it became evident that the unique features of the school, community and teachers' academic goals meant that a single application would be inadequate. Fortunately the development tool (Filemaker) lent itself to customisation and a number of applications were developed. As the primacy of the AEWs became evident the development switched toward a more cultural focus while remaining overtly educational. This included apps to support local language learning and integration of cartographic information showing areas of significance to the local people. Figure 3 shows a screen from one of the 5 applications developed.
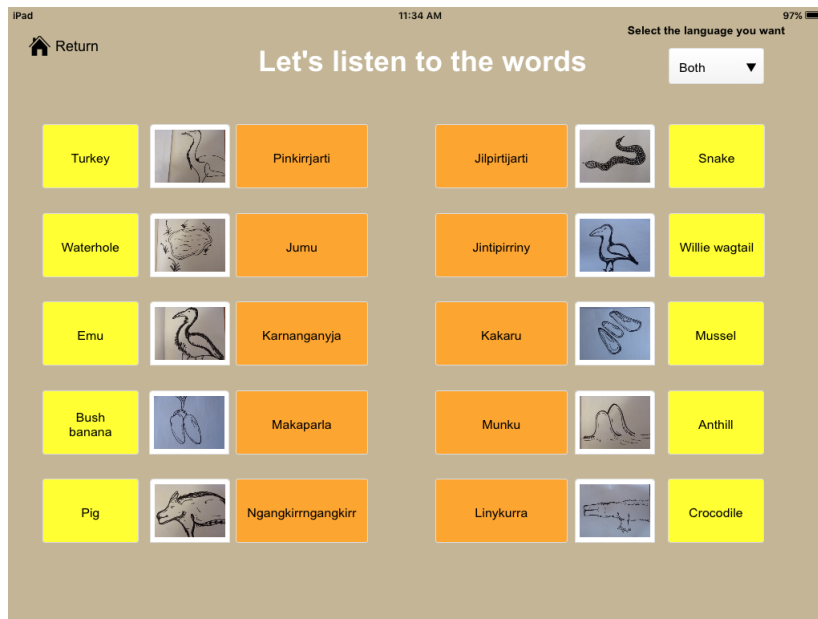
Figure 3: Example screen from a CulturePad application

Findings and Conclusions

Over the course of the project it became evident that the critical participants were the AEWs as they represent the intersection between the local culture and the school (see Figure 4).
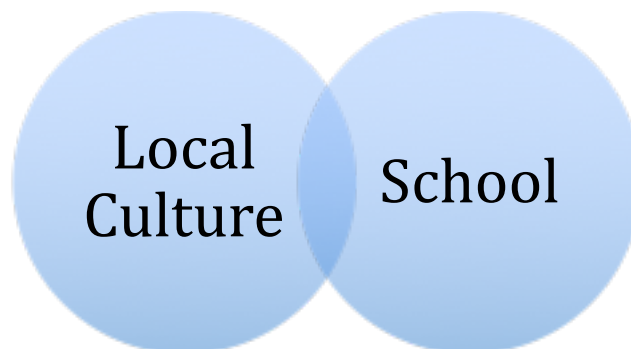

Figure 4: AEWs form the bridge between local culture and school.

At its inception, the project focused on participation from academic school staff. However, it became evident that when teachers and principals are the main driving force the focus understandably is on curriculum. It was found that when community members who are also part of the school community, such as the AEWs, become the driving force then the focus is able to shift toward supporting local culture and community. In this setting educational aims do not become compromised but opportunities more easily arise to address local language and other cultural aspects. This is illustrated in Figure 5 below. Thus future projects that are addressing culture should place emphasis on the AEWs for implementation and support. Additionally, teachers were exposed to an innovative pedagogical approach to integrating ICT into learning in an authentic fashion.
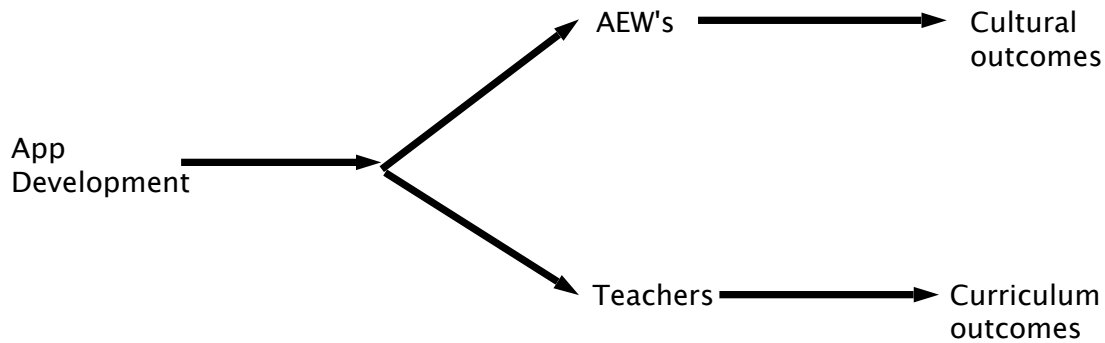
Figure 5. Divergence of Development Curriculum/Culture

While the two schools in the project tended to have satisfactory ICT infrastructure and owned iPads and other devices, internet access in this region is still problematic. This means that application developers and researchers should ensure that software does not have reliance upon an internet connection. The apps developed during this project were self-contained and data were stored locally, which proved to be an effective approach. Having an iPad-based approach requires a lower level of technical support compared to a computer-based solution, which is advantageous in remote schools with little or no local ICT support.

During the project's two-year lifecycle there were great changes to the academic staff in the schools involved. This is common for schools in remote regions, however, the one staffing constant within these schools is the Aboriginal Education Workers who being part of the local community are likely to remain at the school for a long period of time. Therefore, they are the key people to cooperate with when implementing any project that is hoped to have a long-term impact.

While remote project communications with the schools have been generally good, enthusiasm for the project can lag without regular face-to-face contact. This is particularly the case when assisting AEWs, and this may reflect cultural preferences for face-to-face exchanges.

The main difficulties confronting these types of projects are:

- Support local and remote
- Need for face-to-face communications
- Staff ICT knowledge
- Staff turnover
- Consistency of internet connection

The choice of the iPad and a local app-based solution (Filemaker) that was not distributed via the Apple App Store has been effective and convenient. The developed apps could be emailed to the school and immediately accessed on the iPads without the involvement of a third party. This also allowed for confidentiality of the data including the cultural artefacts created by the students. So far the project has shown the potential for both the method of development and deployment. In the next phase development will be refined with an emphasis on Aboriginal languages and links to STEM.

References

Australian Government. (2013). *Strategic research priorities*. Retrieved from
        http://www.innovation.gov.au/Research/Pages/StrategicResearchPriorities.aspx

Colquhoun, S., & Dockery, A. M. (2012). *The link between Indigenous culture and wellbeing: Qualitative evidence for Australian Aboriginal peoples*. Centre for Labour Market Research.

Dyson, L.E., Hendriks, M. & Grant, S. (2007). *Information Technology and Indigenous People*. Information Science Publishing: Hershey, PA.

Gunstone, A. (2012). Indigenous education 1991–2000: Documents, outcomes and governments. *The Australian Journal of Indigenous Education*, *41*, 75-84. doi:10.1017/jie.2012.26

MCEETYA. (2009). *MCEETYA four year plan 2009-2012: A companion document for the Melbourne declaration on educational goals for young Australians*. Retrieved from
        http://www.mceecdya.edu.au/verve/_resources/MCEETYA_Four_Year_Plan_(2009-2012).pdf

MCEEDYA. (2010). *Aboriginal and Torres Strait Islander education action plan 2010-2014*. Retrieved from
        http://www.mceecdya.edu.au/verve/_resources/a10-0945_ieap_web_version_final2.pdf

National Curriculum Services. (2013). *What works. The Work Program. Sustainable School and Community Partnerships – a
        research study 1st edition*. National Curriculum Services Pty Ltd. Campbelfield, Australia.

Nugroho, D., & Londsale, M. (2009). *Evaluation of OLPC programs globally: a literature review*. Melbourne, Australia:
        Australian Council of Educational Research. Mimeographed document.

Sayed, F., Soar, J. and Wang, Z.(2012). Key factors for the development of a culturally appropriate interactive multimedia
        informative program for Aboriginal health workers. *The Australian Journal of Indigenous Education*, *41*, 162-172.
        doi:10.1017/jie.2012.19

Schwab, R. G., & Sutherland, D. (2004). *Building Indigenous learning communities*. Retrieved from
        http://hdl.handle.net/1885/41532

Vass, G. (2012). 'So, what is wrong with Indigenous education?' Perspective, position and power beyond a deficit
        discourse. *The Australian Journal of Indigenous Education*, *41*(02), 85-96.

Woodhouse, J. L., & Knapp, C. E. (2000). *Place-based curriculum and instruction: outdoor and environmental education
        approaches*. ERIC Digest. Charleston, WV: ERIC Clearinghouse for Rural Education and Small Schools. (ERIC
        Document Reproduction Services No. ED 448 012).