

In Quest of Integration: ICT and Pre-service Teacher Education in School

Tony Loughland¹
Charles Sturt University

Abstract

This paper reports on an attempt to reconnect teacher education in schools and universities. This attempt took the form of pre-service teacher education students developing an integrated ICT/HSIE program focusing on Caves for stage two students over one term in a Priority School in the central west of NSW. The pedagogy employed was inspired by the notion of webquests (for an explanation of webquests see: <http://www.ozline.com/webquests/design.html>). Although our first implementation of a webquest was more structured than the quests defined in the literature, there were still positive outcomes for students and student teachers from the program. This novice teacher educator was reminded of the importance of teacher as curriculum designer irrespective of context and pedagogy used.

Introduction

The Ramsey review of teacher education in NSW has called for reform that *...reconnects teacher education and students* (Ramsey 2000 p.50). While this paper does not particularly want to endorse the entire Ramsey agenda, I think this point is well made. Of course, Ramsey's call for stronger relationships between schools and teacher education institutions is not new. Indeed, the Key Schools program in Victoria and the Innovative Links initiative have tried to achieve just that. In the USA, professional development schools and Centres for Pedagogy (see Goodlad 1994) have been on the agenda for at least a decade. The author has also had experience with a school-institution partnership in a previous position (Scully 2001). This partnership was nurtured deliberately and carefully to ensure that both sites for teacher education were equal partners in collaboration (Brady and O'Bree 2000). This exemplar seemed to embody the principles of inclusivity and collaboration as espoused by (Sachs 1997). While I respect this careful approach to building successful partnerships, I didn't have the time or inclination to emulate this approach. As a recent primary teacher I did not feel that I had accumulated sufficient academic baggage to be regarded as a threat to a primary school. Furthermore, offering schools assistance in the area of integrating ICT into the curriculum ensured me a warm welcome.

I was motivated to do this study as a result of my interest in the idea of ICT education ameliorating educational disadvantage. Critical theorists such as Apple (1987) claim that computers reinforce existing power imbalances and dominant ideological positions in society. This is apparent to me when I read post-graduate assignments from teachers who describe the wealth of ICT resources at their disposal in government subsidised private schools. Public schools compare badly not in terms of physical resources but in intellectual resources. Often public schools have the hardware but not the pedagogical experience to utilise them nor the maintenance budget to keep it all working. This is why student teachers with proficient ICT skills are a welcome resource in public schools in this region. The student teachers themselves benefit from the experience as it provides them with a context in which to practise their ICT skills.

¹ School of Teacher Education Charles Sturt University Panorama Avenue Bathurst 2795
Phone: 02 6338 4366 Fax: 02 6338 4417 Email: aloughland@csu.edu.au

This limited venture with both teacher education and ICT integration was designed as a pilot study only. There are no findings, as this study did not conform to experimental design. I will report what I consider to be the main outcomes of this project and discuss the implications in a purely speculative fashion. The reader should understand that these outcomes are specific to this local context only and are not generalisable claims of universal truth.

Methodology

I established a working relationship with the principal of a local primary school from the time of my interview for my position at CSU that was held in September 2000. During this interview I alluded to my desire to integrate teacher education and workplace learning in the context of the integration of information and communication technologies (ICT) in the primary classroom. The principal indicated that she would like her school to be involved in such a program. I was in occasional contact with the principal during semester 1 of 2000. During this time two of my students studying a subject that was part of an ICT minor strand in a teacher education course (EC and Primary) conducted some action research involving the use of the World Wide Web in the primary classroom. As these students were part of a larger cohort working across a range of schools, I had limited contact with the school during semester 1. However, I was pleased with the outcomes of this action research model and was keen to refine it further. Another subject in the ICT minor strand in semester 2 gave me this opportunity.

The seven students in the subject received a rude surprise during their July break when they received an email from me with a subject outline attached. The message indicated to them that they were to meet me at a certain school during the first week of classes. Meanwhile I had been negotiating curriculum and pedagogy with the classroom teacher responsible for teaching ICT to the three stage 2 classes in the school. I presented my position as being an university teacher responsible for seven education undergraduates with highly developed ICT skills (more developed than their university teacher!) that needed a practical context in which to apply these abilities. We were willing to teach the curriculum the teacher had planned for that term conforming to the usual classroom routines. The teacher generously gave us the space and flexibility to develop the pedagogy for the curriculum outcomes nominated by the teacher.

Stage two was to study an integrated unit of work focusing on national parks, rivers and caves. This was a fortunate turn of events for this teaching venture. My background in environmental education gave me good field knowledge of this area. As well, one of the students had been a guide in the Jenolan Caves in a previous occupation. Therefore, we had the curriculum knowledge well covered. The development of appropriate pedagogy was to be our greatest challenge.

The first two weeks were spent helping the students to do a holiday recount in the computer laboratory using the Kidpix application. This gave us time to assess the cognitive and linguistic abilities of the children as well as let them get to know us. I worked in the laboratory all day with the classroom teacher. The students split into 3 groups of 2, 2 and 3 and taught a session (morning, middle and afternoon) each. After each day teaching the students and I met for a debriefing and planning meeting back at the university.

The first two planning meetings were very interesting with a little bit of reaction from the students to my deep-end approach to integrated teacher education. After some assurances that I would remain flexible around matters such as assessment items, we began to discuss appropriate pedagogy to use with the caves curriculum, having already narrowed down our content focus for a five week unit of work. The students, who were highly proficient web designers, wished to make a web-based learning environment. After some discussion of the relative merits of various web-based pedagogies, we settled on the idea of creating a caves webquest (see <http://www.ozline.com/webquests/design.html> for an explanation of webquests). Each group then assumed the responsibility for the planning of various sections of the webquest (see <http://athene.riv.csu.edu.au/~dwalsh10/webquest/> to view the completed webquest).

The webquest was used for six weeks of computer classes in stage 2. The children produced a Powerpoint presentation from their learning in the webquest that they presented to their parents during Education week later on in the term. The children also had an excursion to Jenolan Caves as a culmination to the unit.

Outcomes

Children

The children seem to engage happily with the webquest learning environment. They enjoyed learning to navigate on a web browser and especially enjoyed creating and animating their Powerpoint presentations (see <http://athene.riv.csu.edu.au/%7ejheydo02/esc300/esc300/Kelly.ppt> for an example of one child's work).

The children were discerning users of the webquest environment particularly favouring pages that included pictures and diagrams. Speaking as an ex-classroom teacher this outcome is hardly surprising to me. Children in my classes always preferred information texts with good graphics to text on its own. The children also enjoyed the multimedia aspects of the webquest, especially listening to the story recorded on a .wav file.

Another aspect of the webquest that seem to appeal to the children was the ability to move between different windows through minimising applications. In this way they could move freely between the webquest and the Powerpoint presentation. This helped greatly in the learning process of interpreting information from the website.

Instructions and prompts from within the webquest scaffolded the construction of the children's Powerpoint presentation. There was less need for procedural instructions as the children grew more proficient with using the application. The children become adept at moving images from the website to use in their presentations.

Student Teachers

The student teachers demonstrated their technical aptitude in designing the webquest learning environment. Their good understanding of html code enabled them to create web pages without too much fuss. One of the students acted as webmaster to organise the construction of the quest. The great organisational skills of this student came to the fore in this project. He was able to effectively coordinate the webquest on a pretty tight schedule, ensured that we had back-up copies of the quest in case the server went down and could

quickly remedy any problems that occurred on site. The students did not receive any assistance from me in the technical aspects of web design, as their skill levels were well beyond my own.

The student teachers had to think hard about techno-literacy for young children. One of the students in their appraisal mentioned that he had to think about the ratio and positioning of text and graphics on his web pages. Their analyses also revealed that they reflected on the relationship between process and content in web based pedagogies. For instance, one student wrote of the difficulty children had in *learning three things at once*, i.e. web navigation, Powerpoint construction and the content of the webquest. My concern was not for the students to adopt any politically correct line in their analysis but to show evidence of reflection on salient issues on their part. I believe that this outcome was achieved.

The students also coped with the just-in-time subject thrust upon them in July. The students appreciated the fact they had input into the design of the assessment tasks and into routine matters such as scheduling of classes and due dates for assignments. This outcome has implications for the legal requirements pertaining to subject outlines at the tertiary level that will be discussed in the next section.

Most importantly, the students had to grapple with the demands of curriculum design for the primary school. They needed to interpret syllabus outcomes to create content that was suitable for the children. As well, they needed to develop pedagogical strategies best suited to teach this content. Although webquests are a popular web-based learning environment for school students, some refinement of the model was needed to fit it into the local context that we were working in. Helping the students overcome the significant challenges of curriculum design in this project was the most pleasing outcome of this subject for me.

School Staff

I think the principal of the school was gratified to have some extra help in the computer laboratory on Tuesdays and was pleased with the learning outcomes as evidenced by the children's finished presentation. It is always useful to have something technological to show to parents on open day. At the end of the project, the principal graciously invited me back to participate in future projects.

The classroom teacher responsible for ICT in stage 2 was extremely hospitable in granting access to complete strangers to her classroom. It was her openness and honesty in all communications that contributed significantly to the success of the webquest.

Discussion

The most significant outcome of the webquest project for me was the emergence of the design, make and appraise (DMA) heuristic as being a useful framework for students to think about curriculum design. During semester 2 I had been teaching the DMA framework as part of a science and technology curriculum subject. As six of the seven students in this ICT subject were also enrolled in the science and technology subject there was a fortunate convergence of ideas taking place. Whilst they discussed teaching science and technology using DMA, they were using the DMA process to design curriculum. The DMA framework was also particularly useful in the context of designing curriculum whilst simultaneously designing a web-based learning environment. Of course, DMA is not a linear progression but more of a continuous interactive web with constant interplay

between the different components. Teaching with webquests is an activity that involves constant appraisal of the design and make that has created the quest. Children offer very useful appraisal themselves with comments pertaining to the navigability and attractiveness of the site. Our debriefing sessions allowed us to constantly revise our pedagogical design. The mixture of designing web-based learning environments, testing these environments and constantly reflecting on the whole process created a learning environment in the tertiary sector that I only had ever achieved before with my primary classes.

I find it difficult to think beyond the hard-wired instrumentalist view of ICT use in schools that I carry as a legacy of my primary teaching career. This is despite the fact that I am now fairly well acquainted with the body of literature supporting the integration of ICT into the regular classroom curriculum (Downes, Fluck, Gibbons, Leonard, Matthews, Oliver, Vickers and Williams 2000). Computer classes, often conducted by me as a specialist ICT and Science teacher in primary classes, were always computer skills classes in a separate computer laboratory. As these classes provided relief from face to face teaching for the regular classroom teacher they were happy to cede the responsibility of curriculum design to the specialist teacher. The teachers' limited experience with computers often made this process a compulsory one. I was always happy with this arrangement as it allowed me free rein in my classes.

I now appreciate the fact that the best use of ICT in primary classrooms is a fully integrated model where ICT are used to enhance and extend the classroom curriculum. I do believe, however, that there are intermediary steps on the way to this model. For instance, the principal of the school in this study defended her system of a classroom teacher assuming the role of the specialist ICT teacher for a stage on the grounds that this was the best use of the resources at her disposal.

Often computers cannot be fully integrated due to security rather than educational reasons. It was the reality in a few schools that I taught at that a separate, secure laboratory was the only place to keep computers. Having a separate computer room does not preclude integration of curriculum. This study demonstrates that it is possible to integrate curriculum using ICT in a computer laboratory. It is my contention that schools and teachers everywhere make pragmatic choices about the level of ICT integration based on the realities of their local context. This has implications for teacher educators who must recognise the constraints of local contexts when presenting theoretical frameworks. Indeed, I feel it is far more productive to work from the local to the theoretical where possible in this realm of teacher education where there is not a substantial body of research evidence as there may well be in other disciplines such as Mathematics. I recognise, however, that the provision of work placed learning was only possible in this subject due to the small number of students (7) enrolled and the hospitality extended by the school.

Finally, the inflexibility of subject outlines in the tertiary sector need to be recognised as a major deterrent to flexible subject planning. The legalistic aura that surrounds these documents is anathema to a teacher who uses programs as guides only. Subject outlines in their present form satisfy the demands of performativity rather than the requirements of good teaching and learning practices. This subject could not have taken place if the students did not agree to negotiated assessment tasks and subject content. It was impossible for me to predict, even educationally unsound for me, to anticipate what was going to happen with this subject before the beginning of semester. It was only with the good grace of the students that the subject could work in a flexible manner.

Conclusion

The ease of entry to a school was just one factor that made the program a success. Other factors that I thought contributed were a significant commitment to team teaching on my part, the students teachers' ability to *jump in at the deep end*, the student teachers' ICT skills, and a very strong commitment from the school executive and teachers to pedagogical refinement.

The second part to the integration was the webquest itself. The design of the quest was a great design, make and appraise exercise for emergent curriculum designers. Although curriculum innovation with ICT is often associated with technological wizardry, I feel the webquest involved the student teachers in curriculum making decisions not dissimilar to other contexts. This recognition on my part has helped me to understand and demystify the area of ICT integration. The framework of curriculum design rather than technological innovation is a more productive way forward for me as a teacher educator. This is especially the case when working with experienced teachers who have abundant curriculum skills yet may lack some ICT experience. If, by concentrating on their strength of curriculum design, I may be best able to help them develop their ICT skills.

I must conclude this paper by reminding the reader that any outcomes mentioned in this paper are purely speculative due to the limited nature of this action research. This study has acted as a pilot study for more extensive experimentation in the area of teacher education in schools and ICT integration that will occur throughout my tertiary teaching.

References

- Apple, M.W. 1987. *The new technology: Part of the solution or part of the problem?* Canberra: Curriculum Development Centre.
- Brady, L. and O'Bree, M. 2000. *Partnerships in School and Teacher Education: An Australian Case Study*, Sydney. AARE Annual Conference December 2-5 2000.
- Downes, T., Fluck, A., Gibbons, P., Leonard, R., Matthews, C., Oliver, R., Vickers, M. and Williams, M. 2000. *Models of teacher development for the integration of information and communication technologies into classroom practice: Research in progress*, Sydney. AARE Annual Conference December 2-5 2000.
- Goodlad, J. I. 1994. *Educational Renewal. Better Teachers Better Schools*. San Francisco, Jossey Bass.
- Ramsey, G. 2000. *Quality Matters. Revitalising teaching: critical times, critical choices*, DET NSW. Sydney.
- Sachs, J. 1997. "Revisioning Teacher Education." *Unicorn* 23(2): 46-56.
- Scully, A. 2001. *Partnership in Practice: School and University Teachers Prepare Teacher Education Students for Managing the Primary Classroom.*, Melbourne. 5th International Conference, Practical Experiences in Professional Education. February, 2001.