Mapping New Territories

ICT Integration Across the Bachelor of Education Program

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Abstract This paper describes the integration of Information and Communication Technologies (ICT) skills and practices across the Bachelor of Education (Primary) program at the University of New England, Armidale. The program was reviewed and modified in the light of ICT competencies specified by the NSW Government. The aim was to ensure that all students gained experience in these competencies throughout their pre-service teacher training. It was necessary to improve staff ICT competencies. Members of the Information Technology teaching team helped design activities and team taught with other staff members. Reflections and feedback from staff indicated that the exercise increased staff and student ICT awareness and expertise and offered enhanced opportunities for students to gain ICT in authentic teaching/learning contexts.

1. INTRODUCTION

In 1997, the New South Wales Ministerial Advisory Council on the Quality of Teaching (MACQT) released the report *Computer Proficiency for Teachers*. In this document the Council, whose task is to provide the NSW Government with advice on teacher education issues from initial teacher education to ongoing professional development, stated the following:

“All people employed as classroom teachers need to develop the skills which will enable them to maximise the use of the computer as a teaching resource to enhance student learning and to prepare students to master a high technology society in which lifestyles, attitudes and skills are challenged daily. For this to be accomplished, teacher education programs

and professional development programs for practising teachers will need to focus on the provision of an understanding of the application of computer knowledge, and of both the basic and more sophisticated skills associated with computer proficiency" (MACQT 1997).

In support of this statement, a list of computer competencies for beginning teachers was developed. These competencies can be viewed at: <http://www.det.nsw.edu.au/publications/minister/teacher1.htm>

The competencies fall into five broad areas: basic operations, use of information technology, evaluation of software, teaching practice, consideration of pedagogical issues and awareness of values and ethics related to Information Technology in education. To ensure these standards were met, it was mandated that from 2000 onwards all beginning teachers would need to demonstrate these competencies in order to be eligible for employment in N.S.W. Government schools. In response to this Government directive, the University of New England's main pre-service teaching program, the Bachelor of Education (Primary) was examined to determine the extent to which it would provide students with the necessary ICT competencies required for employment. This analysis showed that a number of modifications would have to be made to the program in order for students to meet the government's requirements. This paper describes a project managed by teaching staff of the Faculty of Health, Education and Professional Studies which modified the Bachelor of Education (Primary) by integrating the teaching and development of these ICT competencies across all of the compulsory pre-service teacher education units of the program.

2. BACKGROUND

The Bachelor of Education (Primary) is a four year, professionally orientated degree, initiated in 1998 and offered on-campus at the University of New England in the rural town of Armidale in New South Wales, Australia. As well as gaining generalist training in infants and primary education, students have the opportunity to focus their study in specific Key Learning Areas or in specialist fields of professional practice which include Aboriginal Studies, Languages Other Than English (LOTE), Special Needs and Technology in Education. Although largely taught by staff in the Faculty of Education, Health and Professional Studies, the program has been designed with the assistance of members of the teaching profession and provides students with the opportunity to develop knowledge, skills and attitudes to become successful beginning teachers in the Australian context.

The course consists of three strands: a curriculum strand, a professional strand and a personal studies strand. The curriculum strand provides the

necessary background knowledge of the school syllabus, teaching methodology and programming for the six primary school subjects (or Key Learning Areas). The professional strand provides the necessary background in the foundational and theoretical aspects of teacher education. The personal studies strand provides for a number of aspects of teacher education and includes an opportunity for students to develop their personal background in subject disciplines necessary for primary school teachers.

It was the aim of the Faculty to integrate the teaching of Information and Communication Technologies (ICT) across all of the compulsory units of the four-year program. Students, instead of learning an isolated or arbitrary set of skills, would learn ICT skills and practices in a meaningful context within the framework of their pre-service teacher education units. It was felt that such levels of sustained practice and consolidation of these competencies in authentic teaching/learning situations would lead to deeper and richer forms of understanding and greater mastery of ICT skills. As a result, newly trained teachers would be more likely to use ICT in their own teaching.

3. IMPLEMENTATION OF THE PROJECT

At the core of the project was the development of the B. Ed (Primary) unit *Foundation Studies* (CSST 192). This unit was the organising framework upon which was based the integration of ICT skills and practices into other units. CSST 192 was set within the context of the *Computing Competencies for Beginning Teachers* (MACQT 1997) and provided student teachers with an introduction to each of the five areas of ICT competence. CSST192 covers all of these competencies, with the majority of practical activities being designed to deliver the computing skills required for success in other first year units.

CSST192 operates during first semester as a one semester unit, in conjunction with three year-long core units. For second semester, students then undertake the unit CSST 193 *Reading in the Primary Curriculum*, along with the three year-long core units. All of these are compulsory units, and comprise the first year of the B. Ed (Primary) program. A reciprocal relationship has been forged between CSST 192 and the other first year units. The other units are encouraged to make use of the computer competencies taught in CSST 192, while academic literacies from these units such as: summarising, paraphrasing and creating concept maps have been integrated into pedagogical tasks for CSST 192.

From a practical perspective, the task of integrating ICT competencies across the entire B. Ed. (Primary) program was approached at two levels. Firstly, working within the Faculty to increase staff awareness of and

expertise in the use of ICT *across* the whole 4-year program. Secondly, working *within* the program to develop staff expertise and student understanding of ICT in relation to specific curriculum areas.

In order to increase staff awareness and expertise in the use of ICT across the B. Ed. (Primary) program, two members of the Information Technology (IT) Team, Chris Reading and Mitchell Parkes worked with staff reviewing individual units. This was undertaken in order to determine the extent to which units addressed the ICT competencies and built upon the foundations of ICT competence laid for students in CSST192. This work was allied to an ongoing program of *Advancing Academic Literacies* within the Bachelor of Education (Primary) program, in which all staff working within the first year units had collaboratively mapped and shared the 'literacy' demands of their disciplines and pedagogy. Incorporating ICT into this expanded view of 'l(IT)eracy' was the next logical step. During the consultation process, advice was provided about effective ways of incorporating ICT into existing pedagogy within units. Care was taken to ensure that any ICT activities added were driven by the curriculum needs of the unit and not as a means of simply covering a competency.

The result of these consultations was the creation of a map showing the coverage of ICT competencies across all units taught in the B. Ed. (Primary) program. The resulting map is a representation of the program at one point in time – a standard against which comparisons can be made towards the goal of achieving integrated l(IT)eracy experience and practice for students. The map itself shows clearly those areas: Basic Operations, Information Technology And Evaluation of Software, where the program is adequately providing the teaching and learning experience expected. It also highlights those areas: Pedagogical Issues and Values and Ethics, where students need to be offered greater learning opportunities. Information gathered from the mapping exercise will form the basis for further sessions where staff can collaboratively aim to fill the gaps, in the most meaningful ways.

Once the ICT competencies had been mapped onto individual units, the next stage involved working with individual staff members to help improve their own ICT skills and practices within their particular curriculum areas. Time was provided for members of the Information Technology team to work with staff developing practical activities. When necessary, members of the Information Technology team taught with staff members and provided assistance and technical support. Examples of activities included: working with the Literacy team reviewing electronic texts; working with members of the Science team collating and analysing data using a spreadsheet for a pendulum experiment and creating and manipulating digital images with a member of the Art team.

These activities proved to be extremely successful and popular with staff and students. From a professional development perspective, many staff members reported increases in computing skill and confidence in using the technology in their teaching. Some reflections by staff members involved in these activities are given below.

“As a member of the English teaching team, I found these sessions particularly useful. I believe that team teaching situations are educationally valuable. I think that it enhanced the sessions greatly. Even though I was not uncomfortable with the technology, I can always learn something from the person with expertise” (Paul Muirhead 2000).

“As part of our Science methods unit with first-year pre-service primary students, four weeks was set aside for students to learn how to incorporate computer technologies into their teaching. Students were expected to undertake a number of activities culminating in a computer portfolio and reflection as an assignment. While I feel competent with word processing, using the Internet, and working with spreadsheets, this has always involved just me and my computer. It is quite a different game when there are thirty eager (and sometimes not so eager) faces all wanting computer help. The benefits of working with someone who is competent in the area enabled students to gain the help they needed quickly and accurately so that the time spent during the workshops was seen to be effective. For myself, I gained confidence in dealing with large groups of students on the computers and insight having learned a number of skills I did not possess previously. The other advantage with this type of collaboration is that students see the integration between the various components or units they are studying. They also are able to observe various ‘experts’ in their own fields working together to enhance student learning. This professionalism may be discussed during lectures but seeing it in action has a much greater impact. I believe that this was an extremely valuable experience for our students!” (Debra Panizzon 2000).

“Over a two-week period, my visual arts classes for first year B. Ed. students were all conducted in the computer lab. Mitchell Parkes kindly agreed to come to all seven of these classes to teach the students how to use Adobe PhotoShop software to manipulate photos that had been taken earlier with a digital camera. I found that the exercise was a huge success and both the students and I benefited greatly. The students are immensely proud of their efforts and have asked me about the possibility of doing further computer art exercises similar to this one in other art education electives next year. It has helped me expand our use of technology in

generating art images within this unit and I can now see a number of ways in which this can be expanded even further over the next few years. I am confident that I could lead these sessions in future without support and I have also used my new skills in other ways since our lab workshops. Many of these new skills have been incredibly useful to me while I was recently preparing an on line art exhibition of students' work for one of the external units that I teach". (Frances Alter 2000).

4. FUTURE DIRECTIONS

The mapping activity has already provided new directions and challenges. One example is the unit CSST193 *Reading in the Primary Curriculum*. This unit focused on instruction for children learning to read at all levels of the primary school. As well as attention to beginning reading, the unit also covered content area reading and reading for information. The challenge for the unit is in relation to multi-literacies, and dealing with expanded notions of literacy and text. As a response to the ICT competencies related to pedagogical issues, this unit was expanded and now attempts to assist student teachers to understand how computer technology can enhance student learning, and how to manage classroom environments and school resources most effectively. In the redevelopment of the unit it was found that models for teaching comprehension using traditional print-based materials were inadequate when applied to electronic text. As a consequence, a new model for the analysis of electronic texts was sought (Reid, Reading and Parkes, under review).

5. CONCLUSION

The ICT competency map represents a snap shot of where the BEd. (Primary) program is at present. Such a map is not something that remains fixed in time but must be dynamic, responding to the professional and educational needs of staff and students. We are just at the beginning of our journey and although we may have mapped new territories, our map is far from complete and our journey is far from over.

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BIOGRAPHY

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