

INTERACT INTEGRATE IMPACT

Proceedings of the 20th Annual Conference
of the Australasian Society for Computers in
Learning in Tertiary Education (ASCILITE)

Adelaide, Australia
7–10 December 2003

Editors

Geoffrey Crisp, Di Thiele, Ingrid Scholten, Sandra Barker, Judi Baron

Citations of works should have the following format:

Author, A. & Writer B. (2003). Paper title: What it's called. In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), *Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*. Adelaide, 7-10 December 2003.

ISBN CDROM 0-9751702-1-X WEB 0-9751702-2-8



Published by ASCILITE www.ascilite.org.au

SHIFTING FOCUS ON INTEGRATION: USE OF ICT TO SUPPORT COMMUNITY LEARNING IN A RE-STRUCTURED ONE-YEAR TEACHER EDUCATION COURSE

Ann Baxter, Ian Olney, Christine Brown and Brian Ferry
Faculty of Education
University of Wollongong, AUSTRALIA
{*abaxter, iolney, cbrown, bferry*}@uow.edu.au

Abstract

The integration of information and communication technologies (ICT) has been one key focus for Education Faculties in the last few years, yet it is not the only factor that requires integration. This paper traces the impact of a significant course re-structure on ICT integration in an annual end-on degree - the Graduate Diploma in Education (GDE), at the University of Wollongong.

This intensive course requires students to undertake up to 12 weeks of full-time practice teaching as well as 21 weeks of campus-based instruction that geographically and functionally divides the program into alternate intensive blocks of campus and school-based learning. One problem is that pre-service and school-based teachers often perceive these blocks as unrelated entities, yet their integration is critical to a shared model of instruction. Our challenge in this course is to link the school and university environments in the minds of all stakeholders.

ICT has been used as one strategy to achieve this goal via a web site that links the pre-service teachers when they are widely scattered for long periods of practicum, and helps them generate understandings of their future roles as teachers. We report this 'work in progress' on the use of this web site with a cohort of 220 pre-service teachers. One benefit of the web site development is its ability to serve as a planning tool for course refinement. The additional load on teaching staff in key positions of web site responsibility may resolve with experience and broader team membership. Now the integration focus has shifted off ICT, we may be well on the way to achieving that goal.

Keywords

Sharing practice of web management, ICT integration.

The ICT Integration Lens

The integration of information and communication technology (ICT) in teaching practice provides a challenge for pre-service educators. If you maintain a separate focus on ICT you can be lured into emphasis on a skill set; embed ICT within all subjects and you run the risk of assuming "someone else has covered that." Both of these situations are illustrated in separate iterations of one course - the Graduate Diploma of Education (GDE) - triggered by a major course re-structure.

In its most basic form, integration can be met by development of student skills with ICT tools and these skills can simply be mapped across subjects in a degree program. This focus on integration may work for the students but it does little to diffuse ICT use through the tertiary teaching staff. Other more pedagogical interpretations of integration require substantial alterations to tertiary teaching practice, either through

emphasis on student-centred activity design, the development of high quality on-line resources and interactive learning experiences, or whole program re-structuring as a consequence of use of ICT. The GDE course was re-structured from a separate collection of subjects to an integrated model of four key themes (person, place, professional skills and pedagogy) for implementation in 2003 (See Figure 1). This paper discusses the broad impact of this significant structural change on ICT integration. The benchmark for comparison is the treatment of ICT prior to 2003.

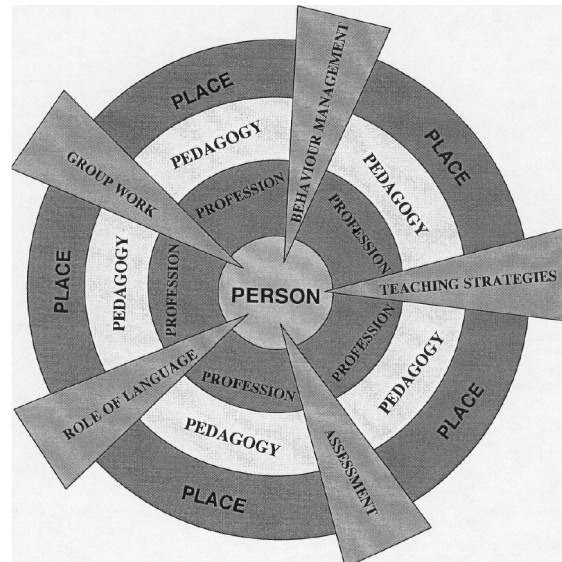


Figure 1: GDE Course Themes 2003

ICT Treatment Prior to Course Re-structure in 2003

The one-year GDE course began incorporating a specific focus on ICT in 1997, when a 9-week series of lectures and tutorials was placed at the end of the annual subject “Pedagogy”. Students complained that there was little time to develop necessary skills and even less to contemplate the implications of ICT use for teaching and learning. In the following three years (1998-2000) a 6-8 week block of Pedagogy early in the year was allocated to ICT integration to allow for skill development throughout the year. Once this lecture and tutorial series was complete, there was no particular emphasis placed on ICT unless other staff chose to emphasise ICT use in their subjects.

The 2001 iteration adopted an extended approach to ICT as a stepping-stone to course redesign with an ICT backbone. Although the lecture series was placed in session one of the year, the bulk of student assignment work was due in second session, permitting a focus on ICT use within the major mid-year practicum. This greatly enhanced the relevance of what was discussed in lectures, as students were able to incorporate their practicum experience into their reflections within ICT assignments due at the end of their course.

By 2002, discussions on course re-structure were well advanced, and there was substantial student feedback that they benefited greatly from early skill development with ICT followed by extended time to experience classroom use, reflect on ideas, discuss issues online with peers then collate assignment work at the end of the course in a portfolio fashion. Although the ICT assignment at the end of the year was not popular, it was engaging students in substantial problem solving and deep learning. Many students stopped by after the practicum to discuss their classroom experiences with ICT, then in relation to the portfolio assignment, some re-defined the limits and incorporated additional work because they saw the value of ICT to their future students. When portfolios were submitted the most frequent comments related to the volume of work but this was also equated with the value of the activity. Since the assignment submission period extended over several weeks to fit the practicalities of the ICT lecturer, and the nature of the assignment was intimately linked to a unique student practicum experience, students were forced into a more self-regulated work pattern by the end of their course - a state befitting beginning teachers.

Following is a snapshot of ICT classes, interactions and student activities within the GDE program in 2002. While they were anchored within the annual subject Pedagogy, the timing of the subject components meant students focused more on the individual lecturers as their point of contact, and less on the overarching nature of pedagogy. Communication ran as one theme throughout the first session. In parallel with communication, students focused on behaviour management for four weeks, followed by an introduction to ICT. Language and literacy and gifted education were studied in second session following a major practicum experience.

The lectures and tutorials for ICT were a source of resources, ideas and support for subsequent application to the classroom context. The lecture themes and associated activities were learning and ICT (web searching), learning to manage (database), learning to design (web), learning to produce (PowerPoint), learning to evaluate (spreadsheets and portfolios) and learning to research (discussion analysis). Each week tutorial support was unfolded on a need basis. The key categories of resources were sites related to the week's lecture topic, tutorial activity skill support through web links or worksheets, ideas for extension activities and creative illustrations of what other teachers are doing. Thus the method of delivery was face-to-face lectures and tutorials, complemented by a Pedagogy web support site for information and interaction. A range of textbooks were listed as recommended reading on matters of classroom integration, technologies as tools, extended project work, ethics, safety and equity.

Student ICT assessment activities were threefold - resource development (completed in the designated ICT period), discussion analysis (submitted after the major practicum) and electronic portfolio production (due towards the end of the course).

- Resource development activities were designed and constructed within tutorial times, and students were free to attend extra tutorials. They were required to work in pairs to produce a class activity and demonstrate competence with particular software.
- The discussion analysis required students to contribute to at least one of three major discussion questions relating to ICT resources, student engagement or assessment. They were then asked to analyse the response of their peers to one question. This task provided a focused use of the discussion space, permitted students to record their school experiences as researchers then analyse the key themes of peer discussion.
- The electronic portfolio was a major structured task with several components. It was presented around four teacher roles of learner, manager, designer and researcher. Students first *research* their school ICT environment, *design* activities with their supervising teacher, *manage* those activities and finally *evaluate* what they learned (based on observations, supervisor feedback and collections of student work). There was a process emphasis (long term, foundational and iterative) and a product emphasis (short term, polished and highly audience specific). The components submitted included a structured report (product) accompanied by electronic folders containing resources, activities and student work for subsequent access (ongoing process).

The key advantages of this approach to ICT were the staggered nature of its distribution throughout an annual subject and the focus of ICT use on the school practicum. The school-driven agenda that emerged from the practicum ensured that students had many rich and unique experiences to share on their discussion forum for later review and analysis. The electronic portfolio structure encouraged pre-service teachers to encounter the common classroom problems of file management, transfer and compilation. The key disadvantages of this approach were the limited opportunities for all university staff to engage with ICT (the web site was only for the Pedagogy subject) and the need for more meaningful links with the supervising teachers in schools.

Opportunities with the new course structure in 2003

The chasm between theory and practice is a significant problem with pre-service teacher education (Thomson, 2000). The most commonly held belief (Thomson 2000) is that *university* is the place of and for *theory* while *school* is the place of and for *practice*. In other words, student teachers learn *about* teaching at university, while they learn *how* to do teaching during their practicum and after they enter the teaching profession. This prevailing idea of theory and practice being located in two separate, discreet

and opposing fields helps to explain why making connections between the two seems to be so difficult. The work of both institutions is thwarted by the lack of communication, knowledge and understanding of each other. As a result of this resistance, the good work carried out in both institutions is diminished by misunderstandings and often it seems that no amount of communication will bridge the gap.

Studies of learning in schools and universities show that knowledge is often presented in a fragmented and decontextualised way (Entwhistle, Entwhistle & Tait, 1993). This connection with authentic school environments is often missing. An example is the tenuous link between university-based teacher education subjects and the associated practicum. Reviews of beginning teachers over the past 80 years continually identify a number of key skills that are not well developed by traditional preparation programs. These include: student discipline, motivating students, dealing with individual differences, insufficient and/or inadequate resources, organisation of classwork, assessing student work, and relationships with parents. Further, the Ramsey (2000) review of teacher education in NSW supported these findings and asserted that pre-service teachers do not have an adequate understanding of how classroom practice produces effective student learning -that is an integrated picture of the professional work of teachers.

The course re-structure provided us with an opportunity to develop and support a professional learning community that was based upon discourse and learner interaction that occurred as a face-to-face community in schools and as on-line community. Both were needed to support our approach to initial teacher education through the formation of a 'knowledge-building community'. Berierter and Scardamalia (1993) describe a 'knowledge building community' (KBC) as a group of people who investigate problems together. Members work as groups and not as individuals and are engaged in progressive discourse in an iterative process of knowledge building. Since 1999, the Faculty of Education at the University of Wollongong has applied this alternative model (KBC) to a small cohort within a Bachelor Teaching Program (Ferry, Kiggins, Hoban, & Lockyer, 2000).

The revised GDE course built on this research by adapting the model and extending the key ideas to a larger cohort. The key issues revealed by Ferry et al (2000) and other researchers such as Groundwater-Smith and Deer et al (1996), guided the development of support tools within the new GDE website. Our model consists of three interacting sources of learning:

- Community-learning* (CL) which involves pre-service teachers, university and school facilitators sharing knowledge as a community;
- School-based learning* (SL) which involves the pre-service teachers in authentic school contexts; and
- Portfolio-based learning* (PL), which requires pre-service teachers to develop a digital portfolio that demonstrates their skill development and achievement of core outcomes of the course.

Community learning requires the development of a "*community of learners*" made up of the pre-service teachers, the school-based teachers, subject-based lecturers (exemplary teachers who lecture part-time in the course) and full-time university staff. It is the expectation that this community will establish a sense of trust that will allow them to work together in small groups to create flexible, school-based developmental programs that are context specific.

Koetsier and Wubbels (1995) report that beginning teachers experience "*reality shock*", when faced with the demands of full-time teaching and they believe that the gap between the ideals and the reality of everyday school life is the primary cause for the disillusionment of beginning teachers. School-based learning aims to develop an understanding of school-based culture, and how schools do business, reducing "*reality shock*" by increasing a pre-service teacher's understanding of a teacher's "real" role in the classroom and the school. Moreover we expect that the pre-service teachers will through immersion in the school culture and through sharing their discussions online within their learning community develop a richer understanding of what teachers and schools do on a daily basis.

Portfolios have been used as a record of achievement, for performance review, action research as well as a variety of other purposes. In this context the portfolio will be used as a record of development. The task of selecting suitable examples to demonstrate progressive development of course goals forces pre-service teachers to reflect on their learning experiences and relate them to the course goals. We hope that

this process will assist them to understand the values, norms and habitual ways of seeing which belong to their profession. Although learning can occur from each of the three sources (CL, SL, PL), we believe that the most effective type of learning environment occurs when they interact to establish the deep learning process of knowledge building. These ideas underpin the development and structure of the 2003 GDE web site.

The GDE Web site development in 2003

The new course structure provided an unprecedented opportunity to develop one website for the GDE course, rather than separate subject or strand/thematic sites, ensuring a common space for students and teaching staff (university and school-based). In keeping with Ramsey's (2000) suggestion that pre-service teachers need quality classroom-based experience supervised by an accredited teacher mentor, we also invited teacher mentors to join the course community.

The core structure of the website as it appeared part way through 2003 is illustrated in *Figure 2* - the Home Page. At this top level, "Quick Notes" inform all course participants of key events and targets specific resources.

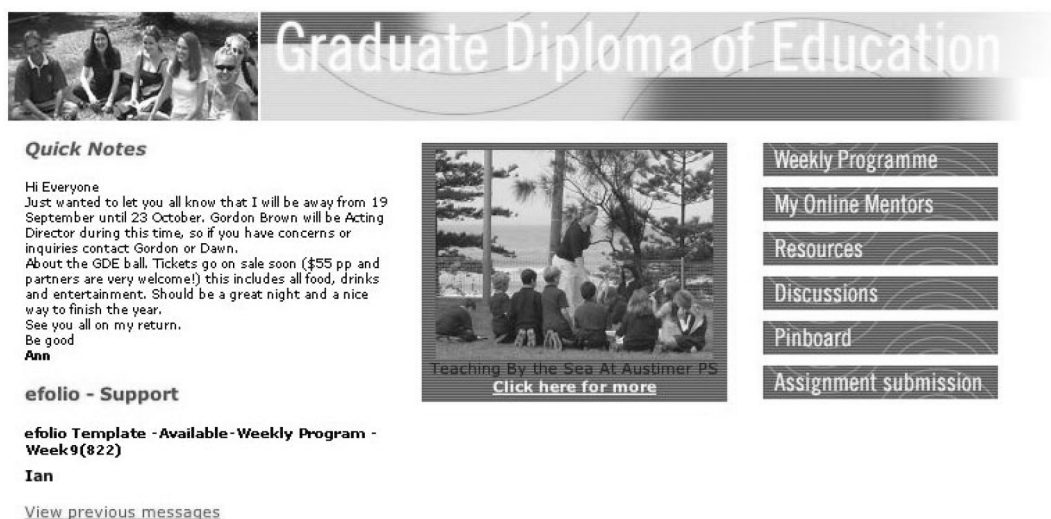


Figure 2: The Website Home Page

Students take visual ownership of the site by contributing graphics, and can navigate to site support tools according to their needs. *Table 1* summarises the function and purpose of each support tool.

From a course development perspective, the weekly programme (see *Figure 3*) became an important planning tool for lecturer timetabling early in 2003. It facilitated the formation of new strand teams by allowing all staff to see what was covered in other areas and in what sequence. Staffing rosters across multiple courses often necessitated adjustments to the weekly programme. Although discussions and planning occurred in the course coordinator's office using a large whiteboard with coloured magnetic strips to indicate themes, the Weekly Programme web page represented the "latest version" of the programme.

Other support tools developed over time. The interface of *Figure 2* was launched once students were on practicum. Due to a generalised data loss incident in first session, students and staff were less than impressed by the stability of the web site, although the data loss was not connected to the WebCT course support system used. Early discussion contributions were lost, thus inconveniencing those who had been keen to engage with the community. The new interface launch was a "fresh face" that represented a new start to the site.

Support tool	Function	Purpose
<i>Weekly program</i>	Selection takes you to the current week. Lecturer and/or coordinator information. Links messages and files to the week's activities - Word, PDF or PowerPoint files	Information transmission; reduces the procedural enquiries to the subject coordinators; provides resource access in case of student absence; gives community a picture of the whole program; can look ahead or back through the program.
<i>Online mentors</i>	Moderate a discussion forum - participation is voluntary	Allows ICT experienced teachers to provide on-line support to pre-service teachers on practicum. Focuses on curriculum integration of ICT.
<i>Resources</i>	A dynamic categorized list of links.	Provides access to current essential policy, syllabus documents and learning materials. Not comprehensive like EdNA
<i>Discussions</i>	Moderated discussion. Topics initiated by on-campus lecturers, but open to all students, staff and mentors.	Acts as a reflection-on-action tool and as a tool to further describe the multi-faceted roles that teachers play in school. Staff provide additional insights and stimulate the discussion
<i>Pinboard</i>	Users contribute resources via a moderator.	Allows user ownership; develops a resource of on-line materials to support the practicum. Identifies outstanding material to transfer to "Resources" section.
<i>Assignment Submission</i>	Drop boxes for student or staff designated work. Tools under development to compile organized teacher friendly collections.	Allows students to progressively build a set of resources for an electronic portfolio that illustrates their professional growth. Allows staff to produce and share resource collections.

Table 1: Web-based support tools in the GDE website

Session 2, 2003

Week: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#) [16](#) [17](#)

	Person	Professional Skills	Place	Pedagogy (Methods)
	EDGC821 - Understanding Learning B: Learners with Special Needs	EDGC822 - Professional Skills B	EDGC823 - Learning and Teaching Contexts B	
Coordinator	Wilma Vialle	Susan Hellmundt	Christine Fox	Primary:
Team:	Wilma Vialle@uow.edu.au Pauline Lysaght Irina Verenikina Simon Leonard Yvonne Carnellor_ Rob Spence Pat Farrar Stuart Woodcock Rae Spence	Susan Hellmundt@uow.edu.au Ros Westbrook, Peter Geekie	Christine Fox@uow.edu.au Gordon Brown, Jen Burnley, Valerie Harwood, Frank Larkin	Stan Warren/Ann B Stan Warren@uow.edu Ann Baxter@uow.edu Secondary : Brian Ferry Brian Ferry@uow.edu
General	EDGC821 821 Subject Outline	EDGC822 822 Subject Outline	EDGC823 823 Subject Outline	Methods All Methods Outlines, news email
Week 1				
Week 2		Practicum Continued		

Figure 3: The weekly program page

Outcomes of course re-structure half way through the course

As part of this work in progress we conducted a short evaluation questionnaire that went to all users at the end of the first teaching session. The preliminary results of this questionnaire were used to identify a range of user responses as the basis for selection and an initial of interview of 10 users. The interviews were mostly unstructured and conversational and lasted about 20 minutes. They were designed to expand on and clarify the range of questionnaire responses. At the conclusion of the interviews we sought additional responses via email to elicit other issues that may have been raised so far. Questionnaire data is being analysed to establish trends. The add-on tools within the program will be used later to provide statistics on general background information and trends. Interview transcripts and email responses will be searched for 'pattern regularities' (Cresswell, 1998) and 'issue-relevant meanings' (Cresswell, 1998). The theory building program(s) NUD*IST and NVivo will be used to store and organize emails and transcripts.

The full impact of this re-structure will require course completion and full evaluation but at this stage we can comment on a number of outcomes that have emerged.

Impact on Staff

Prior to the introduction of the site the staff were unaware of the happenings in other parts of the program and had made little use of the online environment. With the restructure of the course there has been more interaction between the individual course coordinators - this being evident by team meetings attendance and whole course commitments, which involve on campus and off campus lecturers. The 'complete course view' has resulted increased use the facilities by staff that previously had been reluctant to explore the possibilities of such tools. The website is maintained by an academic staff member who receives a small but inadequate workload for this task. This is unsustainable and raises the issue of workload allocation for maintenance of online learning websites for all academics.

Impact on pre-service teachers

In earlier courses prior to the GDE, the students used WebCT to varying degrees. With this new web site there has been an increased use of the online space for both course work and social interaction. In addition to their course requirements, they are beginning to contribute content in the form of messages and photographs - an indication that joint ownership is emerging.

Impact on the online mentors (OLM)

The initial use of this part of the site was in support of a PHD study with the specific focus on the integration of ICT in the classroom. The results to date indicate that the teachers are welcoming the opportunity to be involved in the development of pre-service teachers on a much wider platform than just ICT. The ability to interact 'when and where' they have the time is an important factor with their continued support. Another unforeseen outcome has been these teachers have enjoyed 'seeing' what is happening in schools other than their own, and in some case have been motivated to try and implement some of the tasks and teaching strategies mentioned by staff and students, on the site.

There was a large difference between pre-service teacher experience with the school-based online mentors and with university staff. The online mentors were competent users of ICT and were able to deal with the online requests. Most pre-service teachers who made contact with these mentors made positive comments on their experiences. A few university staff, inexperienced with online discussion management, felt the need for further support with such tools. We plan to thoroughly revise this aspect by providing staff with a series of professional development opportunities during the second half of this year. The first of these courses has already taken place and we will monitor pre-service teacher responses for any changes during the next session.

Sample Student Responses

Table 2 presents the range of questionnaire and interview responses to date. Further analysis is continuing.

Support tool	Sample responses S = Student; L = Lecturer; OLM = online mentor	Comments
<i>Quick Notes</i>	<p>Course coordinator: <i>Glad to hear that you are all are now deeply involved at the chalkface.</i> <i>Prac report templates are now available for downloading- Weekly Program - Week 14.</i> <i>Digital photos welcome - send then to Ian.</i> <i>Don't forget about planning for your "e-folio" & using the online mentors who can support you in this task</i></p>	Students and staff gradually becoming more involved in using this tool, as it is a quick and convenient method of passing on short messages.
<i>Weekly program</i>	<p>S: 'I was sick for a week but when I went to the web I could see what was happening' PST/L: 'I can see what is happening each week' S: I would like to see full lecture notes on the web</p>	Slow to begin with - initially most of the setting up was done by course coordinator and web site manager - More staff now realizing its potential in passing on messages and content.
<i>Online mentor Interaction</i>	<p>S: 'My mentor (NAME) helped me to keep calm and gave me a great lesson plan' L: 'You are in demand when they are in schools so you have to log on regularly. They are very enthusiastic..' OLM: 'No well it was good to get into see what their modules were and have a look at what the task was'</p>	Many staff and students seeing the value in this direct connection with teachers in schools. Possible extension of their use with added face to face involvement.
<i>Resources</i>	<p>S: '...saves me time..' S/L: 'I didn't realize how many (policy) documents were on-line'</p>	Early stage of development. Decisions to be made on appropriateness of resources to be available here.
<i>Discussion</i>	<p>S: 'it was really good to see other people's ideas but it was too big for me to read it all'- S: 'When I read other people's problems I realised that my class was not that bad after all' L: 'I didn't realize the extent and breadth of their practicum experience'- S: 'I am frustrated with this - especially when it crashed.' L: Next time I will break the groups up among the other method lecturers. I was overwhelmed by the response -</p>	Current usage promising. More course lecturers willing to use the tool. Need to extend its use to more than "post a message".
<i>Pinboard</i>	<p>S: 'it was good -I hope to use it - S: 'I enjoyed finding things to put up' -</p>	Little use to date. Technical functionality to be improved to include uploading and downloading files - exciting possibilities
<i>Assignment submission</i>	<p>S: 'It is easy to use and you get an email receipt which is good'- L: 'I know (NAME) said it was easy but I am a little concerned that I will not be able to get the assignments off the web'</p>	Little use to date - its function to be tested more fully for final task submission

Table 2: Questionnaire and interview responses

Conclusion

The paper began with a focus on ICT integration in the old course structure. Both the advantages and disadvantages of this approach to student development of ICT skills and appreciation of its impact on learning environments informed the design of the current web site. Yet a second and more vital driving force was the identified need to link pre-service teachers across school and university environments. It is not surprising that substantial course changes will take time to settle. It is even less surprising that a web site that attempts to capture this new structure and way of working will at times be a step behind, and at other times lead the way. The ability to engage the mentors is an example of the latter. Now that ICT is targeted at developing a solution to a much broader issue for pre-service teachers, it is more likely that it will become an integral part of the system.

Our preliminary report on the first look at student feedback data will lead on to analysis. We can say at this stage that despite early problems the website appears to support the practicum by linking school experience and the university course. Early indications also suggest that it is helping pre-service teachers begin the process of linking the various elements of the course. It is too early to report on whether they are developing an integrated view of their future role as a teacher except to report that schools are telling us that there is an improvement but this could be related to other factors. Later in the year we will be conducting further analysis of the electronic portfolios and the online mentoring. Further, we believe that the targeted staff development process implemented this session will assist staff in becoming more a part of this learning community.

Finally, we wish to emphasize that this project involved 220 pre-service teachers, 23 full-time staff and 21 part-time staff, more than 60 schools and 12 volunteer mentors. As such it was an ambitious project that relied upon the support and goodwill of a large number of people and we wish to acknowledge their support.

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