Transforming Professional Practice: What Profiling Tells Us

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This paper presents a case study of four teaching academics in a Faculty of Education with respect to their use of Information and Communication Technologies (ICT). Data was gathered through in-conversation interviews, conducted via e-mail communication, with the participants. A validated framework for profiling teachers' use of ICT formed the foundation for the analysis. It was clear that the academics had moved towards embracing ICT to support and transform their practice. However, a number of challenges in embedding ICT into all aspects of academic work were identified. The results point to a need for a systemic, faculty-wide approach to embracing ICT as a culture for learning.

There is an expectation that teacher education graduates "arrive into the profession with the confidence and competence to effectively integrate ICT [Information and Communication Technologies] in their learning and teaching programs" (Finger, Russell, Jamieson-Proctor & Russell, 2007, p. 55). Similarly teachers in schools are expected to incorporate ICT into professional practice to exploit the potential of ICT in education programs (Fitzallen, 2004). Their expectations have fuelled a growing body of research considering teachers' and pre-service teachers' skills in ICT, which identifies a number of factors that affect teachers adoption of ICT into teaching and learning experiences for students (British Educational Communications and Technology Agency [BECTA], 2003; Department of Education, Training and Youth Affairs [DETYA], 2000; Fitzallen, 2004; Watson, Jamieson-Proctor, Finger & Lang, 2004; Watson & Prestridge, 2001). These factors are now the subject of frameworks or profiling instruments used to evaluate the integration of ICT into teaching and learning programs (Finger, Jamieson-Proctor, & Watson, 2006; Fitzallen & Brown, 2006; Trinidad, Newhouse, & Clarkson, 2006).

Teacher education courses and teacher educators have a key role in preparing the next generation of teachers. It is an expectation that they are leading in the development of best practice in teaching and learning and "provide a course of study that will adequately prepare their students for the classrooms of the future" (Finger et al., 2007, p. 92). Therefore, with respect to embedding of ICT into professional practice, it can be argued they should not only introduce and extend the opportunities for pre-service teachers to gain skills and experience in using ICT, but also model effective pedagogy in all facets of professional practice.

Whilst evaluation of the way in which teachers and pre-service teachers are incorporating ICT into professional practice is becoming both widespread and well researched, the same cannot be said for teacher educators. Hence, research is necessary to determine the ways in which teacher educators are incorporating ICT into teacher education practice. Research should also provide opportunities to identify the factors that affect the embedding of ICT into teacher educator professional practice and to describe and celebrate best practice. With the aim of delving into teacher educator practice, this project was

conceived as a pilot study to determine whether a profiling instrument designed for practising teachers may be useful in the tertiary teaching context.

Background

Changing Nature of ICT in Education

Although the use of new technologies in schools was originally focused on the personal computer (Lee, 2004), recent developments have seen the application of emerging ICT devices to enhance student learning opportunities. Justification for incorporating ICT into teaching and learning activities is based often on the notion that they can contribute to "improving student learning, improving student outcomes and innovative pedagogy" (Finger et al., 2007, p.5). In order for teachers to take advantage of the potential of ICT in education they need the skills to incorporate them effectively into teaching and learning programs (Roblyer, 2004).

A myriad of technologies are now available and are being adopted by teachers. These include the use of personal digital assistants (Fluck & Robertson, 2006), interactive whiteboards (Sweeney, 2006), 3D spatial technologies (Maguire, 2006), digital video recorders (Grabe & Grabe, 2004), ipods (Dogbey, 2007), and robotics (Torok, in press) to mention a few. Additionally, improved network systems and wireless technologies have provided students with access to a plethora of information and resources on the World Wide Web (Greene & O'Brien, 2002) as well as increased communication and publishing capabilities using weblogs (Huffaker, 2005). To complement these innovations there has been a rise in the availability of the number of software packages and digital resources designed specifically for the development of concepts related to content areas such as mathematics. The aim of using these digital resources is to promote higher-order thinking skills (see Meijers, 2006; Konold & Miller, 2005; The Le@rning Federation, (n.d.); Jonassesen, 2000).

Factors Influencing the Integration of ICT into Professional Practice.

Imbedding ICT into teaching practices is a complex process that is not easy, has high demands on teachers' time, and needs to be supported by professional learning (Department of Education Science and Training [DEST], 2002; McRae, Ainsworth, Groves, Rowland, & Zbar, 2001). It is, however, evident from the literature that professional learning per se does not guarantee the successful translation of ICT into practice (Cox, Preston & Cox, 1999; Williams, 1998), nor does it necessarily enhance the quality of learning outcomes for students (Fitzallen, 2004; Hennessy & Deaney, 2004; Loveless, 1995; Mouza, 2003; Phelps, Graham & Kerr, 2004). Other factors influencing the uptake of ICT include teacher beliefs, confidence and expertise (Albion, 1999; Cox et al., 1999; Jamieson-Proctor & Finger, 2006; Phelps et al., 2004) as well as timely access to appropriate equipment and infrastructure (Norris & Soloway, 2000), along with the need for leadership (Cowie & Jones, 2005).

The nature of ICT is changing rapidly and the adoption of ICT in educational programs is influencing many aspects of teacher' professional practice. Tasks involving administrative, communicative, and pedagogical procedures are often undertaken using ICT tools. Keeping abreast with new practices and initiatives is often difficult as the pace at which new technologies are being developed exceeds the rate at which teachers are able

to incorporate those technologies into educational programs (Goodrum, Hackling, & Rennie, 2001). This imposes great pressures on educators to incorporate and embrace innovations ICT tools and strategies. With the expansion in available technologies, there exists a need for a broad range of professional learning to support the use of new devices and digital resources in the classroom.

Evaluating the Integration of ICT into Professional Practice

In Australia, recent developments in evaluating ICT use have resulted in the concurrent development of three theoretical frameworks and associated measurement instruments. Newhouse, Clarkson, and Trinidad (2005) developed a framework to measure and support change in using ICT. The framework has a focus on the teacher and is based on 'teacher professional ICT attributes'. It is a three-tiered framework, describing teacher practice in terms of outcomes. Progression in each outcome is described in five stages: Inaction, Investigation, Application, Integration, and Transformation. Each outcome is also differentiated in layers in order to describe increasing detail: Layer 1 – Overall outcome, Layer 2 – Components, and Layer 3 - Elements. The framework strongly supports the notion of ICT integration as a step on the path towards curriculum transformation.

Students' application of ICT was the approach for evaluating ICT use adopted by Jamieson-Proctor, Watson and Finger (2003). This approach to measuring ICT integration was grounded in the notion that full integration is achieved when learning takes place through ICT. That is, ICT has the potential to reshape teachers' and students' knowledge. To gather information the measurement instrument, *Learning with ICTs: Measuring ICT Use in the Curriculum*, was developed after a comprehensive literature review and an extensive validation process. The results indicated that the items on the measurement instrument identified two strong factors of ICT integration. The first, 'the enhancement factor', defined ICT as a tool for the development of ICT-related skills and the enhancement of curriculum learning outcomes. The second, 'the transformation factor', defined ICT as an integral component of reform that change what students learn and how school is structured and organised.

To focus the teacher's attention on the way in which students use ICT for learning, items on the *Learning with ICTs: Measuring ICT Use in the Curriculum* started with the sentence stem *"In my classroom students use ICT to …"*. Teachers responded to the items on two separate scales to indicate their students' 'current use' and the teacher's 'preferred level of student use' of ICT. The measurement instrument was administered online and displayed individual teacher's results for each scale on a four-quadrant graph. The graphs can be saved and compared with their responses in the future. Comparison of results collected at different times may indicate changes to professional practice over time (Jamieson-Proctor, Watson, & Finger, 2003).

Similar to the Newhouse et al. (2005) framework, Fitzallen and Brown (2006) developed a framework that focused on the teacher. It recognised the role teachers play in the development, implementation, and orchestration of learning experiences for students. The key elements that impact on successful teacher implementation of professional learning were identified through an extensive literature review process and were grouped into three interconnected key element organisers:

- **Teacher knowledge** - Content and Curriculum Knowledge; Knowledge of Learners; Evaluation of Student Learning Outcomes; ICT Content Knowledge; Application of ICT in Context
- **Teacher dispositions** – Confidence, Previous Successful Experience and Enjoyment; Engagement in a Community of Learners; Engagement in Reflection
- **External factors** - Background and Professional Learning; Time and Access (Fitzallen & Brown, 2006, p. 4)

The framework identifying factors that influence the successful integration of was used to develop a teacher profiling instrument, which examines classroom practice from the teacher's perspective, taking into account teacher background, teacher knowledge, professional learning, and reflective practice. The teacher profiling instrument gathered information about the teacher's background and ten aspects of teacher practice. The sections of the profiling instrument and the key elements of successful ICT integration are organised in a matrix structure in Table 1. Validation of the profiling instrument determined that it was a reliable instrument as it elicited responses under each of the key elements, described how teachers were using ICT, identified what factors impacted on their use of ICT, allowed teachers to recognise where they needed further professional development, and provided opportunities for teachers to reflect on their success at integrating ICT (Fitzallen, 2004; Fitzallen & Brown, 2006). The profiling instrument may be administered as either a semi- structured interview protocol or written survey.

The three ways of evaluating use of ICT in education described in this section provide the opportunity to gather rich data related to professional practice. Each measurement instrument is based on strong theoretical frameworks and measure integration of ICT using different units of measure, that is, students and teachers. The selection of an evaluation method for a particular research project should be based on what is to be measured, and for what purpose. Considering this, the theoretical framework and associated teacher profiling instrument developed by Fitzallen and Brown (2006) is pertinent to this study. It explores the integration of ICT into teaching and learning programs from the teacher's perspective, elicits a holistic view of professional teaching practice, identifies factors that impact on the teacher's ability to integrate ICT successfully, and provides the opportunity to be reflective about teaching practices. The flexibility of being able to use the profiling instrument as an interview protocol was also important.

Table 1

Summary of Profile Sections and Factors Covered

			Types of Teacher Knowledge					Teacher Dispositions			External Factors	
Profile Section			Content and Curriculum Knowledge	Understand Learners' Characteristics	Evaluation of Student Learning Outcomes	ICT Skills	Application of ICT in Context	Confidence, Previous positive experience and/or Enjoyment	Engaging in Communities of Practice	Employment of Reflective Practice	Background , Professional Development	Time/Access to ICT
	Background	Specify years/grades of teaching experience, courses studied	✓			✓					✓	
1	Significant Factors for integrating ICT	Brainstorm factors influencing integration of ICT into teaching practice		✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Planning to integrate ICT into curriculum	Identify resources, people, preparation time, topics and sequence	✓	✓	✓	✓	✓		✓	✓		✓
3	Preparing to teach a unit of work using ICT	Identify understanding goals, time, teaching & assessment methods, and lessons including how ICT integrated	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	Teaching Practices	Outline how ICT is currently employed in classroom practice	✓	✓	✓	✓	✓	✓	✓	✓		✓
5	Introducing a new computer application	Outline methods for introducing a new IT application to a class	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	Advantages of using ICT in teaching	Indicate on the Likert scale where ICT is seen as advantageous/Teacher comment		✓	✓		✓	✓	✓	✓		
7	Confidence	Indicate on the Likert scale confidence level in: using, integrating, and planning use of ICT/Teacher Comment	✓	✓	✓	✓	✓		✓	✓		
8	Objectives for using ICT with students	Indicate on the Likert scale the level of application for each of the objectives for using ICT in teaching and learning/Teacher Comment			✓	✓	✓		✓			
9	Teacher Skills	Outline teacher skills in ICT applications/content				✓		✓				
10	Professional Learning	Outline programs taken previously and identify further learning needs	✓						✓	✓	✓	✓

Methodology

Research Aims

The pilot study was designed to investigate ways in which teacher educators have integrated ICT into their teaching and learning practice. It explored the factors that influenced the extent they have done this as well as the attitudes and perceptions of the teacher educators towards the way they integrate ICT. A validated profiling instrument (Fitzallen, 2004) designed for use with practicing teachers was trialed as a model for profiling quality teaching in the area of integrating ICT in the higher education context. The theoretical framework, on which the profiling instrument was based, was used to analyse the participants' responses.

Context of the Pilot Study

The setting of the pilot study is a Faculty of Education at an Australian university. The participants in the study are teacher educators lecturing in a two year post-graduate teaching degree (BTeach).

Design of the Study

This research project utilised the case study as a strategy of inquiry. Considering Stake's (1995) three categories of case studies – intrinsic, instrumental and collective - this particular study is an instrumental case study. The instrumental case study allows the examination of a case to extend understanding of phenomena, looking for commonalities or differences. The phenomenon in this case, is the way in which teacher educators integrate ICT into professional practice.

Method

The research project consisted of a series of e-mail interviews with teacher educators. It was conducted as an in-conversation interview with all lecturers concurrently. Individual responses were asynchronous allowing the participants to reply in their own time. Contributions made by individual participants were forwarded to all the participants and as the conversation progressed the participants had a full record of all previous responses, including their own. Initially, it was necessary to pose formal questions from the teacher profiling instrument (Fitzallen, 2004) to draw the participants into the conversation but as the interview progressed, the conversation was guided by the participants and new questions were introduced only when the thread of a question had been exhausted.

The e-mail mode of collecting data was chosen as e-mail has become an integral part of teacher educator professional practice. It is used extensively as a just-in-time communication tool and is an effective way of communicating with colleagues and students. The researchers wanted the study to be a part of professional practice and e-mail communication allowed the participants to remain grounded in their day-to-day responsibilities whilst still contributing to the research project. E-mail data collection has the additional convenience of producing transcribed interview data as part of the interview process. This enabled the researchers to conduct data analysis without having the tedious job of transcribing interview data.

E-mail interviews have had limited use in education research but have proven to be an effective way of collecting qualitative data. Participants in research projects using e-mail communication have been noted for providing considered responses and taking the opportunity to reflect on and expand their initial responses to questions through the iterative interview process (Gordon, Petocz, & Reid, 2007). Kamler & Thompson (2001) describe the use of e-mail conversations in research as a collaborative process, which becomes integral to the research as it can make a major contribution to the writing-up of the research.

Pilot Study Participants

The participants in the research project were four teacher educators who met two selection criteria to be involved in the investigation. First they were lecturers in the BTeach program who did not lecture in ICT Curriculum and Method units or other multimedia units. Second they demonstrated a willingness to participate in the study. To provide a balance of teaching contexts, two participants were lecturers in Professional Studies, while the other two participants were lecturers of Curriculum and Method units associated with their area of expertise. Participants were recruited by personal invitation, with all agreeing to be involved in the research project without hesitation. All the participants were female and have been assigned pseudonyms for reporting purposes.

Instrument

The teacher profiling instrument (Fitzallen, 2004) developed using the theoretical framework by Fitzallen and Brown (2006) summarised in Table 1 was administered as an interview protocol. Profiling instruments have been used successfully in other studies to evaluate teacher achievement and teacher needs with respect to implementation of elements of curriculum (Fitzallen, 2004; Watson, 1998, 2001), and to assess success of professional learning programs (Watson, Beswick, Caney & Skalicky, 2005). They can be designed as either a survey or an interview protocol for semi-structured interviews. The theoretical basis for these instruments focused on important elements that influence teachers' classroom practice and for the research project reported on herein, centre on key elements that influence the uptake of ICT into professional practice.

Data Analysis

The data analysis was undertaken in two phases. The first analysis was performed by organising the lecturers' responses under the matrix presented in Table 1. This was to demonstrate whether the profiling instrument was capable of eliciting responses under each of the key elements. Once clustered under the key element organisers, a further analysis of responses was performed using cluster analysis (Miles & Huberman, 1994) to determine emerging themes. Qualitative exploration of the responses scoped evidence of successful implementation of ICT teaching and learning strategies and provided an indication of further professional learning needs.

Results

The preliminary analysis of the data categorised responses under each of the key elements of ICT integration into professional practice (Table 2). The results presented

indicate that the teacher profiling instrument elicited responses for each of the key elements as intended. Analysis of individual responses under each of the key elements was then performed to provide a more descriptive picture of the data. In the next section a summary of the lecturers experience and background is presented followed by the results from the e-mail interview presented under each of the three key element organisers – Types of Teacher Knowledge, Teacher Dispositions, and External Factors. Excerpts from the e-mail transcripts will be used to illustrate how the outcomes of research study were evidenced.

Table 2
Teacher responses to key elements of ICT integration

	Types of Teacher Knowledge					Teacher Dispositions			External Factors	
Teachers	Content and Curriculum Knowledge	Understand Learners' Characteristics	Evaluation of Student Learning Outcomes	ICT skills	Application of ICT in context	Confidence Previous Experience/ Enjoyment	Engaging in Communities of Practice	Employment of Reflective Practice	Background/Pro f Development	Time/Access to ICT
Amrita	✓	✓		✓	✓	✓	✓	✓	✓	
Julia	✓		✓	✓	✓	✓	✓	✓	✓	
Larree	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heather	✓			✓	✓	✓	✓	✓	✓	✓

Teaching Background and Experience

Amrita, Heather, Julia, and Larree collectively have a wealth of teaching experience. At the time of the study, one of the participants was lecturing in Professional Studies only, another was lecturing in Professional Studies and Curriculum and Method – English/Literacy. Whilst the other two lecturers' work in the faculty focused on Curriculum and Method – Science, and Curriculum and Method – Mathematics. Amrita was the most experienced lecturer having lectured at the university level for 22 years. Julia had been lecturing for nine years and was the most experienced classroom teacher, with eight years experience at the high school level. Larree and Heather were both novices with three years university lecturing experience. Larree, the least experienced of the group, was the only participant to have studied the application of ICT in education as part of a formal qualification. During her undergraduate degree she studied computing science as the minor strand of a science degree and since graduating as a teacher, completed a Graduate Certificate in Teaching and Learning with ICT.

Types of Teacher Knowledge

When the participants in the study were asked how they used ICT to prepare for and deliver classes, all the lecturers listed numerous applications of ICT. They all noted using ICT to create resources and manage their teaching practice. This included using word processing software, spreadsheets, and multi-media presentation tools. As an example,

Julia described downloading unit outline templates available on the faculty web site and altering them for her courses. She went on to note that an important feature was the ability to hot link websites to the electronic version. This made it easy to update information and "it is pretty easy to check on them to see if they are relevant and should be included in the most recent outline". Additional to this all lecturers used the internet to collect resources and information. Amrita and Julia both remarked that using the internet assisted them to learn new information and support their content knowledge.

All the lecturers felt it was important to provide opportunities for their preservice teachers to develop ICT skills and resources, however, each supported this in different ways. Julia required her students to create Webquests (www.webquests.org) and develop a video to deliver content. In justifying why the tasks were important she stated "The video project forces students to condense content knowledge and focus on the important concepts" and "the need to be an e-designer reinforces pedagogical content knowledge". Larree felt it was important for preservice teachers to develop an understanding of the way in which ICT can impact on student learning. Her emphasis was on preservice teachers designing tasks that utilised online digital resources. This included assisting the preservice teachers to evaluate critically those resources. She also focused on the way in which graphing software supported students' development of statistical thinking skills. Amrita valued the power of visual imagery to send a message and focused on tasks that centred on connecting powerful images with relevant contexts. Heather considered it important to provide opportunities for preservice teachers to gain skills in the delivery of information and designed tasks that made use of MSPowerPoint presentations.

Teacher Dispositions

All the lecturers were positive about their use of ICT and felt it played a significant role in supporting their professional practice. Of particular note was the way in which they used e-mail to communicate with colleagues and students. Amrita described how she used the features of e-mail to track and record tasks and Heather used the message facility within e-mail to provide reminders for tasks as well as meetings. She remarked "I use it more than sticky notes". Julia mentioned how working collaboratively was facilitated by using e-mail. "Electronic unit outlines are also really good when you have different staff contributing – easy to update and send back and forth [by e-mail]".

In relation to developing communities of practice, Julia was the most active. She explained how she subscribed to a forum set up by the previous year's graduate teachers. She remarked "it is really great that they are still supporting one another even those who are on different continents. They are still sending lesson plans and activities and sending out SOS[s] for lesson ideas." Larree noted that she subscribed to two online forums but said she did not contribute actively to the forums and used them only as a "way of keeping in touch with current issues". Heather provided details about using a web-based learning management system (LMS) to post resources for preservice teachers to access. She did not, however, utilise the communication features such as the forum and bulletin board to communicate with students, neither did she set tasks that may have promoted communication with each other.

External Factors

The key elements included in the key element organiser External Factors are*: Background and Professional Learning,* and *Time and Access*. In relation to professional learning undertaken all four lecturers had undertaken professional learning in the use of the learning management system (LMS), Vista. At the time of the study, Heather was the only lecturer to be using a LMS in the delivery and support of her teaching and learning program. She used the LMS extensively to post resources and information for her students to access but had not utilised the communication structures within the LMS to stimulate conversations with and between her pre-service teachers. Amrita had used a LMS previously, noting: "it [LMS] involves a completely different mind-set with course and materials design, and communication/support structures for students. It was a steep learning curve for me navigating my way around Vista". Larree also noted that "forums [in a LMS] would work best if they are a meaningful part of a course. This would require formal structures to be put in place to guide and stimulate discussions". She went on to discuss the problems she had encountered getting pre-service teachers to post responses to lecturers and fellow students. "I came to think that forums were not really effective as only a few students contributed (usually the same ones all the time)". Amrita had a similar experience with forums: "I remember asking my students at winter school if they wanted much communication via Vista and they almost all said they didn't – but I think it was a time factor rather than a vote for the educational value". Although, Julia described having positive experiences with LMS forums she also added a word of caution: "I don't know that it really added that much. I found it quite difficult to remember to check it and then having to reply on a regular basis was quite time consuming, particularly as it unfolded that some students needed to be contacted confidentially."

Heather noted that she had recently undertaken a professional development session on using *The Learning Federation* (n.d.) learning objects and described how she had been able to use the learning objects in her classes.

> I have used the learning objects quite a bit!!! I incorporated them into my lecture on Multiliteracies a week ago and gave the example of the Chocolate Factory to the class. [I] included a sample unit from the PETA website and [demonstrated] how a teacher incorporated this learning object into the unit.

Larree was the only other lecturer to mention additional professional learning undertaken. Her professional learning included: Developing Webquests, Database Management, Online Resource Development, and Project-Based Learning with ICT. Julia did, however, express a desire to develop a better understanding of how ICT can promote higher-order thinking. Although not directly related to professional learning needs but reflecting the idea that there was scope for development within her teaching practice, Amrita noted "This has given me many ideas for how I could use ICT more fully in my own professional practice".

The lecturers identified that they needed limited assistance learning new applications and would like to have more time to develop resources, so that they could implement new practices into their teaching. Heather also commented that whilst she found a LMS useful she found it very time consuming when setting up a course but indicated that the management of resources for her students was easier thereafter. Larree made a comment that reflected her frustration that time constraints restricted what she could cover in her courses. "Of course time is an issue. None of us has enough time to cover the content we would like to include".

Access was an issue that received very little attention from the lecturers. The lecturers constantly referred to the way they used ICT and it was obvious that access to resources and software was not an issue when it came to the way in which they used ICT in their professional practice. Larree did, however, discuss access in terms of the limitations caused by the level of pre-service teachers' ICT skills.

Limitations

The limitations of the study are those of any educational research that utilises case study as a method of investigation. The small sample size restricts the inferences that can be drawn from the study and the results are a snapshot of the teaching practice of the participants and cannot be considered indicative of all lecturers.

Discussion and Implications

The aims of the research study, to explore the factors that influence teacher educators in the way they integrate ICT into professional practice, and trial a profiling instrument (Fitzallen, 2004) designed for use with practicing teachers as a model for profiling quality teaching in the area of ICT integration in the higher education context, were met successfully in the case study. In relation to the first aim, during the case study four lecturers from a Faculty of Education provided descriptive information about into their professional practice. The information was used to describe the way in which they have integrated ICT into their work as teachers. It was clear that the lecturers were confident, competent users of ICT, and had had many positive experiences using ICT. They used it extensively to support their practice by creating resources, accessing information, communicating with students and colleagues, and managing administrative procedures. Although to a lesser extent, they also used it within their classes to assist preservice teachers to develop an understanding of concepts. The lectures did not, however, exploit fully the communication capabilities of the learning management system available to all the lecturers.

Considering the availability of innovative ICT devices and digital resources it is disappointing the lecturers had not incorporated more of those in teaching and learning activities for preservice teachers. It is, however, understandable as the lecturers had not had many professional learning opportunities to develop their practice using resources such as ipods, weblogs, and interactive whiteboards, as examples. It was evident that when professional learning had been undertaken, the lecturers where able to incorporate effectively the technologies into their work. It became clear during the study that the lecturers were providing adequate learning opportunities for preservice teachers to develop ICT skills and pedagogical content knowledge related to using ICT in classrooms, and to manage teaching practices. However, most of their initiatives were of their own volition and a more systemic and supportive approach from the faculty would facilitate further the use of new technologies. Taking into account, the expectations for graduating teachers to be able to use new technologies to develop understanding of concepts for students (Finger et al., 2007), it is suggested a faculty-wide approach that facilitated strategically the embedding of ICT as an integral part of professional learning would be beneficial. This would assist in promoting the use of ICT to be part of a culture of learning rather than a supporter of practice, as demonstrated in this study.

In relation to the aim of trialling a profiling instrument used previously to evaluate practicing teachers application of ICT in the school context, the case study demonstrated that the profiling instrument was an appropriate method of collecting information about tertiary educators' practice. As Watson (2001, p. 328) noted: "The semi-structured interview format offers the flexibility that suits a wide range of teachers' reflective styles." Like the teachers in Watson's study the lecturers provided rich, descriptive responses detailing their professional practice. The theoretical framework used to analyse the data allowed for the documentation of factors that influence the embedding of ICT into professional practice.

It could be considered that e-mail provides an artificial platform for collecting data. This factor was considered when conceptualising the research project. As the study was a pilot study the concession was made to use the e-mail for collecting data, as all participants had easy access to this particular mode of communication. The results from the research demonstrate that email is an effective mode of data collection. The asynchronous nature of e-mail allowed the participants to take time thinking about their responses and it was evident through the extended responses that the activity provided an opportunity to participate actively in reflective practice. Throughout the transcripts many references were made to the way in which contributing to the e-mail conversation made the lecturers think about their teaching practice. Amrita expressed excitedly "I'm actually really enjoying this short reflection as it's making me stop and think about how much I use ICT" and Larree stated:

> As ICT is the focus of my research and I am trying constantly to build it into my teaching practice, contributing to these emails has allowed me to share my views, and hopefully my contributions have stimulated some ideas about how we may start to use ICT more in our courses. Sharing stories is always a great way to show what is possible.

This study highlights the benefits of researching teacher practice. Close scrutiny may be confronting for some but in identifying what teachers do, the possibilities for future development become obvious by active participation in reflective practice. Teachers, schools, and systems should be encouraged to explore the way in which teachers use ICT in their classrooms and how the ICT support their practice. This will assist them to identify teaching exemplars as well as identify professional development needs. Although, the pace at which new technologies are developed exceeds teachers' ability to employ them in meaningful and pedagogical appropriate ways in the classroom, ongoing evaluation is paramount to ensure ICT teaching practices progress.

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