

# Graduating Teachers' Reflections about Teaching with Information and Communication Technologies

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**Abstract:** Teachers' visions for and beliefs about working with Information and Communication Technologies (ICTs) are an important influence on the successful application of ICTs in education. Because beliefs are closely associated with experience, teachers' stories are an important area of study. This paper will report initial results from a study which is exploring graduating teachers' reflections about ICTs as a means of understanding how teacher preparation programs may better prepare teachers for working with ICTs.

Using data from a study of 4000 teachers in 1100 schools across the U.S., Becker (2000) concluded that computers have not transformed the teaching practices of a majority of teachers but that, where teachers have the necessary computing skills, some freedom in the curriculum, convenient access to equipment, and personal philosophical beliefs supporting constructivist pedagogy, computers can be valuable instructional tools. A recent paper (Albion & Ertmer, 2002) has argued that, of the factors identified by Becker, access to equipment, development of relevant skills and freedom to innovate in the curriculum are being or can be addressed by policy makers and administrators but that teachers' personal philosophical beliefs are a critical influence which deserves more thorough study.

The development of beliefs is associated with personal experience (Nespor, 1987) and teachers' personal stories have been found to influence their identities and professional practice (Drake, Spillane, & Hufferd-Ackles, 2001). Hence, investigation of teachers' recollections of experiences relevant to the use of Information and Communication Technologies (ICTs) in teaching should increase our understanding of how relevant beliefs are related to professional practice and suggest ways in which teachers might be supported in developing beliefs that will enhance their capability for making appropriate decisions about the integration of ICTs in their teaching.

The study described in this paper seeks to build understanding of graduating teachers' visions for, and beliefs about, teaching with ICTs by exploring the following questions:

- 1 What experiences and visions do student teachers have for integration of ICTs into teaching and learning?
- 2 How do those experiences and visions relate to their ideas about the nature of teaching and learning?

## Method

Participants in the study were students in the final year of their Bachelor of Education program, who had completed a practice teaching experience over six weeks during the previous semester. Students completing questionnaires for a related study were informed about the interviews and invited to volunteer their names if they were interested in participating. Twelve students agreed to be contacted to arrange mutually convenient times for interview. Satisfactory times were found for interviews with eight participants. Interviews with six students, three males and three females, have been used for this paper. Participants are identified by pseudonyms: Allan, Beverley, Charles, Dianne, Eric and Frances.

The semi-structured interviews, each of around 20 minutes duration, were conducted in the author's office using a prepared list of questions as a guide. Additional questions and prompts were used to extend or clarify participants' comments. Each interview was recorded and transcribed for later analysis.

This paper has been prepared using material from a preliminary analysis of the transcripts in which major themes were identified. The questions that prompted the responses used in this study asked about important ideas about teaching and learning, example of good teaching, examples of good use of ICTs in teaching and learning, personal experience of teaching with ICTs and how an ideal lesson using ICTs might look. More complete analysis will follow at a later date.

## Results

When asked what they thought were the most important ideas about teaching and learning, Allan, Charles and Frances gave responses acknowledging the need to understand each learner individually. Allan focused on learning and the need to accommodate differences in style:

*when I say teach the students, it doesn't mean we're up there doing chalk and talk and just teaching. ... it's more so them learning, and we're there to guide them more than anything I think ... you've just got to be flexible with your teaching, because every student is different, and there is going to be a different learning style for each student, and each student's going to learn things differently*

For Charles it was important to find the key so that students would want to go beyond surface learning:

*it's finding an avenue for the kids you've got, just trying to find out what makes them click ... making them want to learn. If you tell them they've got to learn, well they might be able to reproduce stuff on paper but learning, I don't know if they'll actually carry it through.*

Frances managed to neatly capture key ideas related to the concept of pedagogical content knowledge:

*Understanding the students, understanding the content, so that you can teach it to your students, knowing how the students are going to learn it.*

Responses from the other participants were diverse. Eric was concerned about making meaning but his mention of “control” suggested there might be limits on how students create their own meanings:

*being able to impart meaning and to control ... using constructivist techniques particularly, guided learning, guided discovery ... real life experiences as well ... to further enforce meaning to the child.*

Beverley was adamant about the need for careful preparation, though it was less clear exactly should be prepared:

*Being prepared! The hugest thing that I found is that if you aren't prepared, you're not going to have a lesson ... making sure that you've got all your resources ready, that you're accounting for everything*

Dianne viewed learning from a different perspective, noting the need for the teacher to continue learning:

*Oh, it sounds very, very self-centered – enjoying it! And being motivated and continuously, even though you are a teacher, you're still very much learning.*

The examples of good teaching cited by Charles, Dianne and Frances highlighted the benefits of teachers knowing children in the context of community and family. Charles observed that knowing students well had allowed his cooperating teacher to know which students could be pushed to work harder and which had personal circumstances that needed more careful encouragement. Frances had observed her cooperating teacher developing curriculum specifically to meet the needs of her class, which she knew very well. Dianne had been so impressed by the preparedness of her cooperating teacher to set aside standard curriculum and deal with the personal needs of students that Dianne was considering a change in career direction from classroom teacher to support teacher.

Allan spoke about the enthusiasm of teachers energizing students so that they would “want to learn”. Beverley described a cooperating teacher who she thought had managed to achieve an appropriate balance of “authority and fun and friendship” which allowed him to share a joke with the class and quickly get them back to work. Eric admired the capacity of “an older gentleman” teacher to meld together new and old approaches to teaching literacy.

Three of the six participants were able to describe good examples of teachers integrating ICTs in their classes. Allan said that he had seen Year 3 children in one school able to do things that he thought Year 7 children could not do at other schools. He commented that,

*the facilities are there and they get used. The integration of the computers is such an important aspect in that classroom, and a lot of the students do all their projects on it,*

and noted that the teacher had arranged a timetable with groups of students to manage access to the computers. Organization was also a feature of Beverley's example. She described how the teacher

*had this pocket folio thing set up on the wall where the kids had their own little book and their own disk in it, and when they'd want to use the computer they'd come and take it and go use the computer and put it back. And he made sure that there were activities for them to do.*

Eric described an integrated project where the class

*was making a brochure depicting Toowoomba and the surrounding areas, and the children were advertising executives ... developing this word-based document to be printed out in brochure form*

He noted that, on the few occasions where a student did not quite understand what to do, peer tutoring proved to be an effective strategy.

The other three participants were not able to describe what they considered to be good examples of teachers integrating ICTs. Charles recalled that he had observed extracurricular activities catering to interested students but little ICT activity in classrooms. In fact, he had observed a teacher who was keen to engage in an integrated ICT activity being actively discouraged by another teacher with whom she was team-teaching and who preferred more traditional approaches. Dianne had been in one school where there were maintenance issues:

*... we had two computers in the room, and when you said 'do you use these?' 'No, we don't use those, we're still waiting for someone to come and fix it, and we've been waiting 8 months'.*

In another case where there was a computer laboratory available she noted that the older students went there sometimes for typing but no more extensive use of ICTs. Frances had similarly frustrating experiences:

*the teacher's idea of using computers was, "Here's 10 minutes, go and type up what you've written". The kids couldn't type, so they got one line done in ten minutes, and there were 4 computers for 26 students. No printer. So once it was typed, what were they going to do; it was ridiculous.*

She also experienced a computer laboratory where

*there was a teacher who did specific activities on the computer, but then that wasn't integrated with anything that they were doing in the classroom.*

When asked to describe personal experiences of teaching with ICTs, Charles noted the difficulty of field experience where it was necessary to fit into the existing class structures. Nevertheless, he had taught some lessons with an ICT focus. Despite not having observed good examples of ICT integration, both Dianne and Frances recounted teaching units of work that integrated ICTs. Dianne taught a sequence related to the armed forces

*so we e-mailed East Timor and we wrote a letter to the news paper, which was really hard too, because you've got people saying, you know, that children need to do the keyboard first. And I'm thinking, my goodness, if we wait for that the year 6/7s will never get it done ... but they've been motivated to e-mail.*

Frances taught a sequence about ancient civilizations, specifically the Incas:

*we went to the computers, ... and we explored this Inca site, ... these were Grades 4-7 were doing this, and it was very in depth. ... they were reading it, they were looking at pictures of this site, they toured the Inca trail, ... That was marvelous, they got so much out of that, ... it was like they were there.*

Allan enthused about his experiences with WebQuests and PowerPoint presentations. Eric recounted the use of the Internet for student research about Australian animals.

Participants were asked to describe how an ideal lesson using ICTs might look. Allan wanted to ensure that students learned something that they could use and about which they might feel some excitement so that:

*in the car on the way home they can say "Mum, this is what I learned about computers today, I'm going to go home and show you,"*

Eric referred to the brochure project. Frances envisaged students exploring on the Internet, seeking information and

*bringing it back and utilizing it; giving it some real purpose, apart from just on the computer.*

Beverley, Charles and Dianne described scenarios in which students would work in small groups on various tasks some of which would involve computers.

## **Discussion**

Participants' experiences of teaching and learning with ICTs were varied. Only three (Allan, Beverley and Eric) were able to recall seeing what they thought were good examples of teachers working with ICTs. Two (Dianne and Frances) described examples of uses they thought were inappropriate. Dianne and Charles described problems they had encountered with equipment and with a teacher resisting change. If one of the functions of field experience is to expose pre-service teachers to appropriate models of professional practice, then, if the experiences recounted by the

participants are at all typical, it seems doubtful that this function of field experience is being achieved in the case of ICT integration. There may be a continuing need for alternatives, such as multimedia cases representing good practice.

Despite some discouraging experiences with observing the use of ICTs by teachers, all participants were able to describe at least one instance when they had incorporated ICTs into a lesson. In particular, Dianne and Frances seem to have been able to rise above the very limiting uses of ICTs they had observed and create lessons that effectively integrated ICTs. The descriptions of ideal lessons incorporating ICTs were general rather than specific but all participants were able to envisage lessons that integrated ICTs with the curriculum.

These graduating students appear to hold visions for integrated use of ICTs rather than treating ICTs as another subject area. They have experience of working with ICTs in classrooms but they are unlikely to have had many opportunities to observe exemplary use by other teachers. In some cases their commitment to their vision has already been tested through teaching with ICTs in less than encouraging circumstances. It seems likely that, in some cases, they will provide exemplars of integrating ICTs in the schools where they commence their teaching careers.

Finally, how do these visions and experiences relate to participants' ideas about the nature of teaching and learning?

In the case of Allan, the centrality of student learning provides a consistent thread through his interview. His example of good teaching describes a teacher inducing students to want to learn and his ideal lesson with ICTs would enthuse students to want to share what they had learned with parents. ICTs provide one means to excite students about learning and to flexibly address their different learning needs and styles. For Frances, the connecting thread related to matching learning experiences to content and learners. Her exemplary teacher was one who knew her students well and her ICT lessons would have students exploring the Internet for information that would be used for some real purpose applied to learners' lives.

The connecting threads are not so clear in the remaining interviews but neither are any major inconsistencies apparent. Beverley initially focused on preparation but appeared to struggle with the balance between organization and spontaneity in the classroom. Her lessons with ICTs involve interactive learning for teacher and students. In describing an ideal lesson with ICTs, Charles echoed his original thoughts about providing a variety of activities to suit different learners. Dianne's first thoughts about motivation for her as teacher are echoed in her comments about motivation in describing her actual and ideal lessons with ICTs. Eric began by talking about making meaning and integrating the curriculum. His ideal lesson with ICTs referred to the integrated lesson he had observed in which students developed a brochure to present information about the local area.

It seems fair to conclude that these graduating teachers do not view ICTs as novelties that might be used to entertain or reward students. Neither do they view them solely as a new subject to be taught although necessarily there will an element of that. Rather they appear to view ICTs as tools that can be applied in ways that are consistent with their most important ideas about teaching and learning. Moreover, in some cases at least, they have already demonstrated willingness to surmount significant challenges to use ICTs in what they consider to be appropriate ways. Their arrival in schools will bring new hope for the effective integration of ICTs in teaching and learning.

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## **References**

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