Adaptation and avoidance:

Observations of teachers’ reactions to information and communications technology in the classroom

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This paper reports and reflects upon the observed behaviours of teachers during the conduct of a large-scale telecommunications project. While teacher behaviours were not the original focus of the project, they quickly became an exogenous force on the environment which could not be ignored. This paper is drawn from field notes which revealed a pattern of success and frustration, of adaptation and avoidance as those concerned dealt with the subjective and logistical changes in their lives and in their teaching practice. The story told here is about the complexity of change, and the struggles faced by individuals in coming to terms personally and professionally with externally-imposed change. This paper also is concerned with the “head and heart” of teaching, rather than the operational skills usually implied by technology adoption. The conclusions drawn concern the nature of professional development required to facilitate the adoption of information and communications technologies in the classroom.

Adaptation and Avoidance: Observations of Teachers’ Reactions to Information and Communications Technology in the Classroom

In Australia, as elsewhere in the world, teachers are being impelled to become computer literate and to demonstrate their ability and willingness to use information and communications technologies (ICT) in their classrooms. Power-coercive strategies are being brought into play by employer groups which include the threatened withdrawal of teacher registration and consequently of employment or the withholding of enterprise bargaining agreements (ACCE, 2000). Beginning teachers will not be employed unless specified ICT competencies can be demonstrated (DEET, 1996, pp. 9-13). The ramifications have not been fully articulated in each state, but it seems likely that the ‘stick’ rather than the ‘carrot’ will be proffered. The new mood is
unequivocal. Politicians argue that the dollar investment is now so great that computers in schools must be used effectively to justify their ongoing expense, “a return for our education dollar” (Quinn, 1997, p. 1). The pedagogical demand for new collaborative, more relevant models of teaching is growing. The sociological demand for contemporary relevance and preparation for the future is constant. Education needs to be relevant to its society and we are deemed to be living in an Information Age (Education Queensland, 2000).

A new challenge facing individual teachers will be how they meet externally-imposed requirements, and how they respond to the new and conflicting discourses of their work. Day and Roberts-Holmes (1998) documented the ‘stories of change’ told by a group of teachers in the United Kingdom as they came to terms with the National Curriculum and external changes to school management and organisation. The authors reported on the adaptations teachers made “to accommodate the conflicting discourses within which they find themselves” (p. 30). They suggested that it is imperative that “those who are to survive successfully must engage in an increased rate of personal adaptation and professional development - the steep learning curve or accelerated uncomfortable learning often associated with change” (pp. 28-29). This paper speaks to such personal adaptation and its counter emotive behaviour, that is, avoidance, in the context of information and communications technologies in the classroom. It looks to the “head and heart, the personal and professional” which Day and Roberts-Holmes (1998) suggested is integral to teacher change.

INTRODUCTION TO THE PROJECT

Recently, we worked in a large-scale telecommunications project with eighteen teaching professionals (8 teachers, 3 librarians, 3 computer co-ordinators, 4 school administrators) within and across four metropolitan primary schools which hitherto had not had an Internet connection. The project provided a computer, modem, ISP account, technical and curricular support for each of the participating schools. The project was based on the notion that by going into classrooms, establishing a “connected” computer and working with teachers and children on specific ICT projects, teachers might see the value of using computers in the classroom and that via telecommunications they could share success stories with each other and other primary teachers. Underpinning the project (and consonant with stated systemic policy) was the belief that:

...[children] can best understand the role and value of technology in their own learning through experience of it in a varied curriculum context. ... the [Primary Computer] program will emphasise information technology as a personal learning tool requiring new skills, offering new horizons of information and knowledge, and offering the power to greatly enhance personal productivity.

(Division of Communication and Information Systems, 1990, p. 4)

The personal impact (of the technology) on the teachers was not the stated focus of the project, but became such a tangible force and affective variable in the conduct of the project, that it could not be ignored. This paper aims to record the respondent behaviours of teachers during the conduct of the project and to categorise them in terms of basic psychological reactions. Naturalistic observations and diary entries of conversations give a snapshot of demonstrated teacher behaviours and how they are revelatory of their attitudes to information and communications technologies, and, more significantly, about teaching and learning itself. The observed individuals had established classrooms which the incursion of the project did a great deal to unsettle. Their behaviours generally belonged to the culture of refusal described by Hodas (1997) in which:

any practice ( and a technology is, after all, a set of practices glued together by values) that threatens to disrupt this existing structure [here meaning the school or the classroom] will meet tremendous resistance at both adoption and implementation stages.

In a classroom, it is quite possible to let the world pass you by. Teachers are not complicit in this - their day is subsumed by the numbers of students (including those now mainstreamed through inclusive schooling practices), a crowded curriculum (made fuller by the role of the school as a social band-aid: fixing road safety, public littering, sexual harassment, human relationships, drug and alcohol education) and the politico-sociological pressure to go 'back to basics' (fuelled by almost constant media barages on the fall of literacy and numeracy standards). Letting the world go by is a survival strategy - a mechanism to deal with daily pressures.

Teachers, in practice and by definition, work in insular environments. They have prescribed responsibilities confined in one geographical space, usually a room. Professional dialogue in a school becomes restricted to minutiae - daily routines, logistical issues. This scenario and its concomitant effects may be described as follows:

Teachers are currently isolated from their peers and from learning opportunities because they spend most of their time working alone in classrooms. The isolation of the teacher becomes reflected in a view of learning as a process which takes place in the minds of students working quietly at their desks.

(Riel, 1993, p. 222)

The teachers in this study all operated within such an isolation zone. They were all “good” teachers, experienced and capable in classroom management but limited in the use of information and communications technologies. The technology – here in the form of asynchronous telecommunications (email) - stood to shatter the operations of their classrooms, and more significantly, their sense of self-esteem and self-actualisation as effective classroom teachers. Most had not used technology at all until government initiatives (particularly the Primary Computer Program, 1993-1997) had placed two or three computers in upper-primary classrooms and pressure was imposed to make use of this provision.
We were critically aware that the participation of the teachers in the project was not something that they had initiated themselves nor were necessarily included in the agreement to participate. In two schools (n=4), the teachers were told of their participation by school administration and/or computer co-ordinator just prior to its commencement. This added to the threat posed by the project, and our presence in the schools. The project daily became more about the “head and heart” integral to teacher change (Day & Roberts-Holmes, 1998) and less about teaching strategies or student outcomes.

**TEACHER REACTIONS**

There have been a number of studies which have directly or indirectly considered teacher adoption of information and communications technologies in the classroom (Bigum & Green, 1993; Dwyer, 1995; Russell, 1995) or more globally with change and innovation itself (Hall & Hord, 1987). From these studies, a common pattern emerges whereby an individual moves from an entry level or awareness stage, through to a personal construction and control referred to as renewal (Hall & Hord, 1987), invention (Dwyer, 1995), or as critical (Bigum & Green, 1993) where operational skills and understandings are put to “creative application to new contexts” (Russell, 1995). This process, although described in different terms, could be likened to the growth of a nautilus shell – beginning as enclosed (egocentric) and then building expansively to create a new entity (here someone undertaking a leadership role in either local or online professional environments).

In the observations described in this paper, we identified only one individual (Teacher A) who made this transformation. We also identified one individual (Teacher Z) who refused to begin the process. The following discussion speaks of observed teacher reactions in terms of adaptation or avoidance, with these terms taking their meaning from psychology as being (respectively) direct-coping and defensive-coping.

**ADAPTATION**

There was limited demonstration of adaptation in the teachers observed (n=8). Only three moved from an operational or entry level to a more active one where the telecommunications itself gained a purpose as a technology in its own right. They started (and have continued) to use email in their daily communications with each other and with the Project Officer replacing initial communication by phone or fax. Using the medium to meet personal information and communication needs was critical to its acceptance and served as a useful model to their peers.

One of these three (as previously noted) has gone on to be a truly adapted teacher, in that her behaviours can be identified from the research as meeting the descriptors of the ‘higher’ or more critical levels of engagement. She (Teacher A) has initiated a reiteration of the project with another school undertaking sole management and responsibility. Her classroom has, through personal contacts, established regular email contact with an Australian scientist in Antarctica. Her use of telecommunications in the classroom is now an integral part of her teaching methodology and she is staunch in its defence as a pedagogical and motivational tool for children. She has begun to see the writing of an email message as representing a new language genre for children. It is to become part of her repertoire of language arts to be developed and assessed.

Teacher A overcame a lack of technical expertise and hands-on experience through determination and perseverance. Her sense of personal achievement was tangible. In the first email she sent to the Project Officer, she wrote:

> I’ve found the back-door to the computer ... I am genuinely impressed. Technophobes of the world unite! I was pleased that I was sitting at the machine when the message arrived.

Adapted individuals identify problems and pose sensible solutions to overcome them. Teacher A attended computer workshops and conferences to expand her understandings and experiences. She commented that she had begun to know ‘what she did not know’. We are all aware of the rapid technological changes around us, but as Richards (1996, p. 8) suggested, we often “feel relatively powerless to prevent such change and insufficiently informed to articulate such fears.” It is a marked sign of adaptation that questions can be formulated and that some personal empowerment does take place. Teacher A is at one end of the adaptation and avoidance continuum.

**AVOIDANCE**

The traditional manifestations of psychological avoidance were noted in the majority of teachers’ comments and actions throughout the project and are here illustrated by verbatim statements and observed actions. Defensive mechanisms adopted were (a) intellectualisation, (b) rationalisation, (c) denial, and (d) projection.

In the first instance it was evident that some teachers refused or were reluctant to become computer literate at all. Revealing an intellectualisation of the problem, one computer co-ordinator (n=3) proffered reasons that centred around “the mystique of computers.” He argued that “high technology is so difficult”, most people [here meaning teachers] demurred to a “high priest who mediates the knowledge to the pilgrims” [here meaning himself]. One teacher spoke of “maze confusion”, elaborating that “there is so much to comprehend, too much to know, too many questions to have answers.” This is in stark contrast to the adapters who had begun to ask questions in order to construct personal meaning, rather than being overwhelmed by “what they do not know.” The avoiding individuals refused to take ownership or personal control, waiting for an unnamed other to take leadership, to ‘teach’ them what to do.

It is important to offer these responses as an argument against the model of professional development in ICT prevalent in the four participating schools. This was a deficit model, comprising of isolated or random in-services courses. Rather than instilling confidence and competence to use ICT in the classroom, this model served to have
teachers perceive the whole area as being unconnected to their daily practice. What success was achieved through this project in the adaptation of Teacher A in particular would support a model of professional development which occurs over time and in context (Borko, 1997; Clandinin & Connelly, 1995, 1996, 1998). It would also be one which provided both emotional and technical support (as noted in the ACOT studies) (Dwyer, 1995).

Teachers rationalised their lack of use of ICT in the classroom (and that of their colleagues) by stating that there were barriers for its effective use. The most oft-cited barriers were (a) time, (b) duty of care, (c) gender and (d) age. Of these there is research support only for the notion of time as an element in effective professional development (Ely, 1995; Lloyd, 1999; Sheingold, 1991).

a. Time

"There are no spare minutes in my class; they’re already taken up with maths, remedial reading, just keeping up!"

"Teachers are so busy - we have a de facto system of trade offs which hides how specialised and how busy teachers are becoming. No one person can know everything. No one person can do everything."

b. Duty of care

"I don’t like it when they’re out of my supervision. They could be down the library doing almost anything - even if I was there, I wouldn’t know what they were doing. I’m responsible for them, aren’t I?"

c. Gender

"... at the start of the year, we have to nominate the two committees we will be on. Now - and I’m not being sexist here - the women always choose to be on the ‘language’ committees. We always end up having to draft women onto the technology committees because you can’t just have men there."

d. Age

"... then there are those who are close to retiring, who are going to coast it in, who needs the hassle of learning all this stuff, and who would blame them."

It is of interest here to note that Teacher A was a female in her late 40s. She was heavily involved in extra-curricular activities and community groups. She could have mounted a defence in terms of time, gender, or age. She did not. She dealt pro-actively with the “duty-of-care” through the $10 purchase of a phone extension cord which allowed her class’ “connected” computer to be in the classroom itself rather than in an adjoining work space. It is likely that the rationalisations of others were not of issue for her.

A further example of rationalisation was noted in the management practices adopted by some teachers who appeared to be separating the computer task from its context. That is, they re-contextualised their role as one of management. All were executive, organising rosters and schedules for student activities, but some went to extraordinary lengths to delay the actual task of sending email messages. For example, some kept meticulous checklists of who had sent and received messages. Others demanded handwritten drafts of planned emails from students which could not be sent until they had been proof-read; while another would not allow any children to send any messages until they had finished their book-work (from an activity booklet we supplied at the request of the schools). These teachers re-asserted themselves as classroom teacher through this executive function.

Denial mechanisms were observed in some teachers’ refusal to take ownership during the various phases of the telecommunications project. The Project Officer was frequently asked “Is that all right?” when teachers wanted to know about such matters as the use of the modem, the extent of independent research or student membership of existing telecommunications projects.

Denial seemed also to be a factor in the reaction of two of the computer co-ordinators (n=3) when offered sponsored places at a conference dealing with telecommunications in education. Both independently opposed as if insulted that the offer had been made. They indicated that they considered themselves to already be ‘expert’ in their use of computers in the classroom and in no need of additional information or advice. What was interesting, as observers, was that neither of these co-ordinators shared information with their teaching colleagues and seemed to retain their ascendancy through the withholding of information. At one of these schools, the co-ordinator’s absence at a school camp meant the complete halt to the project. No one else knew about it! Power games were being played and were largely the product of personal insecurities and a desire to conceal a lack of knowledge through smokescreens of mystique. That these co-ordinators were male in predominantly female teaching staffs may have been a contributing factor to the defensiveness of their behaviours.

Reluctance or refusal to become involved was projected to the children as a deficit in their behaviour or attitude. The teachers said:

"the kids aren’t keen [to use the computer in their own time] ... but they’re always as keen as mustard to use it in class time" [as an indication of their work-shy habits].

"with the type of child in my class" [implying they couldn’t be trusted]

"he is a particular type of child" [referring to one boy who was banned from computer use because of a breach of Netiquette].

This projection shifted the responsibility from the teacher to the student. Their stance implied that it was the students who were culpable in their not using technology in the classroom. That the teachers themselves did not themselves note the logical flaws in these assertions is evidence of how genuinely held are such rationalised beliefs. The speakers probably knew them not to be true, but still gave voice to them.

High levels of frustration were observed as participant teachers came to terms with the incursion of technology into their classroom. Defensive-coping reactions to frustration
are most commonly direct or displaced acts of aggression. Displaced aggression is referred to as scapegoating and was the most common manifestation of individual hostility observed in this project. It is itself related to the processes of projection previously discussed.

One teacher volubly announced, in front of both her students and the Project Officer, “What is the problem with the machines in this school? They never work properly!” What she was signalling here was that the reason she didn’t use the technology was therefore the technology’s fault. The telecommunications connection had failed to work because her teaching partner had deleted the browser software to make room on the machine’s hard drive. The public nature of the announcement was a way of assuaging her feeling of guilt, of explaining to her students and to her peers her reasons for not becoming involved with the project and for not using technology. She was transferring the blame to the inanimate machine, even though the problem was patently one of human intervention. The machine as scapegoat was an effective displacement of her hostility and frustration.

In one school, there seemed to be a strategic battle for location of the modem. The librarian wanted the phone line and appropriate hardware moved to the library from the Year 7 classroom. Her argument was based on principles of equity, suggesting that whole-school access was a major issue of Internet use in the school. In relaying her arguments, she indignantly stated “And they say I’m power-building.” Of interest (and in diametric opposition) is that in another of the schools, the librarian was actively campaigning to have the “connected” computer removed from the library. She contended that there would be an untenable disruption to her working space, saying “they’ll [the students] be coming in and out, needing help, disturbing others.” Neither librarian had their wish granted, and subsequently both remained resentful of the circumstance in their schools.

Perhaps the only examples of direct aggression were where the computer co-ordinators refused to attend the sponsored conference and where two teachers in one school physically ‘hid’ from the Project Officer who had arranged to provide some one-on-one training for them during a pupil-free day. There was some difficulty in locating them, and when found, they made ineptual excuses as “We came back from lunch and you weren’t here” and “we even checked with the Principal.” They had taken advantage of a ten-minute delay in travelling time to go to ground. The planned session went ahead but was marred by teacher resistance and negativity.

There was only one teacher (Teacher Z) who evidenced a genuinely neurotic reaction to technology in the classroom. She retained strong technophobic reactions to the project. Her avoidance mechanism was physical and she had to be coaxed into actually touching the computer. She was visibly nervous, pale and anxious during the experience. She held the mouse tightly and made such violent movements with it as to frequently lose the cursor. She made repeated reference, with her voice notably at a higher pitch and faster rate than usual, to how she refused to “even touch the VCR at home” demurring to her husband’s expertise. Teacher Z was the only teacher who demonstrated technophobia, presenting as an “anxious” technophile who exhibits physiological symptoms (Rosen, Sears, & Well, 1993). The other ‘avoiding’ teachers in this paper generally appeared more concerned with issues of esteem and management.

Teacher Z was an adult, a teaching professional, displaying the regressive behaviour of primitivism. This was disconcerting and placed an excellent classroom teacher into the role of an incompetent or insecure child. Yet, paradoxically, this teacher developed her own defence through the adoption of appropriate and exceptionally effective classroom strategies. Teacher Z (in an unintended mirroring of Teacher A’s strategies and classroom management) used peer tutors and a system of distributing received mail to students through printouts. Her own fear caused her to shift from a teacher-centered to a more socio-cultural model of teaching and learning. The student tutors were unaware of their teacher’s fear and actively enjoyed the responsibilities they were given. The new imperatives to be computer literate will undoubtedly hasten Teacher Z’s retirement and may cause her to leave her final year’s work focusing more on the negative aspects of her teaching than on the positive.

So what can be learned from Teacher A and Teacher Z – the two poles of the adaptation-avoidance continuum? The first lesson is about the pragmatism of teachers to deal with change. Teacher A could change (with burgeoning ICT skills) as could Teacher Z (without these skills). The changes wrought by bringing ICT into the classroom is about considerably more than teachers’ learning of a set of operational skills. The observations described in this paper support Postman’s (1998) assertion that “technological change is not additive; it is ecological. A new technology does not merely add something; it changes everything” (pp. 192 - 193). For the teachers in this study, “everything” changed and they needed to develop survival strategies “of personal adaptation” (Day & Roberts-Holmes, 1998, p. 28).

TEACHER REACTION TO STUDENT BEHAVIours

It is perhaps important to note here that the students did not evidence the avoidance behaviours noted in teachers. The then Director-General of Education (Queensland), Frank Peach suggested that “today’s students operate in a different paradigm to their teachers” (1997, p.iii), a notion supported by Negroponte’s (1995) definition of the young as “digitally literate.” The observations in this project would confirm these notions as the participant students quickly became familiar with the processes and requirements of the telecommunications project. Students in all schools approached the Project Officer with the email addresses of parents or older siblings (at work or university) and asked to send personal messages. They were permitted to do this and would conduct simple everyday conversations by email. It was the first time they had used this medium but it was as casual as if they were making a phone call or having a direct conversation. One girl disarmingly asked her mother what was for dinner. She was still at the machine when the response came back, and she was delighted. Her mother’s message
began saying that she initially was concerned that the school was emailing her immediately fearing the worst. She then ended the message cheerfully, answering her daughter’s question. It was as if the student had extended her family into the classroom, and the classroom had expanded into other parts of her world. The lack of paranoia was the most telling aspect of this interchange and stood in stark contrast to many teacher behaviours.

Students thus seemed to enjoy communicating with others and adapted effortlessly to the medium. Teacher A was encouraged through her observations of her students and came to describe computers as “communication, not information devices.” One of the other “adapted” teachers was particularly impressed with the effect on those she had dubbed her ‘slower’ students who were motivated to write when the task was to communicate with another student. She has been given new purpose to her adoption of computers in the classroom.

Students in three of the schools took on the responsibility for the downloading of mail and distribution of messages, in either written or verbal form. They remained enthusiastic and reliable throughout the conduct of the project. In two of these schools, this continued involvement was despite teacher negativity and abnegation of responsibility. At the beginning of the project, Teacher Z had admitted to her Principal that she was unhappy that the children knew what to do and she did not. She had attended all the instructional sessions with her students and had been given the same demonstrations. Her profound belief of teaching and learning therefore was that the teacher must know more than the child, that her classroom was predicated on a transmission model (Renshaw, 1995) in which she, as teacher, was the source of the child’s knowledge. Her profound belief of technology was operational and predicated on notions of a process to produce a product. Her behaviours were the reaction to the challenge made to her identity and self-esteem as a teacher. It becomes of further interest that she used her ‘teacher’ skills of organisation to counter the situation and allowed her re-take control.

The teacher who intended to assess the children’s workbooks (provided as part of the main project) was also displaying this operational or functional approach to both teaching practice and the technology itself. Hodas (1997) spoke of the normative and conservative functions of schooling, and here teachers are seen to be attempting to impose one paradigm of instruction over another.

One of the main problems for those schools where teachers continued to display ‘avoidance behaviours’ was related to the supervision of students while they were engaged in telecommunication. The computer with the modem connection was often out of the classroom area. It was either in an area adjacent to the classroom, located in a computer laboratory next to the Year 7 classroom or remotely located in the school library.

There were continued but minor incidents of inappropriate messages being sent from unsupervised environments. However, in one instance, an unsupervised student used the connection to make a booking at a five-star international resort with access to the heli-

pad. He entered his parents’ Mastercard details in his dispatch. The school abruptly went ‘off-line’ as the Principal had confiscated the modem. ‘Avoiding’ teachers saw such behaviour as confirmation of their stance. The incident strengthened their position and reasserted their control over the students. ‘Adapting’ teachers responded very differently. In one school, they quickly and collaboratively developed an overdue policy of supervision, access and parental permission which led to a resumption of their participation. This action gave them a sense of autonomy and heightened their participation in the project. The incident could have been the blind to close the project; but it was a spur to heightened involvement. It is a curious outcome that such incidents could strengthen the beliefs of both ‘ adapters’ and ‘avoiders’.

What all teachers and others observed in this project failed to note was that student behaviours are often a direct reaction to the dynamic created by the teacher. That students here responded well or badly, despite teacher beliefs, is of interest and is perhaps a measure of the role of ICT in their lives. Students do not fear technology. The observations here are that they are generally competent in its use and are capable of using it irrespective of what their teachers do or believe. It leads us to the assumption that teachers who hold the transmission view of teaching will not ‘adapt’ to technology in classrooms because of the power it gives directly to students. It is not a fear of technology, it is a fear of losing who and what you understand a teacher to be. Hodas (1997) spoke of the ‘insular culture of self-congratulation that attempts to reassure them [teachers] that they are competent and selfless professionals, that their social and institutional function is to develop the very best qualities in the children they serve.” (paragraph 36)

DISCUSSION

The purpose of this paper is not to diminish those teachers who displayed ‘avoidance’ behaviours. There seems little to be gained in berating teachers as “middle-aged technophobes” (Maslen, 1995, p.13) or to state that “the bulk of our teachers are either inadequately equipped, ill-trained, or clinging to outdated teaching practices” (Lynch, 1996, p.13). The lot of contemporary teachers is a sorry one. They have been held accountable for high levels of unemployment due to low levels of literacy and numeracy, for increasing violence in our homes and on our streets and for the national debt Schools have increasingly become the band-aid for society and the media hype for a technologically-literate society has added one more item to this ‘fix-it’ agenda for schools. Day and Roberts-Holmes (1998) described the “conflicting discourses” of contemporary schools at a time of government intervention and the linking of school outcomes to national economic imperatives. The current political fixation with education equating to dollars for technology is part of the problem, rather than part of the solution.

The professional development of teachers has been an easy cost item to remove from the spreadsheet of educational spending. What professional development does occur takes place in teachers’ own time, and is often opportunistic not needs-driven. What teachers ‘do’ is based on what is offered or available, not necessarily what is needed, following a ‘just in case’ rather than a ‘just in time’ model. Undertaking more formal
studies (towards university accreditation) is problematic for teachers not only in terms of time, but in the costs implicit in the Higher Education Contribution Scheme (HECS) and explicit in full fee paying programs. There are some support schemes available but these have a very small audience and are highly competitive.

The scenario is that a target bull’s-eye could be drawn and teachers could be placed at its direct centre. The arrows coming towards it may not make a direct hit, but they will certainly create feelings of uncertainty and trepidation. The preferred model of professional development is one that shifts the locus from ‘me’ to ‘us’. Teachers will only cease to feel vulnerable when they no longer feel the insular responsibility for the adoption of technology into their classrooms. The aim is thus to take teachers off the target and hand them the bows and arrows; to put them in a position of control, rather than one of vulnerability.

Teachers feel vulnerable because they are being threatened by political and sociological pressures beyond their control. They do not feel that their needs in respect of ICT were being met by existing in-service and professional development programs. What remains important to them is that their professionalism and personal esteem needs to be respected, not devalued. What mitigates against them is that teaching is fundamentally an insular profession and they, as perceived ‘experts’ do not need help. Teacher Z, despite her trenchant belief in the teacher as the controlling pedagogue and her technophobia deserves respect. Ironically, she too ‘adapted’ as she brought her control mechanisms to bear in the new environment. She compromised, accepting change but not becoming part of it. The status quo was restored.

The experience of this project is those who ‘adapted’ were those who became active. An integral part of successful teacher professional development could be seen to be the creation of an environment of active engagement - of working with and through the technology to achieve a particular goal. Lave and Wenger (1991, p.93) stressed that a ‘community of practice’ can only be formed in circumstances where participants are active, as opposed to adopting ‘peripheral’ positions. Teacher A moved quickly from participative to leadership roles in online professional forums. Personal involvement adds the affective dimension of engagement thus changing the individual’s experience of the technology, and, in turn the ‘stories’ the individual imparts (implicitly or explicitly) to students about the technology.

The ‘adapted’ teachers were ones who were student-centered. This was also a finding of a major U.S. study (Dexter, Anderson & Becker, 1999). Being trained in using ICT on an operational level was not the total answer to their application. Adapted teachers often used technologies which they themselves did not fully command. This indicates that operational level had very little to do with teaching; being a software trainer and a teacher are two very distinct roles. The ‘best’ or the adapted teachers here focussed on what they did well not on the functions or sub-menus they were uncertain of. Their teaching models were socio-cultural and they positioned the technology as subservient to the task it facilitated or the people it served.

The three teachers who began to use email as a personal communication facility displayed a cultural shift in their use of ICT. There is a growing sentiment that ‘connecting teachers’ is more powerful than ‘connecting schools’ (Williams & Bigum, 1994). This is much more complex and subtler than connecting schools. It is not just a matter of training. Technology must impact on a teacher’s life before its introduction into the classroom can have any real credibility or conviction. This impact is not merely operational; it is attitudinal. The teachers in the school where the student abused his use of communications to make hotel reservations displayed a cultural shift in their proactive endeavours to salvage the project from their Principal’s directive. In the short time of its operation, they had come to see it as important and ceased to see it as threatening. The teachers in Day and Roberts-Holmes study were ‘able to find ways of reasserting their professionalism after a temporary period of shock, innovation, fatigue and, in some cases, disillusionment’ (p. 30). The adapted teachers in this study evidenced similar behaviours. The setbacks were overcome.

The ‘adapted’ teacher looking at ICT as a means of expression, the creation and promotion of a new writing genre is displaying a more critical attitude. The technology has become critical to, but transparent in, the task at hand. It is the writing which is important. The communication with an audience other than the teacher is merely the motivational context for the task.

There is much to be learned from the research accompanying the ACOT Project (Apple Classrooms of Tomorrow). Dwyer (1994, p.6) relayed one teacher’s observation, who said:

As you work into using the computer in your classroom, you start questioning everything you have done in the past and wonder how you can adapt it to the computer. Then you start questioning the whole concept of what you originally did.

What this teacher was really saying is that ICT in the classroom fundamentally challenges a person’s psyche. It makes you question who you are and what you are doing. This is both profound and threatening. This understanding clarifies the reasons behind the ‘avoidance’ behaviours noted in this paper, and encourages us to not be dismissive of the conflicts faced by individual teachers. It is not techno-fear, it is disempowerment and a loss of the sense of self.

The key to the change from ‘avoidance’ to ‘adaptation’ in the use of technology in the classroom is dependent on a shift from operational to critical behaviours. It is not necessarily hierarchical or sequential, nor is it necessarily linked to technical expertise. That teachers must ‘adapt’ is essential to the new educational paradigms. ‘Adapted’ teachers will be the ones who do not fear technology or change. Postman (1996) wrote of how a new technology “makes war against an old technology” (p.192). Here the ‘old’ technology is the didactic transmission-model classroom where the teacher was the centre. The ‘new’ technology is in fact, the new computer-mediated classroom where didactic methods do not belong. The ‘adapted’ teacher needs to not only come to terms
with computers on an operational and management level, they need to re-consider deeper understandings of what a classroom is, and the ‘new’ teacher’s role in it.

Day and Roberts-Holmes (1998) suggested that those who are promoting change should “respect those who are implementing it [the change] by listening to them, demonstrating an understanding that extra time and energy are needed” (p. 29). They should also recognise that “change is complex and involves the head and the heart the personal and the professional” (Day & Roberts-Holmes, 1998, p. 29).

Our experience on this project has reinforced for us that it is essential to engender an environment of care rather than one of censure. We must acknowledge that the new technology-rich learning environments will involve:

... change in the notions of knowledge and information, change in pedagogy, change in the role of the teacher, and change in the way technology is used in the classroom. To achieve this requires professional development that attacks the very psyche of individual teachers and promotes an attitudinal shift that inspires radical and dramatic change in the classroom. This needs to occur in a way that does not marginalise any group. There are teachers in the system who are opposed to change and dismiss technological innovations as yet another fad that will pass. This group clings to the past and values traditional ideals. These values are not insignificant. It is crucial to muster the support of the ‘traditionalists’ and win them over so that their wisdom and expertise are not wasted or lost.

(Bates, 1998, p. 6)

This project gave us a glimpse of this future and brought teacher vulnerability into sharp focus. It was an epiphany to the teachers whose lives it touched. It highlighted for the research team that practising teachers need both support and understanding to change, to re-invent themselves to forge a new classroom dynamic, and to better understand the paradigm shared by the children they teach.

REFERENCES


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