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"...it's like the McDonalds of IT": A computer lab, micropolitics and educational change

Susan Grieshaber

School of Early Childhood, Queensland University of Technology, Brisbane, Australia

School of Early Childhood

Queensland University of Technology

Victoria Park Road

Kelvin Grove 4059

Queensland

Australia

Phone +61 7 3138 3176

Fax +61 7 3138 3989

s.grieshaber@qut.edu.au

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Susan Grieshaber is a Professor of Early Years Education in the School of Early Childhood, Queensland University of Technology, Brisbane, Australia.

Abstract

This paper investigates what happened in one Australian primary school as part of the establishment, use and development of a computer laboratory over a period of two years. As part of a school renewal project, the computer lab was introduced as an 'innovative' way to improve the skills of teachers and children in information and communication technologies (ICT) and to lead to curriculum change. However, the way in which the lab was conceptualised and used worked against achieving these goals. The micropolitics of educational change and an input-output understanding of computers meant that change remained structural rather pedagogical or philosophical.

Keywords: school renewal; computer laboratory; educational change; micropolitics, ICT

Introduction

Despite pervasive ideas about information and communication technologies (ICT) transforming teaching and learning, the extent and pace of change has not lived up to expectations, even with heavy government investment in infrastructure and policy initiatives across the globe. The British government for example, invested 900 million pounds between 1998 and 2002 to connect schools to the National Grid for Learning and provide staff development (Reynolds, Treharne & Tripp, 2003), and the state of Maine in the USA provided computers for all children in elementary schools (Papert, 2002). In Queensland, Australia, policy documents have acknowledged the positive effect of ICT on student achievement in all subject areas and for all ages from preschool to higher education, as well as students with special needs and those in remote and urban areas (Queensland Government, 2002, p. 4). Further, the Queensland Government stated that not only do ICT have a positive effect on student achievement, but they also have positive effects on student attitudes and motivation, and increase self-confidence and self-esteem (p. 4).

In the everyday world of primary schools, transforming teaching and learning through ICT is no simple or easy matter. It is fraught with daily issues of competing curriculum demands, technology failure, issues of access, the need to develop new curricula and pedagogical approaches that suit technological environments, and frequently, children knowing more than teachers about ICT. As well as these demands, attempts to transform teaching and learning are often part of larger school reform projects, as in the case reported here. With 58 others in the state of Queensland, Australia, the school was engaged in a trial of educational renewal between 2001-2004 called the New Basics (NB). The NB is a whole school renewal process based on an "integrated framework for delivering Bernstein's (1971) three

message systems of curriculum (New Basics), pedagogy (Productive Pedagogies) and assessment (Rich Tasks)" (Ailwood & Follers, 2002, p. 3). These three components operate reciprocally, that is, changes in pedagogies and assessment are required alongside curriculum innovation. Of the four curriculum organizers, two are relevant because they emphasise the importance of ICT for the NB: multiliteracies and communications media; and environments and technologies.

In what follows, relevant literature is discussed that includes aspects of school change, innovation, the micropolitcs of educational change, de Certaeu's (1984) ideas about challenging the dominant order, and the concept of technology as a product. The research design is then explained and details of the site provided. After a description of the three phases of the implementation of the computer lab, analysis is undertaken in line with relevant literature and theory, and conclusions drawn.

School change, innovation and micropolitics

With the passage of time, the school reform literature has shown the significance of innovation; how curriculum change is an integral part of system reform, and that whole system reform cannot occur through one innovation at a time (Fullan, 2008). In terms of innovation, Fullan notes that it is "easier to adopt a decision than to put it into practice, and it is easier to make changes in the structure than to reculture, which gets at the heart of behaviors and beliefs" (p. 114). The trouble seems to be that after a decision has been made, materials and resources (changes in structure) detract from any real changes to pedagogies and philosophy, that is, reculturing (see Spillane, 2000; Stigler & Hiebert, 1999). In later work, Spillane (2004) found that when pedagogical changes did occur, other teachers and external experts supported teachers in their day-to-day teaching. Further, sustained engagement with ideas over years rather than months is also necessary for any significant conceptual change (Spillane,

2004). However, many teachers do not have such opportunities because of the short-term nature of much educational change. The type of change model used is also important. For instance, Datnow (2002) observed that prescriptive models worked for short periods and were not sustained, and that approaches that are more flexible had greater sustainability but lacked focus. One response to this dilemma has been to refocus continually on the specific goals and issues encountered at particular sites (Fullan, Hill, & Crévola, 2006). Another issue is whether teachers support particular innovations, whether they understand them and what is required of them (Fullan, 2008). As far as whole system reform goes, Fullan (2008) acknowledges that the classroom and more specifically, daily teaching, is where opportunities to make a difference occur.

Studies investigating the use of ICT in schools tend to focus on how innovative ideas are implemented. This often occurs in terms of why teachers are not interested in integrating technologies, or why teachers who say they are interested do not do so (Means, 2008). Unsurprisingly, time is a major factor, even for computer laboratories, where teachers have to schedule a lab time in advance and take the time to move students to and from the lab (Means, 2008). As might be expected, in classrooms with ready access to a bank of computers, students engage to a greater extent with ICT. Means (2008) notes that policy makers want ICT to be used for delivering curriculum aligned with standards, and that researchers see ICT as able to transform what is learned and how it is learned. This places teachers in a precarious position between the two. Nevertheless, as Ball and Cohen (1996) pointed out some time ago, whatever is implemented depends on the complex interplay among teachers, materials and students in the class at any particular point in time.

The micropolitics of educational change have continued to be an avenue of exploration since early work by Ball (1987) and Blase (1991), especially questions of power and control. Of interest here is the relationship between power, time and educational change. According to Hargreaves (1994), there is more to teacher time than "its technically efficient allocation, planning and scheduling" (p. 98). Differences between how administrators and teachers understand time manifest in administrators having "greater power to make their particular time perspectives stick" (p. 113). Administrators, notorious for their impatience with the pace of change, increase expectations and reduce timeframes, which in turn produces resistance from teachers because of the intensification of their work. A possible solution is to give teachers more control over time management, but this means a possible reduction in administrative power and control (Hargreaves, 1994).

Contrived collegiality, one aspect of the mircopolitics of educational change, involves compulsory collaboration among teachers (Hargreaves, 1994). Contrived collegiality is regulated by the administration rather than being an organic and spontaneous initiative of teachers. Its compulsory nature can be overt or covert and it usually involves the implementation of mandates by others, which can be at the school, district or ministerial level. Contrived collegiality is limited and controlled by time and space boundaries, which occur at the discretion of the school administration. Because of its artificial nature, there is a high degree of predictability associated with contrived collegiality. However, while the desired outcomes are not guaranteed, the administrative control over factors such as time, space, what is to be implemented, and the requirement that teachers work together, make achievement of the outcomes more likely. With contrived collegiality compromises occur in the reduction of teacher professionalism; inflexibility leads to inefficiencies, and teachers' "energies

and efforts" are diverted to "simulated compliance with administrative demands" (Hargreaves, 1994, p. 208).

Subverting the system and technology as a product

In *The practice of everyday life* (de Certeau, 1984), everyday actions of consumers or users are sites of possibility for undermining or re-directing the power of the dominant social order. This occurs by using tactics against the strategies of the dominant order, or subverting from within to destabilize the system. Strategies are the preserve of the more powerful and are the laws and practices of the system that mould the space and order of everyday life. In contrast, tactics are ways of dealing with living in the space regulated by others and involve "Innumerable ways of playing and foiling the other's game" (de Certeau, 1984, p. 18). de Certeau relies on Foucault's (1991) notion of discipline as a mechanism of power that regulates how individuals behave. Examining the practices of everyday life and the use to which products are put reveals how consumers adapt things according to their own interests and needs, and the "ingenious ways in which the weak make use of the strong, thus lend[ing] a political dimension to everyday practices" (de Certeau, 1984, p. 31).

With talk about technology as a tool or enabling device has come an emphasis on the integration of ICT into curricula, as opposed to the idea of technologies dominating the curriculum at the expense of content (Yelland, 2007). An alternative idea suggests understanding technology as a social process rather than a finished product. When considered as a finished product, technology is a "non-negotiable" entity (Berg, 1994, p. 95) as it has been designed with a specific purpose in mind and is an "already-made 'thing'" (p. 96). According to Lynch (2003), the concept of technology-as-product dominates computer-based technologies in schools as well as

"government policies, popular culture and school marketing literature. It can also be found in research into technology and schooling" (p. 4).

When applied to policy, technology-as-product operates on an input-output basis, with associated expectations that input (e.g., more computers) will produce a subsequent and unidirectional increase in output, which will be evident in learning outcomes (Lynch, 2003). Lynch (2003) contends that this philosophy is the basis of government spending in Australia and the reason that research is often concerned with matters such as quantifying the numbers of computers in schools, determining Internet accessibility, measuring output in terms of input, and assessing computer use against intentions for use (p. 4). Based on economics, the input-output model negates teacher perspectives and the complexity of teaching-learning relationships by assuming that the intentions of the technology designer are the same as those of teachers. When technology is considered as a product, the purposes teachers have for using computers have not been established and consequently the interactions among teachers, children and computer-based technologies tend to be neglected. Seeing technology as a social process enables close up investigations of actual users and patterns of daily use, something that can provide insight into teachers' reasons for using ICT (or not). Using de Certeau's (1984) concept of subverting the dominant order; the idea of technology as a product; school change and the importance of micro-politics, this paper investigates the innovation of a computer lab and daily classroom practice in one school.

Research design

Data reported here are drawn from a larger research project, an exploratory case study (Yin, 2003), which investigated and documented how teachers and children enacted curricula and pedagogy within the New Basics school renewal project. This

article explores what happened in one school as it enacted a decision to establish a computer laboratory between mid 2002 and late 2004. Three data sources are used: video records, interviews and email conversations. The video records consisted of children using computers in two classrooms as well as video records of 24 (30 minute) lessons in the school computer laboratory. Three semi-structured interviews (Fontana & Frey, 2003) were undertaken with the laboratory teacher (Robert), six with one classroom teacher (Angela), three with another classroom teacher (Erin), and five with the principal. Analysis of empirical data involved four steps:

1. All audio transcriptions from interviews were combed for evidence relating to the computer laboratory.
2. A chronological narrative (Patton, 1990) of how the computer laboratory came into existence and how it evolved over time was constructed from the interview data.
3. All video data from the computer laboratory was organised to show dates, times, who was involved, the activities that were undertaken and a short summary of what occurred. Video recordings of the 24 lessons in the computer laboratory were annotated and categorized.
4. Analytic induction (Janesick, 1998) was undertaken to derive codes and identify data regularities.

What emerged was a story of how the computer laboratory evolved, how it was used, by who, when, and its purposes.

The site – Yarran State School

Yarran State School is a multi-age primary school located in a commuter-belt suburb about half way between the capital city of Queensland (Brisbane) and the east coast. It caters for approximately 400 children from preparatory (aged five and six years) to

Year 7 (aged 12 years). The principal described the school as being in a "low socio-economic area with a number of challenges with the community" (Interview [I]; 02.09.2002). Two of these challenges were the transient population and a high turnover of staff. In multi-age schools, there is a deliberate mixing of age groups so that children of a wide age range occupy the same teaching space. The guiding philosophy is that children learn and develop in different ways, at different rates and different times, which means that their educational needs are not determined by age alone. The two classes where data were gathered consisted of children aged from five to eight years, in Years 1, 2 and 3, with approximately eight children from each year level in each class (about 25 children per teacher).

The computer laboratory

Prior to the establishment of the computer laboratory, ICT was a focus at Yarran because of its involvement in the New Basics project. Each classroom had two or three computers. One teacher, Robert, became a leader in the school because he integrated ICT into his pedagogical approaches. He procured six computers for his classroom and once he had established what he called "…a sort of mini laboratory" (I [Interview]; 14 August, 2003), he began teaching children basic skills. Robert found that the mini laboratory "…worked really well" (I; 14 August, 2003) because locating the computers in the classroom enabled him to teach using the computers and then the children were able to access them for follow up activities. As Means (2008) has noted, having a critical mass of computers in classrooms increases the likelihood of more extensive use by students. The success of the mini laboratory was capitalized on by housing a set of six lap top computers on a movable trolley, which was transported to various classrooms, enabling other classes to access a small bank of computers while

also remaining in their classrooms. Integrating the use of computers into everyday classroom activities was Robert's preferred mode of operation:

> I didn't particularly like the idea of laboratories because I thought the computers should be in the room … [if you] wanted to do something…they [children] should just be able to go there. And my logic always was, rather than having 30 tied up in a laboratory situation, spread those 30 up around the classrooms and have one or two more in each class. (I; 14 August, 2002)

The transportable mini laboratory met with some success in the other classrooms in which it was used and provided a cost effective way of increasing the number of computers available in a classroom, albeit it for a limited period of time per week.

Over time, Robert found that transporting the mini-laboratory to classrooms was labour intensive for outcomes that were not always productive. He also found that once the school was able to provide several computers for each classroom, they were not always used in the way in which he and the principal had intended:

> But what I've found is that…you could put a dozen computers in some rooms, and not have a laboratory and those computers will still tend to sit there or be used for banal things. Before you get to the stage where it is a resource that can be used, the kids have to know what to do with it. They're not going to pick those skills up while the classroom teacher is occupied with their other various things that are going on. (Robert, I; 14 August, 2003)

Because of this experience, the school applied for a grant to set up a permanent computer laboratory. It was awarded and the principal appointed Robert as a full time technology teacher, responsible for organizing teaching and learning with computers

for all classes. In mid-2002, Yarran converted a double teaching classroom into a computer laboratory with approximately 30 computers. What happened after the introduction of the computer lab is discussed according to the three phases that characterized the development of the lab.

Phase 1: "PD by stealth" (mid 2002-early 2003)

Robert's job as technology teacher was to plan and enact the technology teaching and learning in the laboratory for the whole school. The laboratory operated on a model of "ICT skill acquisition and application spread between a laboratory of computers and small groups of computers in each class" (e-mail from Robert; 2 July, 2003). Robert's role was to organise rotations in the laboratory on a weekly basis so that each class had a 30-minute skill session, which was "based around a specific program or combination of programs for a generic task" (e-mail; 2 July, 2003). Robert taught all the lessons and tried to work with teachers by discussing what they were doing in the classroom so that he could develop laboratory lessons that were aimed at providing children with the skills that they would need for computer tasks to be completed in the classrooms. As part of these lessons, children learned how to save their work to a server folder, which they could access at a later stage in their classrooms.

Part of the way in which the laboratory operated was a requirement by the principal that teachers attend the laboratory lessons with their classes. Robert described this as teachers attending "these sessions as part of a PD [professional development] by stealth program, that is, while it is a specialist lesson, it is not non-contact" (e-mail; 2 July, 2003). In most public schools in Queensland, teacher attendance at specialist lessons such as music, health and physical education is not mandatory. However, teacher attendance at computer laboratory lessons at Yarran was, as decreed by the principal. Yet this was not sufficient to make Erin (Year 1

teacher) attend: “When the children go to technology lessons, I probably should go but I’m busy doing something else generally. I think it is great for the kids. If you are computer minded it works, but not if you are not” (I; 1 September, 2002). Erin did not attend the technology lessons, flouting the principal’s decree that all teachers were to attend the lab lessons with their classes, and even admitted that she would “have to upskill myself…” (I; 1 September, 2002).

Comments from teacher Angela a couple of months after the laboratory had been established were both positive and negative, and ranged from observations about how children were coping with the laboratory lessons to statements about linking the lab work with what was happening in the classroom. However, Angela expressed concern that “the degree to which they [the children] can keep up with Robert’s lessons varies” (I; 19 August, 2002). Angela also indicated that Robert seemed to feel pressured to complete the lesson and ‘get through’ the content in the allocated time: “…Sometimes I worry about Rob because he thinks he has to get through *this* much and [it’s] not always revisited” (I; 19 August, 2002). Unfortunately, not being able to keep up with Robert had repercussions:

> …the other day we had over half the group who didn’t end up with their animated product. I wonder if the animated product with the group that I had in there (being the lower end of the room)…might be too much to ask… (I; 19 August, 2002)

The laboratory lessons also presented other challenges for Angela. She found that because she did not know many of the programs that the children were using, it was difficult to assist them: “I’m so busy problem solving for them that I never get to remember any of it for myself” (I; 19 August, 2002). In addition to this, she worked with the “…the lower end of the class…so I don’t see the

extension that he [Robert] does with the [other] group" (I; 19 August, 2002). Angela commented that her non-contact time followed the laboratory lesson and that she could have stayed after the children left and worked on the computer programs, but she had other more pressing matters that required her attention.

Phase 2: "...a shift from the battery hen model" (2003)

Early in 2003 Robert expressed concern about the way the laboratory was operating, the benefits to the children, and the transference of skills from the laboratory to the classroom. He was worried that the children's skills weren't being developed as he had hoped. After several discussions with the principal, he reorganized the laboratory timetable. The purpose was to trial two new ideas: Mondays were for teachers to book into the laboratory with their class for longer sessions with Robert so that the children could work on particular tasks; and alternate Mondays were for teachers to meet with Robert to plan a unit of work or to learn specific ICT skills. To enable this to occur, teachers were released and a relief teacher covered their class.

One of the reasons that the decision was made to alter the way the laboratory operated was due to the pressure of covering the content during the 30 minutes allocated to each lesson. This had been raised by Angela toward the end of 2002, and retrospectively, Robert was quite candid about it:

> The drawback…is…it's a forced situation…it's like the McDonalds of IT, where you charge in, you gobble down what you can fit in your mouth, and then you walk out the door and hope you don't vomit on the way…I've only got that half hour time frame, I [go] blah, blah, blah, blah, do this; do this; do this! No, no time for that! (I; 14 August, 2003)

The metaphor of force feeding young children a dose of ICT once a week for 30 minutes seemed powerful enough for Robert to realise that the pedagogical principles of the New Basics were not being upheld. He knew that trying to cover the content in each lesson compromised pedagogical aims and that a piecemeal approach was the best he could do in the circumstances (I; 14 August, 2003).

After eight months of operating on the alternative system during 2003, Robert reflected and said that some progress had been made: "…there is some evidence of movement beyond the use of classroom computers as mere typewriters or skill game devices" (I; 14 August, 2003). However, Robert found that what occurred on Monday with the children was still very much like a "production line" style of lesson and he admitted that he now had other concerns that revolved around timetabling and pedagogical issues:

> …the spacing of alternate Mondays and weekly 30 minute sessions spread across 17 classes still allows for large gaps in continuity of skill acquisition and the follow up of innovative application. It is only recently that I have perceived this problem as one involving blockages of timetabling and pedagogy. To turn this around I have suggested a shift in my pedagogy and my timetabling which may provoke a shift in computer use attitudes and, possibly through evolution, the current pedagogy around computer use in the classrooms. I put the following thoughts to our staff last week and am awaiting further advice from them. I am keen to document any changes in outcomes that may be evident after this shift from the 'battery hen' model. (I; 14 August, 2003)

Robert hoped that suggested solutions would be the impetus for changing staff attitudes toward computer use in classrooms and that teachers would be motivated to

use computers in their classrooms, assisting children to become more proficient with the skills introduced during the laboratory lessons.

There were several issues bothering Robert that promoted the action of sharing his concerns with staff:

- The 30-minute lessons were ineffective because of the time taken for students to move into and out of the laboratory (sometimes up to 10 minutes for children to move into the lab and settle).
- The 30-minute block was not always suitable for the immediate needs of students and teachers, which created potential friction between Robert's goals "for children to know this" and the teacher's goals of "I just want them to do this thing *now*".
- The 30 minute skill block in "monkey see/[monkey] do" format was holding back students who were working at advanced levels within group, thus stifling advantages that come with multiage approaches (Robert, I; 2 July, 2003).
- The 30 minute block provided little time to take advantage of the type of spontaneous mentoring that occurred in other laboratory sessions such as at lunchtime and after school.
- Gaps between exposure in the laboratory and follow up sessions in the classroom, which in Robert's view occurred because of lack of timing and resources available in classrooms (I; 2 July, 2003).

While Robert had identified his concerns for the staff, he did not mention that some teachers were not assisting children as required when he was teaching the laboratory lessons. Erin did not attend the laboratory lessons, but in addition to this,

according to Angela, other teachers were not supporting the children in the laboratory lessons:

> Robert wanted to get away from him teaching the children everything…Teachers would sit down and check their e-mail and then go and check the library for resources and so he would teach a skill to the kids and the teachers would still not be able to transfer that "home" because they hadn't done anything about. (Angela I; 1 April, 2004)

To Robert, teachers not working with children in the lab meant that appropriate follow up support in the classroom was uncertain. This lack of skill transfer from the laboratory to the classroom was instrumental in what occurred in Phase 3.

Phase 3: Robert is no longer 'running the show as far as technology goes' (2004)

The solution to these issues resulted in another change of format in the laboratory. Robert no longer taught lessons and his role changed to laboratory facilitator, with the laboratory operating on a 'drop in' basis. This was due partly to a reduction in his duties as laboratory teacher from full to half time. With the new model, teachers were required to book their classes in for 30-minute lessons during the morning session, and to teach the lessons themselves. The principal wanted teachers to be responsible for their own learning of computer skills, to teach their own classes, and not rely on Robert as much as some had previously (I; July, 2003). In the middle and afternoon sessions, teachers could book a 45-minute session for their class with Robert on a needs basis (e.g., they could send a group of six children if they needed help with a particular task). The principal hoped the new model would allow Robert to work more on integrating computers into classrooms:

> I'd like to free Robert up so he can work in blocks of time with teachers on integrating technology with more intricate skills. Not just pull down

> menus and cut and paste and that sort of stuff but how to really use this software to achieve this result. [There are] those that still have their head in the sand a little bit and have let Robert run the show as far as technology goes; then the challenge for them is 'Here are the lessons: you do it'. (Principal I; July 2003)

The principal wanted to use Robert's expertise to assist teachers to integrate technology in more sophisticated ways and as he said, teachers were now provided with the lessons and were required to teach them to the children themselves.

As might be expected, not all teachers were happy with the new model. Some of the teachers did not teach their classes in the lab. As Angela said, the "new model…should work but the staff aren't taking up the …sessions" (I; 1 April, 2004). But according to the principal, "... up to two thirds of the teachers are now using the laboratory and bookings [system]; with a directive that you are to... now the other one-third will get a please explain!" (I; 1 April, 2004). As with the directive that teachers were to stay in the laboratory when Robert taught the lessons for their classes, the principal had again instructed teachers to make bookings and use the laboratory, or they would be asked to 'Please explain' to him. To make things easier for teachers, Robert had prepared a folio of detailed lesson plans for those who needed assistance in the lab. Even though the new model did release Robert for more integrated work, there were few comments made by the teachers about how this was happening.

Good pedagogical intentions gone wrong?

The school change literature provides a comprehensive understanding of the complexity, challenges and multifaceted nature of what school renewal involves. The computer lab was an innovation connected to the curriculum change aspect of the

New Basics school renewal project. Both the principal and the technology teacher saw computers as curriculum and pedagogical resources capable of providing alternative ways of approaching (transforming) teaching and learning. But what happened with the lab at Yarran depicts a story of good pedagogical intentions gone wrong. Changes in structure, micropolitics, and the conceptualisation of technology as a product worked against the goals for the lab that were held by the principal and technology teacher, being realised.

Structural changes

Making the decision to become involved in school change is easier than putting it into practice (Fullan, 2008). It is also easier to make structural changes than to change the culture, that is, the behaviours and beliefs of teachers (Fullan, 2008). With the computer lab, structural change took precedence over changing teachers' behaviours and beliefs. Dedicating two classrooms to a computer lab housing 30 computers is a significant structural change, as was the requirement in Phase 1 that each class and teacher attend a 30-minute skills based lesson each week. Teachers were required to assist children and to learn from how and Robert taught the lessons. This "PD by stealth", a strategy of the more powerful principal and technology teacher (de Certeau, 1984), dictated the terms on which the lab was used. It removed any possibility of teachers themselves deciding whether they would take advantage of what was being offered in the lab and required them to allocate another 30 minutes per week for the children to be out of the classroom. That is, teachers had 30 minutes less teaching time per week. Teacher tactics, or ways of dealing with how they were being regulated by the administration (de Certeau, 1984) included outright refusal to attend the lab lessons in Phase 1 (e.g., Erin), and in Phase 2, a lack of participation in lab activities if they did attend. Instead, time was spent checking email and procuring

resources from the library. This resistance to the administrative mechanism of power shows how teachers subverted the system and adapted things according to their own interests and needs.

In all three phases, the model used for the operation of the lab was prescriptive. Teachers were told how it would work and were expected to conform. While prescriptive models work for short periods, their effects are not sustained (Datnow, 2002). This was the case with Yarran, where three different approaches to using the lab were tried in the space of just over two years in an effort to achieve the goal of upskilling teachers and children, and transferring skills learned in the lab to the classroom. In consultation with the principal, the technology teacher continually refocused according to the issues that he identified as impeding progress toward the goal, which is something that Fullan (2008) identified as a solution to prescriptive models. However, the refocusing remained structural and concentrated on the administration of teachers' time and the management of resources, rather than pedagogical reculturing. At no stage was there any consideration of supporting teachers in their day to day teaching, which Spillane (2004) found produced pedagogical change. The closest thing to this was in Phase 3 when Robert worked with teachers in the lab to develop more intricate skills for integrating technology: "how to really use this software to produce this result". This is a 'quick fix' approach and some distance from working with teachers in their classrooms on aspects of day-to-day teaching that are aimed at enduring pedagogical or philosophical change.

Care is needed to ensure that teachers support innovations that are adopted by schools (Fullan, 2008). This means that time should be spent explaining proposed changes to all staff, especially where a whole school curriculum renewal project is being adopted. Prior to acceptance in the trial of the New Basics, schools were

required to consult their communities and submit an application to be one of the trial schools. Despite this process, not all teachers felt that they were consulted appropriately about the school's involvement in the New Basics. While there are no data to show that consultation occurred with teachers about the computer lab, the data that are available suggest that the principal and Robert made the decision to apply for the grant, which was subsequently awarded. This leaves room for the idea that not all teachers supported the computer lab 'innovation'. However, the point is that as well as undertaking a meaningful consultation process to know whether teachers support proposed changes, it is important that teachers understand the proposed changes and what is required of them as part of the process (Fullan, 2008). This establishes a firm basis for informed decision making, the importance of which cannot be underestimated as it is at the coalface of day-to-day teaching where opportunities to make a difference occur. Support from teachers and other external experts in day-to-day teaching, as well as long-term engagement with ideas is what produces pedagogical and conceptual change (Spillane, 2004). In sum, structural changes to timetabling and use of resources predominated and there was little focus on or acknowledgement of long term conceptual change to teachers' behaviours and beliefs.

Micropolitics

Micropolitical questions of power and control are enduring in educational change (e.g., Ball, 1987; Webb, 2008). In this case, they involve power, time and expected change because of the innovation of the computer lab. As Hargreaves (1994) noted, "Teachers take their time seriously...Time...is a major element in the *structuration* of teachers' work" (p. 95; emphasis in original). Computer lab time for each class was planned, scheduled and allocated with technical efficiency (Hargreaves, 1994) and came with specific expectations about the outcome required. During Phase 1, lab

attendance meant that teachers had 30 minutes less teaching time per week in their classrooms. This, plus the added requirement of upskilling not only the children but also themselves indicated the determination with which the administration was approaching the task and the concomitant expectations of change.

When the anticipated results from the computer lab did not did not materialise in Phase 1, the principal and Robert changed the way in which teacher and class time in the lab was planned, scheduled and allocated. In Phase 2, Mondays were dedicated alternatively to longer lab sessions for children (and teachers); and for teachers to meet with Robert to undertake specified work while they were released from class. Not only was more time allocated to class lessons, but teachers were also provided with dedicated one-on-one time with Robert, again reducing the time they had with their classes and therefore intensifying their work. This is an example of contrived collegiality (Hargreaves, 1994), where teachers were required to collaborate with Robert to produce improvements in their professional abilities. In terms of subverting the system from within (de Certeau, 1984), the danger is "simulated compliance" (p. 208), where teachers 'fake it' and give the impression that they are teaching units to their classes that have been planned with Robert.

Providing teacher release from class is an administrative strategy of power and one in which teachers have very little choice other than to attend. Allocating financial resources to release teachers from classes attests to the significance attached by the administration to the task of upskilling children and teachers, and the transference of skills from the lab to the classroom context. These actions indicate the increasing pressure applied to teachers to produce tangible outcomes, and administrative impatience with the pace of change that occurred in Phase 1 (see Hargreaves, 1994).

What occurred in Phase 3 intensified teachers' work even more and was seemingly because some teachers (according to the principal) still have 'their head in the sand'. Robert was no longer 'running the show as far as technology goes' and teachers were forced to book the lab and teach the skills themselves, as well as work with Robert in blocks of time to integrate technology 'with more intricate skills'. Although Robert ran 'the technology show', the principal was a key figure in decision making in all phases, epitomising comments by Ball and Maroy (2009) that "principals are...crucial in maintaining and changing organizational arrangements and cultures" (p. 110). In this case, the principal was instrumental as a manager and used an authoritarian mode, rather than taking on the role of pedagogical leader (see Ball & Maroy, 2009).

Technology as product: tactics and strategies

That the principal and the technology teacher understood computers as products was indicated by the adoption of an input-output approach, where the number of computers available in each classroom and the laboratory was considered important; as was Internet accessibility, as well as the measurement of output in terms of input (cf. Lynch, 2003). This was also consistent with state education department approaches at the time, as success was measured by the achievement of set targets for pupil-computer ratios (Queensland Government, 2002). At Yarran, an input-output approach meant that there was an expectation of a noticeable improvement in children and teachers' skills because of the computer laboratory lessons and the follow up work in classrooms. However, as indicated by the initiation of Phases 2 and 3, students and teachers were not adopting the skills they were taught in the laboratory sessions in Phases 1 and 2 and using them in classrooms.

Robert's laboratory lessons in Phases 1 and 2 were similar to an input-output model. He crammed everything he could into the 30-minute lessons in the hope that children and teachers would take in as much as possible and produce the desired outcomes. Predictably, the data are strewn with comments associated with input-output thinking:

- The regurgitation metaphor (it's like the MacDonald's of IT, where you charge in, you gobble down what you can fit in your mouth, and then you walk out the door and hope you don't vomit on the way).
- The battery hen metaphor.
- The monkey see/monkey do metaphor.
- "Rob thinks he has to get through *this* much and it's not always revisited". (Angela, I, 19 August, 2002)
- The fact that lesson output was not realised: "the other day we had over half the group who didn't end up with their animated product". (Angela, I, 19 August, 2002)

Robert too was compromised by the pressures of time and the model adopted for the lab lessons. Because of the battery hen model, there was little hope of 'hands on' professional learning for teachers occurring in the lab lessons. Angela for instance, was in survival mode because of her lack of skills; caught in endless problem solving with children at the "lower end of the class" and never remembering "any of it". One wonders whether the children did either. Not remembering any of it may well be a reason for not following up in the classroom. Ironically, Angela immortalised Robert's fear that the children would regurgitate the content as they walked out the door. According to Angela she did not remember it, which would make it difficult to regurgitate. Along with the children, Angela and the other teachers were also passive

recipients of Robert's production line, his self-confessed battery hen, monkey see/monkey do, input-output style of lessons.

The skills of neither teachers nor students had 'transferred' to the classroom to the extent expected with the battery hen or 'monkey see/monkey do' lab format of Phases 1 and 2. Robert was perturbed because there was still evidence of computers being used inappropriately in classrooms: computers were 'sitting there'; were used for 'banal things'; for 'mere typewriters or skill game devices'; for teaching children how to type; teachers were occupied with 'other things', and made statements such as "I just want them [the students] to do this [with the computer] *now*". What Robert described was teachers' active resistance to the administrative exercise of power, the tactics used to subvert the administration by not following up in their classrooms, preferring instead to use computers to suit their own purposes.

Conclusion

Transforming teaching and learning using ICT is a goal pursued by many in education. The funding, development and maintenance of a computer lab is an ambitious venture for any primary school. In this case, it fitted neatly with the ideas of the New Basics school renewal process and reciprocal changes in curriculum, pedagogies and assessment. The story of the computer lab illustrated the ease with which decisions are made to adopt innovative approaches. It also showed the ongoing challenges of moving beyond structural changes concerned with resources and time, to embrace deep and lasting pedagogical and conceptual change. That is, changing teachers' behaviours and beliefs (reculturing) takes more than providing innovative resources, models of how to 'do it' and teacher release from classes to work on unit plans. Deep and lasting change was conceptualised as part of the New Basics approach and was part of the vision with the computer lab, but these goals were not

realised because of the way in which use of the lab was conceptualised and administered. As time progressed and the administration team became more anxious about the outcomes that were proving so elusive, additional changes to the lab and its operation resulted in further intensification of teachers' work. The adoption of strategies of power by the school administration and utilitarian approaches to computers resulted in teachers subverting the system. The innovation of the computer lab is therefore an example of good pedagogical intentions gone wrong.

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