

Chapter # 19

TEACHING AND LEARNING IN TECHNOLOGY RICH SCHOOLS: TRADITIONAL PRACTICES IN A NEW OUTFIT

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ABSTRACT

Twenty-five years ago an educational project was carried out in a school class in Melbourne Australia using one-to-one laptop computing for educational purposes. The project took place well before initiatives by global hard and software corporate giants to develop one-to-one computer actions as a global venture in the pursuit of profit. A discourse of technology optimism has worked as a driver in these developments, particularly at school levels. In it computer technology is claimed to solve problems and create educational change and effectiveness when it actually can't and above all doesn't. In the chapter we examine aspects of the discourse at work through critical ethnographic research.

Keywords: Educational technology, IT, critical ethnography.

1. INTRODUCTION

This chapter takes its departure from a 25 year old educational project at a girl's Methodist school in Melbourne Australia, which was one of the first school classes recognised as using one-to-one (1:1) laptop computing for educational purposes. This was well before initiatives by hard and soft-ware corporate giants to develop 1:1 computing as a global strategy in the pursuit of profit based on optimistic claims that computer technology can solve educational problems and create educational change and effectiveness (Ende & Dolfsma, 2005; Jagodic, Courvisanos, & Yearwood, 2009; Selwyn & Facer, 2013). This technology optimism discourse has been prominent part of the educational debate during the past 25 years (Nivala, 2009; Player-Koro, 2012b). It announces the capacity of technology to change school practices and outcomes in a progressive common interest, whilst at the same time enabling and supporting a take-over of pedagogy in a manner that allows schools and their agents and practices to be subsumed to the interests of corporate profit (Hjörleifsson, Árnason, & Schei, 2008).

Corporations have made vast profits from the sale of computer hard- and software to schools in 1:1 laptop initiatives as well as in other similar ventures, with little evidence of strong transformational effects or increased general efficiency (Player-Koro, 2012a; Selwyn & Facer, 2013). The technology optimistic discourse has in this way become a marketing strategy based on an over-trust in science that shapes policy and public investment in the interests of private corporations (like Microsoft, Dell or Apple). The present research has explored this through an imminent critique of technology optimistic policies concerning 1:1 laptop projects in which we confront the optimistic policy claims with the reality of educational outcomes and the strong demands of educational renewal in practice. We ask if a process of false marketing and an exploitation of education can be said to have taken place.

2. BACKGROUND: THE HUMBLE BEGINNINGS OF 1:1 PROGRAMS

1:1 laptop initiatives are now global activities that are very well known within education. However, there are certain things that are often assumed about them that are quite exaggerated and other things that are not at all well known. One of the latter concerns the origins of 1:1 computing in school in a 1:1 laptop program in 1990 in one school class at an independent girl's school in Melbourne Australia called the Methodist Ladies College (Johnstone, 2003) using a set of modest off-the shelf standard lap-top computers bought by the parents of the pupils. It signals that 1:1 initiatives, although often marketed as innovative new millennium projects, are actually quite old and that contrary to common understanding, they didn't start on the basis of research in California, Washington or Cambridge Massachusetts or research sponsorship from IT organization like Microsoft and Apple. They started on laptops that were bought from money provided by the parents of pupils at a girl's school in Melbourne and distributed to the class by teachers at the school (Johnstone, 2003). Moreover, contrary to recent hype about the value of IT in education (Player-Koro, 2012a) the intention was not to transform the learning culture, curriculum, and teaching-learning paradigm and practices of the school. Instead the hope was simply that the laptops would be valuable teaching and learning aids much like the textbook and pen and paper had been. Thus, the original 1:1 laptop initiatives weren't part of a global corporate venture; corporate capital became interested afterwards; nor was the initial project trying to transform educational culture and practices, but rather act as an aid in support of established educational practices. Also noteworthy is that 1:1 computing in the initial experiment did not result in any kind of significant learner-empowerment or educational-transformational effects. These are also claims that have been made afterwards (Bocconi, Kamylyis, & Punie, 2013; Kamylyis, Bocconi, & Punie, 2012), often with very little empirical evidence (Goodwin, 2011). They grew from an important link. The Melbourne experiment involved some business interests through the computer hardware dealer for the MLC-school, a company called Computelec. Computelec later became the Australia-wide software distributor and major retailer for Microsoft products that connected the Microsoft and the Gates Foundation to the Australian market and the project. These organisations recognised the possibilities presented by the experiment and then added economic incentives. They sponsored visits to Melbourne by teachers and school leaders in the early 1990s so American educators could learn from the Australian programme and bring the initiatives stateside (Johnstone, 2003).

There is a significant point to be made here about a common relationship between capital and education. Capitalist corporations are often keen to seem to sponsor education. It is good for their market image and laptop initiatives are often part of sponsorship packages (Ball, 2012). However, what has happened in the 1:1 case at hand here is more in line with another scenario, where capitalist organisations look for new possibilities for making a profit and then, once they have confirmed the presence of these possibilities, they invest money to expand and exploit them through, in the present case, the peddling of computers on a massive scale and the creation of new (spin-off) needs such as study guides, licensed software, e-educational courses and other digital learning tools (Ball, 2012). This has created an entire new edu-industry. It is one further example of how the capitalist class reaches into the heart of living culture to steal its ideas and then sell them back at a vast profit.

2.1. The investigation and its aims and methods

The present chapter is based on the results from ethnographic research in four upper secondary schools in Sweden that examined whether the claims that are made about laptop initiatives are actually realised. The data has been produced through surveys, semi-structured focus group interviews with school principals and teachers, and video observations from everyday work in classrooms over a two-year period. This was done to help us gain empirically generated insight into what digital technology means both in and for education today. We wanted to make visible, describe and analyse everyday educational/ pedagogical work in these technology rich schools to see exactly how (or perhaps if) education really is made more innovative and productive by the use of 1:1 laptop technology.

Immanent criticism has played a vital role in the research. This is a method from critical theoretical research that sets out to detect contradictions by juxtaposing ideas such as those expressed in educational policy texts and promises with lived educational realities and actual outcomes. It locates distinctions between what something is claimed to stand for and what actually appears to be happening (Street & Copeman, 2014). The intended effect is one of surprise through the creation of a momentary apprehension of gaps in our common knowledge-producing tools. The intention is to provide a picture of both the daily teaching and learning as well as of the context surrounding these activities at the local schools under study that can be held up to and compared with the vision of optimism in official policy and marketization.

The four upper secondary schools in the research were all situated in relatively wealthy suburbs with a predominantly middle and upper-middle class intake. Sweden is known for its one-school-for-all principle of education, but since the decentralisation and marketization reforms of the late 1980s and early- to mid-1990s, profiled intakes have become increasingly common (Arreman & Holm, 2011) as has pedagogical profiling as a market strategy (Schwartz, 2013). This has been described generally as having negative effects of educational equity but in terms of the present project the combination of a middle-class catchment and an IT-profile could be assumed to be positive in terms of increasing the possibilities for successful one-to-one projects and effective learning outcomes. That was our assumption at least and the choices therefore represent positive case selections for investigating whether fundamental transformations in education have occurred through and in conjunction with the 1:1 initiatives. The following questions were given special attention:

- What teaching and learning patterns can be found in the educational practices in these technology rich environments?
- What discourses appear to structure these educational practices?
- What transformational potential is suggested by the data and analyses?

2.2. The theoretical framework

This research is grounded in theoretical traditions in which educational systems are seen as part of society's instruments of social integration and control. This has important consequences, because from within this theoretical tradition, schools and classrooms are not reduced to mere transmission systems and 'the digital' part of the educational context is considered, along with everything else that 'happens' in educational organisations, as the outcome of struggles between different agents and discourses. Basil Bernstein's theoretical concept of *the pedagogic discourse* has been important to the research. The pedagogic discourse is realised and made visible through activities in the classroom and has its roots

in the modality (classification and framing) of the social relations of actual classroom practices, such as in the selection of subject content and establishing rules for the transmission and acquisition of knowledge and skills (Bernstein, 2000). This involved investigating how and why IT is being used in education and how this use (or non-use) is valued. The intention was to describe how the content and practice of education and teaching was formed in situations where language and communication work and are analysed as functional and even meta-functional tools that comprise sign systems for mediating human-world relations with ideational (i.e. they are 'about something'), interpersonal (i.e. they are about 'doing something') and textual (i.e. they are facilitated by 'the speaker/communicator's text-forming potential') elements (Halliday & Kress, 1976). From this perspective educational technology is assumed to provide important specific features that can be taken up directly in recorded observation protocol and dialogue that can be further analysed in the research.

2.3. Doing the ethnography

Doing ethnography means basically trying to learn about people and their everyday lives based on long-term engagement and extensive participant observation by watching what is going on, listening and feeling. It produces a particular kind of sensuous practical knowledge because of this that has been gained from skills of perception and capacities of judgement that develop in the course of direct practical engagements with our surroundings and people in them (Beach & Player-Koro, 2012). Ethnography is particularly strong because of these characteristics in producing unique studies that provide detailed, in-depth descriptions of practices and meaning along with finely grained knowledge about the conditions of specific educational systems and their demands and practices.

For the present chapter empirical material has been produced through two years of participant observation of day-to-day activities in four upper secondary schools and the use of digital technology in the teaching process and interaction between students and teachers there. They were documented using a video recorder (in some cases) and by taking observational and transcriptional field-notes. The fieldwork involved two to three days each month during one year of observations along with two online surveys with teachers in 2012 and 2013, semi-structured group interviews with school principals and semi-structured focus groups meetings with 8 groups of 3-5 teachers.

The selection of classrooms for the first rounds of observation were made by the school principals (head-teachers) based on the criteria that the teachers there were particularly knowledgeable about IT and innovative in their use of it (4 lessons of approximately 1 hour each). This is in line with our intention to prove ourselves wrong about the limited use value of IT. The assumption was that these IT-committed educators would use IT extensively and inventively thus maximising the possibility for us to identify new use values in it.

3. RESULTS

The different data were developed for somewhat different ends and provide different kinds of input. The survey will be presented first. It was used to provide a picture of how the pedagogical work of teachers was influenced by digitalisation. The results did not differ significantly between the two years. In this chapter we refer to the 2013 survey and the responses of 276 teachers who returned their completed questionnaire (147 woman and 129 men) from the initial sample of 352. The questionnaire was constructed with fixed interval items where the respondents were asked to express agreement or disagreement with a series

of statements. We asked standard questions about teachers' professional development, school improvement, assistance and support, and more specific questions about the teacher's use of digital tools in teaching, their attitudes towards the use of digital tools in teaching, the skill necessary to support students in their use of digital technologies, and changes in the teacher's work due to the introduction of digital technology. The teachers also had the opportunity to add their own comments in their own words in a number of open-ended questions.

The results of the survey were meant to provide a kind of overview of dispositions and understandings of practice. They showed that 201 out of 239 (84%) responding teachers used IT more than once a week in their teaching and that 40% of them used it on a daily basis. These teachers described search features, production and distribution of educational materials and the computer screen as a new tool for communication (where the projected screen image became in effect a new whiteboard) as the main reasons for using the computer. It was quite simply a better tool. Observation protocol supports these points (below).

Teaching from the front of the classroom was still the most common way of organising the lessons according to 23 % of the teachers who stated that teaching from the front was used in more than 50 % of their teaching time, whilst 61 % responded that this way of organising classroom work occurred in at least 30 % of their teaching time. This commitment to conventional regionalisation forms was also discussed during focus group interviews. The teachers said these things like:

The computer is second nature now... But teaching is no different ... I stand at the board... Before I had an overhead projector whereas now I use PowerPoint. ... Yes ... now it is natural... (Focus group interview 2012-06-12)

What is suggested here is how the use of the computer and the teachers' use of space created a focal point in the classroom around the whiteboard and projector screen, which were used for displaying the computer screen content in what seemed to be quite conventional way (see also fig.1) in front focussed ways as described in for instance Beach (2008). This fairly conventional regionalisation and appropriation of space applied even though, not despite, IT being fully integrated in the teachers' everyday work (Beach, 2008).

Text production was also an important reason for using IT according to the teachers. Sixty-eight percent of them stated that the computers were used for this purpose at least once a week, replacing in this sense pen and paper processes of text production and providing a way to collect, share and disseminate information between teachers and students. This was often done through the learning management system (LMS). Eighty-one percent of the teachers stated that they used the LMS system for communication around students work at least once a week. This administrative function became a kind of information exchange centre. These ways of using IT also came up during the interviews.

There has been a tremendous gain in communication. Students can retrieve articles from the Internet or go to any Twitter account and tweet directly with politicians for example. It's a big change [but] not pedagogically. IT provides tools for communication and has brought the world closer by helping students to listen to things they wouldn't have and find interesting texts. (Focus group interview 2012-06-14). I no longer [have to] make photocopies for students. I just put everything on the learning platform. (Focus group interview 2012-06-19)

I have not had to distribute a single paper so far. I have everything on the learning platform and the computer [A]. I can stream movies [and] no-longer use the usual textbooks. I search on specific topics [which] saves time and students get a different picture than just reading a book [B] (Focus group interviews A 2012-06-12 and B 2012-06-19)

The students and I can find the latest information on the web. I wouldn't-be without this now... Also, whereas before the students left their exams in my box, now they submit them through the computer... The difference is in communication. (Focus group 2012-06-14)

In relation to the research question concerning the teaching and learning patterns that are evident in technology rich educational practices the results here show that the 1:1 initiatives have resulted in a high frequency of use of IT as an integrated tool for teaching and that IT is a component of a digital infrastructure that is also used for the organisation of the education. The learning platform is a key component of this. But in many senses these changes don't represent changes in pedagogical principles or discourse. IT is replacing traditional media rather than changing principles of organisation and communication or transforming educational power relations. It has affected some working methods but teaching is organised primarily according to traditional patterns and power relations.

One example of consistency with the past is that the power centric relations of space that have been found in classrooms have not been reconfigured and, as in Beach (2008), the modality of education does not seem to have been affected significantly in terms of classification, framing, or pedagogic discourse. This is also in line with our initial starting scepticism. Previous studies have repeatedly shown a considerable lack of evidence regarding the transformation of education culture or enhancements of general educational standards (Balanskat, Bannister, Hertz, Sigillò, & Vuorikari, 2013; Goodwin, 2011; Larkin, 2011; Tallvid, 2015). Indeed in Sweden for instance these are often reported to have become considerably worse. At the same time as most of the Swedish schools have initiated or planned for 1:1 initiatives several international studies reports on drastic deterioration of Swedish pupils' academic performances¹².

3.1. No significantly transformative changes

Sometimes the explanation for the failure or absence of IT impact is made by pointing at the teacher as the major hindrance to the successful implementation of technology in schools (Drent & Meelissen, 2008). However, this cannot be said to apply in the present case, as most of the teachers were experienced IT-users who expressed a positive attitude toward technology and found it useful for managing their professional work. Thus an important point for us in this respect is to stress that it is not the teachers who should be regarded as failures. Instead, the use of technology should be analysed and understood in context and in relation to the complex web of policy demands and the different expectations and requirements that teachers are obliged to take into consideration. We need to identify and analyse also the discourses that appear to structure educational practices in conjunction with the adoption of 1:1 initiatives.

We attempted to do this in some of the focus group meetings, where teachers were asked to discuss how they planned and organized their teaching, what motivated them in

¹www2.diu.se/framlar/egen-dator/

²<http://www.skolverket.se/skolutveckling/forskning/didaktik/tema-elevperspektiv/ar-svensk-skola-lika-for-alla-1.195584>

this and what shaped and steered their work. In this discussion what was mentioned most often was the new curriculum for upper secondary school (Skolverket, 2011), together with the increasing demands made by national tests:

The upper secondary reform has affected us... Before we were multidisciplinary teams working with the same students. It was easier to use computers then. Now we are back in the subject divided teams and [so] we mostly use computers to share material on the learning platform. I have to prepare my students for national tests and this affects what and how I teach. My teaching is guided by these tests. Moreover pupils are not allowed to use computers in national tests. They have to write by hand [so] we were unable to use computers and work with texts on the computer. We have to write with pens in the lesson as well. (Focus group interview 2012-06-12)

These statements provide an example of issues that were brought forward by teachers concerning how educational policy is related to their work and how the field for policy production seems to have prevented them from making innovative transformations of their teaching, not only through the implementation of IT in their pedagogical practice but also more generally (Singh, Thomas, & Harris, 2013). They concern how performative demands from national testing, rather than technology, tend to structure the formation of the pedagogic discourse. Teaching is focused on preparing students for the national tests and learning is aimed at learning for getting good grades.

Another important way to identify the discourses that appear to structure educational practices was through the analysis of participant observation of day-to-day activities in classrooms. This analyse made visible the strong influence of conventional examinations forms that heavily structured the pedagogic discourse. Even in this case the tool used for seeking information and writing reports was the computer but there is no evidence whatsoever that the power controlling what counts as official knowledge or how it is examined has been changed:

You have to include the country's economic and political development in the report if you want to pass the exam. Look for information online [and] don't forget to submit the report for assessment by week 48 (Teacher to class: Civics classroom 2012-11-12)

Today you have to solve the exercises from the learning platform ... I'll show examples on the smart-board... Then you go on to the task and you can ask me if you have any questions... The exercises will help with knowledge and skills for answering the questions and performing the forthcoming tests. (Teacher to class: Economics classroom 2012-09-11)

The talk and use of space during the lessons under study reflect the common way of organising teaching and learning in schools historically (Johansson, 2007; Player-Koro, 2012a). The lessons started with the teacher standing in front of the class introducing the topic of the day, in these cases with help from digital technology (fig. 1). After that the teacher introduces the exercises to practice during the lesson. Whilst the students were engaged in 'practice', the teacher strolls among the students' desks, tutoring individual students one at a time or in small groups (fig. 2). During this period some students were occupied with the exercises as instructed whilst others were engaged in other activities with their friends or were surfing on their computers (fig. 2). At the end of the lessons the teacher was once again standing in front of the class summarising the lessons and

answering the students' questions. Many of the questions concerned the content and requirements needed to pass various assessed and graded activities such as homework and tests.

Figure 1. Introduction.



Figure 2. Working on /with exercises.



4. DISCUSSION

The main findings presented in the chapter suggest that there is a frequent use of technology in classrooms but that this use is a form of conservative modernisation in a context of educational reforms that are structured by neo-liberal and neo-conservative movements toward high stakes performativity (Ball, 2003). These issues are clearly pressed down on teachers in their teaching and learning according to the present research in ways that could be considered to have highly traditionalising effects. The effects have been such that although the teachers at these schools has a positive attitude towards the use of technology, and despite them stating IT to be useful tools in their professional work, they have remained highly traditional in their basic pedagogical perspective and activities. Additionally, no signs have been given that the use of technologies has played a significant part in education innovation or a change in their views of education or of the use values of

education to pupils and for society. This does not mean that teaching has not changed. The point is instead that the introduction of IT in educational settings seems to lack the potential that is often referred to, namely that of transforming education culture and making teaching and learning significantly more effective. Indeed instead IT seems to be used within established power structures and relations that are in practice reinforced not challenged.

However, two points should be noted here. Firstly, starting from the initial Melbourne experiment and onwards, IT has been a tool for attaining traditional aims of knowledge development and improvement as a replacement for traditional pen-and-paper, which it has also arguably done somewhat more effectively than did the tools used in the past. IT has in other words been a tool for meeting the demands of education not changing them. Secondly, performativity demands on postmodern professionals and examination requirements are what are emphasised the most by the teachers and these externally imposed demands (the terrors of performativity in the terms of Ball, 2003), rather than the presence of technology, are what contribute the most to the structuration of their working activities and its content (Ball, 2003).

IT works in this way, as the data suggests through the regulative effects of examination-based performativity discourses on the instructional part of the pedagogic discourse. This can be seen in the selection of subject content and in the interactional patterns during lessons: i.e. in terms of pedagogic modality and the classification and framing of education content. Thus, even when IT was integrated in the teaching and learning activities observed, the examination demands worked through the teacher as an intermediary and were very much in control of what was selected as content and how this content was sequenced and paced. In the Durkheimian sense of education in the interests of social integration and control, there is little if anything that is really new about this.

In line with those of other extensive critical investigations our findings suggest that 1:1 initiatives has not had strong effects on pedagogy and teaching and learning activities. This, in that the teacher is still in control of the selection, sequencing and pacing of the content that the state determines to be official knowledge, exams are still the main structuring force behind what goes on during the lessons, and IT has had no general context independent impact on pedagogy as there is no evidence of a significant link between technology use and the transformation of educational practices (Goodwin, 2011; Livingstone, 2011; Skolverket, 2013; Tallvid, 2015; Yuan-Hsuan, Waxman, Jiun-Yu, Michko, & Lin, 2013).

A possible difference between our findings and those of others still exists however. In other research, the suggestion often tends to be that the full potential of the use of IT has not yet been reached, but that it can be (Bocconi et al., 2013). This line of reasoning springs from the conviction that IT plays a prime role as a key enabler for innovation in education (Kampylis et al., 2012). Our claim is that a process of false marketing has taken place within which technology is claimed to solve problems and create educational change and effectiveness when it doesn't and in ways that it cannot and as far as we know never has.

4.1. Concluding remarks

Selwyn (2012) argues that the field of educational technology tends to be 'an inward-looking and self-referential field of study' (p. 331) that is resistant to viewpoints that contradict the view of technology as a potential force of positive change in education. He suggests its arguments are narrowly focused, that they risk missing 'the bigger picture' and that they can be characterised by a lack of rigorous studies about what really takes place when technology is used (Selwyn, 2011, 2012).

In the present case this bigger picture involves both the understanding and description of what actually happens with education and the educational system and what takes place in an educational context when teachers and students have unlimited/ubiquitous access to technology. It isn't a 'nothing happens' picture. It is instead one that highlights how a superlative discourse of revolutionary changes in education through the introduction of IT is marketed by capital to influence policy makers, education planners, teachers, learners and parents to invest in projects like 1:1 initiatives: both economically, intellectually and perhaps even emotionally. The discourse shapes conscious practices but it is not real. It doesn't describe what is or even what is intended, but it does exploit current concerns with competition and performance and pressure agents to buy and use new technology.

There are at least three clear dimensions to consider in relation to this statement. One of them is that despite there being no concrete evidence available about the advantage provided by computers for intellectual learning, schools are being continually filled and re-filled by computer hardware, software and educational add-ons, that are also at the same time being constantly (and possibly deliberately) out-dated. The second is that because of this, the academic labour of teachers and pupils has been formed into a new economic labour power that is exploited in the interests of profit making by private capital. The third is that this contribution to the creation of a further means of exploitation of education by capital is surely not the point of education in the public consciousness (i.e. is not common sense) and nor does it seem to bring any significant benefits to the broader public commons.

The main results from our investigation thus paint a fairly clear picture. We want to talk about them at three levels. The first level is that capitalist corporations in the interests of profit have economically exploited a quintessentially educational initiative at a girl's Methodist school in Melbourne Australia, without any economic reimbursement to the agents whose intellectual activities became a source of unpaid labour power. The second is that this exploitation was a forerunner to the current mass exploitation of schools and the actions and people in them by the IT industries in the interests of further their private profits. The third is that technology optimism has allowed a marketization process that has worked in the interests of corporations and their pursuit of profit to significantly affect educational investments with very little significant gain to others and with at best marginal impact on education standards.

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