ICT as political action

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Table of Contents

Table of Figures

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Abstract

This thesis is a narrative account of the development of my living theory of practice as a teacher and information communications technologies (ICT) consultant with a national awarding body. Within my two workplaces I experience myself as a living contradiction when my values are denied in practice, in relation to the prohibition of full participation of all participants through the suppression of their voices, or by the imposition of too-rapid organisational change. The thesis accounts for how I have attempted to transform these unsatisfactory situations into life-affirming practices for all through exercising my educational influence in learning for personal and organisational sustainability. The significance of my research lies in my capacity to explain how I hold myself accountable for my improved practice as I develop emancipatory pedagogies and conditions that nurture personal and social wellbeing.

I have generated my living theory of emancipatory practice through finding ways to enable myself and others to work in solidarity to exercise our agency through communicative action (Habermas 1975). This is accomplished through realising the potentials of ICT as a form of communicative action within actual and virtual communities of practice, which becomes a significant feature of the originality of my contribution to knowledge of my field.

Originality is extended in the production of evidence to test the validity of my theorisation of ICT as political action. The multimedia evidence base is continued in the production of a multimedia thesis that accompanies and embeds the linguistic form of the thesis, a communication of my parallel understanding of traditional forms of theory and pedagogy as subsets of their wider inclusional and relational forms. The thesis also explores how values may be clarified in the course of their emergence in practice and transformed into living standards of judgement.

Introduction

This thesis is about ICT as political action. In this Introduction I give a brief background to my research. I explain how I experienced myself as a living contradiction when my values were denied in my practice (Whitehead 1989) as a teacher and ICT consultant and how this gave rise to my research question and to my claim to knowledge.

I proceed by setting out the main themes of the thesis which focus on achieving justice for my students, my colleagues and me through political action and I address issues of how ICT can be a form of communicative action, in the sense that ICT can form the basis for people joining together in dialogical processes of negotiating their futures and planning ways to achieve them. I present my approach to achieving justice in terms of a 'web of enablement' whereby I provide supportive relationships that enable my students and colleagues to achieve their own goals. This involves developing practices within my workplaces that allow people to feel that what they are doing is important. Transforming practices is achieved in a context of developing uses of ICT that are liberating and empowering for those involved. This involves reconceptualising ICT in ways that support individuals' human agency so that people are not seen as passive consumers but as active creators of their own lives.

Reconceptualising ICT as a means of supporting individuals' agency stems from my values base, which is rooted in the pursuit of justice. Because of my emancipatory values I have taken the decision to use an action research approach, itself an emancipatory methodology, to my research and my work. In attempting to establish criteria for the evaluation of this work I indicate how I transform my values of justice and care for the other into my living standards of judgement which provide the basis for the evaluation.

In this introduction I explain the need for generative transformational forms of theorising. I set out how these forms of theorising are different to propositional theories and why I have chosen these forms. The choice of form of theorising has an influence on the form of the thesis and I set out my approach to devising two theses in two forms, one as a linguistic thesis and the other as a multimedia thesis.

Later, I indicate the significance of both forms of the thesis in terms of contributing to new living forms of theory and to the knowledge base of educational enquiry. I describe how the

research has been carried out using an action research approach and why the presentation of the multimedia thesis supports such an approach.

Background to my research and formulating the research question

Here is an outline of my research and the key ideas developed throughout. First I describe my work contexts and explain my values base.

I work in two capacities for two separate organisations. One context is that of teacher and information and communications technologies (ICT) coordinator in a large secondary school for boys in north Dublin. The second is as an ICT consultant for a national awarding body, the National Council for Vocational Awards (NCVA). The two positions share some characteristics, and have other characteristics which are different. In both locations ICT form the overall focus for my work. While teaching is the primary focus within school, administration is the primary focus in the awarding body. As the similarities and differences between the two organisations are an important part of this work I will address these here. From a personal point of view a key similarity between my work in both contexts is that my work is driven by my personal values base.

While ICT work can often be seen in impersonal, mechanistic terms, I have personal values which are person-centred. I regard the uniqueness of the individual as important in my work. Because of this I place a value on the experience of democracy in my work and life and I see a need for an approach to practice that is collaborative in nature. However it is in my day-to-day experience that these values are frequently denied in my practice.

As a teacher I work in a school with a highly authoritarian structure. I work with students and colleagues that I like and whom I like to work with. However, the authoritarian structure that we are located in frequently acts to prevent us working in ways that we find are beneficial for us. As an ICT consultant with a national awarding body I also work with people that I like and like to work with. In this case the main issue is not with the structure of the organisation but with the pressures caused by the rapidly growing and changing further education sector which the body serves. The result of the pace of growth and change is that people feel that they are exposed to excessive pressure of work and find it difficult to deal competently with the demands placed on them.

Within my practice as a teacher I find myself questioning the nature and quality of educational experience that I am offering to myself, my students and my colleagues. Within my workplaces people are not always treated as unique individuals with a unique contribution to make. This situation is a denial of my values, as I believe strongly in the uniqueness of the individual and their capacity to make valuable contributions in the world (Arendt 1958; Sen 2001). Instead, many people, particularly young people in school, are often marginalized and 'silenced' (Giroux 1992: 158). For example, as a novice teacher I was respected by those around me as one who could maintain an orderly class. But that model of orderly class was on the basis of me, as teacher, insisting that my students sit quietly and listen as I told them what they needed to know. I then expected them to write down carefully what I had told them. Within this classroom arrangement there was little room for discussion or debate. I recall one particular student who seemed to enjoy thwarting my efforts and that I, eventually, sent out of my class. The deputy principal, supporting me strongly, insisted that if the student wished to stay in the school he should be quiet, do his work and stay out of trouble. At the time I considered this a success.

However, in hindsight, I see that I offered little opportunity for this student to show his abilities or interests. I now realise that I was contributing to a situation where sometimes the work and contributions of people are not valued and, sometimes, as a result, people are not valued and, sometimes, are, in consequence, denied their full humanity. There are times when I marginalise those with whom I work. I am not alone in marginalising my students. My actions in removing the student mentioned above from my class were supported by those in authority. To that extent the marginalisation of this student was an aspect of institutional practice. At that time, it was common practice that those who did not fit within particular norms of behaviour and work were treated as if they had something wrong with them and told they did not belong. Ironically, while I was treating my students in this way I also held values around respect for people and the importance of people. Clearly my practice was in conflict with my values. Later, while seeking to improve my practice, I learned that when dealing with 'non-programmed, difficult or threatening situations', people frequently do not follow their 'espoused theories' but follow 'theories of action' which are not congruent with their espoused theories (Argyris 1982: 85). As a result of this conflict between my values and my practice I experienced dissonance in my professional work. In Whitehead's (1989; 1993) words, I experienced myself as a 'living

contradiction'. Consequently, in response to the experience of dissonance, I began to follow Whitehead's approach to addressing the experience of oneself as a living contradiction by asking questions of the kind, 'How do I improve what I am doing?'

However, while asking questions about how I improve my practice within my class so that my espoused values can be seen to be realised in my practice, I find other cases of conflict. Within my institutional structure, 'theories-in-use' include ideas that students who are late or do not wear their complete uniform are 'deficient' in some way and need to be 'corrected'. As my insights into these matters deepened, I came to see that I was marginalising and pathologising students who do not learn by listening and sitting still. I punished and excluded students who spoke too much or moved around class.

My desire to improve what I was doing and how I was doing it positioned Whitehead's question as a core concern for me. While looking at improving my practice I needed to understand the role of ICT in improving what I was doing. As with much of my work I draw on insights from the literature to support me in understanding how my 'theories-in-action' are in conflict with my 'espoused theories' (Argyris 1982: 85). To help me with this I draw upon the ideas of Hannah Arendt (1958; 1973; 1978; 1994) and Habermas (1975; 1979; 1980; 1984). I will explore Habermas's ideas in Chapter 1, and here I outline some of Arendt's ideas that have been influential for my research.

Arendt (1958) argues for a three-sided view of human activity: she calls these labour, work and action. Labour refers to routine behaviour required to meet basic needs; work includes activity by artists and craftspeople to make lasting objects that comprise the human world; action requires collective interaction to determine what is good and just (see also Sutherland 2001). In examining my practice I find that much of my school work in ICT relates only to 'labour' – those routine activities that are required to keep the systems running. However, it is also possible to conceptualise ICT as 'work'. The development of multimedia tools and Internet technologies that support creative interaction are consistent with Arendt's concept of 'work' as activities that produce artefacts that are durable in the world. A third conceptualisation of ICT could involve the use of multimedia tools and technologies to support original human agency – this can be 'action'. Furthermore, 'action' is the defining quality of freedom. Arendt argues that it is a mistake to take freedom to be primarily an inner, contemplative or private phenomenon, for it is in fact active, worldly and public (Arendt 1958: 30). Using Arendt's ideas as a basis for practice could be seen in

Argyris' (1982) and Argyris and Schön's (1974) terms as taking one's espoused theories and turning them into theories of action.

With this analysis in mind I decided that among my difficulties was the reality that my class-work focussed on routines and, when my students found that they could not cope with the routines, I found that I could not cope with my students. An Arendtian approach to my class-work might suggest that I should focus less on labour and attempt to move toward activities that are more life-affirming for me and for my students. I therefore decided that I should try to identify forms of practice that would enable me to move our joint activities toward 'work' and 'action'. Consequently, my research has focussed on finding ways to encourage movement away from 'routines' and 'labour' toward action – taking control of one's life – that will provide an environment that will allow us all to achieve our educational aims and remove some of the conflicts that result in my students being removed from class or being punished in other ways.

In adopting Whitehead's (1989; 1993) question, 'How do I improve what I am doing?', I am shifting the focus from pathologising my students' behaviour to focusing on examining my practice with a view to improving it, in order better to support their learning how to take responsibility for their behaviour. This is a general statement of my intentions. Underneath the general statement there are specific questions: What can I do to enable young people to achieve what they want? What are the conditions that I put in place as I teach? How can I help marginalised people to speak for themselves? Do ICT have a role in enabling me to enable others? With these questions in mind I formulate my primary research question as, 'How can I reconceptualise ICT as political action?'

Within NCVA my activities have been concerned with supporting administrative workers as they devise ways of dealing with the administration of certification processes that would ensure the quality of those processes, despite the rapid rise in the number of learners seeking certification. Over a number of years my activities have concentrated on devising computer programmes, redesigning forms and developing workflows that would support the integrity of these processes (O'Neill 1997). Despite our best efforts workers were disillusioned with perceptions of the quality of their work. In an interview about the transfer of candidate details from paper entry forms to the computer one administrator commented:

> [There was] … a huge impact, with constant cross-checking both by hand and by computer… and some errors managed to get through, which at such a late stage caused more problems. [The outside view was] that we were not sure ourselves of what was going on.
>
> (O'Neill 1997: 36)

Workers were frustrated that, despite their best efforts, the scale of the job was such that their efforts always appeared to be inadequate. Certification administrators have considerable access to ICT but this in itself does not enable them to reconceptualise their activities. This raises questions for me about how ICT are conceptualised, whether as a means for self-realisation, or as a form of technological effectiveness. Within the certification environment, ICT operates more as a productivity tool, as an aspect of the cult of efficiency (Callahan 1962). While my work in the context of NCVA is different to my work in school, the question, in many respects, is similar: Can our work be reconceptualised to support original human agency as political action? Can we find a way to understand how ICT can be conceptualised and used as a means for personal freedom to make one's valuable contribution to the world?

In using the term 'political' I am drawing on Arendt (1958: 23), and using the term in the sense of 'an alliance between people for a specific purpose'. In attempting to 'reconceptualise ICT as political action', I am attempting to use ICT as a means of supporting original human agency by forming alliances between people to give meaning to their lives. Specifically, I needed to find ways to support my students, colleagues and myself to author our educational action whether in school or NCVA.

In my work in school I have operated on the basis of the 'one who knows', imparting knowledge to those who do not know. This 'expert mode' of operation exists in NCVA also where there is a perception that there are people who 'know' and there are people who 'do'. This is another aspect of the 'theory/practice' divide (Cochran-Smith and Lytle 1999; Coulter 1999; Coulter and Wiens 2002; Plato 2003; Richardson 1994; Zeichner 1995 *inter alios*). It arises from a perspective that knowledge is abstract, and 'doing' implies not knowing. In NCVA 'knowing' is valued above 'doing'. Delivery of certification is regarded as a straightforward administrative procedure; administration itself is regarded in a technical-rational light. In reflecting on my work in school and NCVA I see a need to move out of 'expert mode' toward a position that values the knowledge and contributions

of all – teachers, students, and administrators. This would enable a shift from the prioritisation of abstract conceptual knowledge over embodied practical knowledge.

Fundamental to Arendt's conception of action are the ideas of 'natality' and 'plurality'. Natality emphasises that as a result of their birth alone, every person has the possibility to contribute something new to human experience and therefore to give meaning to life (Arendt 1958: 178). However natality is not expressed in isolation. It is expressed in community – we can define ourselves and create our identities in relationship with others. Arendt (1958: 184) tells us that '…the realm of human affairs…consists of the web of human relationships…' The web of human relationships is enlivened by plurality – the diversity that exists among people (Arendt 1958: 8). Arendt's conception of natality resonates with my values around the uniqueness of individuals, and her conception of plurality resonates with my desire to value diversity. Taking Arendt's analysis as my 'espoused theory', how can this form the basis of my 'theory of action'? My research questions begin to take the form: Are there ways that I could work with students, whom I otherwise isolate and marginalise, that would recognise their natality and plurality? Are there ways that I could work with colleagues in NCVA that would recognise the unique contributions that they have to make and enable them to enable others to do the same?

Therefore, by asking the question, 'How can I reconceptualise ICT as political action?' I am asking whether it is possible to conceptualise ICT as a means of supporting individual human endeavour by people working in collaboration with others in life-affirming practices which enable them individually and collectively to create a new world for themselves. Can I provide students and colleagues with an opportunity to design and develop their multimedia artefacts which are relevant to their lives? By exploring and reflecting on their learning in producing these multimedia artefacts, can they become creators of their learning? Are there ways that I could support my colleagues in NCVA to develop practices that are relevant to their lives and support them in becoming creators of their learning? Who do I need to be in my professional identity to enable people to get to where they want to be? Furthermore, asking these questions prompts other questions:

- How can I support my students to reach their capacity through the use of ICT?
- How can I use ICT to support political action?
- What are the conditions that I can put in place as I teach to support agency?

- Can I learn to teach in ways that allow people to realise their natality?
- Does the programme of work using ICT that I have undertaken constitute political action?
- What are the characteristics of this programme that would allow me to make this claim?
- Can I develop my living theory of learning as I work and support others in their learning?
- While the programme of work I describe involves innovative practice can I conceptualise this practice as a personal theory of education?
- How do I demonstrate the validity of my evidence-based claims to knowledge?

These are the questions that I will address throughout the thesis.

Using ICT as a form of communicative action

In Arendt's (1958: 178-9) formulation, the actor's action becomes relevant through the spoken word. It is through the spoken word that actors identify themselves as actors and announce what they do, have done and intend to do. As I engage with the questions in this thesis I will engage in a dialogical form, using the spoken word, both real and virtual, to offer my labour, work and action to public critique. In doing this I am being political because '…to be political means that everything is decided through words and persuasion…' (Arendt 1958: 26). The actions communicated in this thesis, whether mine or those of my students or colleagues, are frequently offered dialogically. Within the thesis I am taking several steps to support a dialogical approach to my research. My approach to writing this thesis is dialogical in nature. I am endeavouring to involve the reader in this thesis by writing for the reader and supporting the reader in walking through this thesis with me. Through the online forum in the multimedia version of the thesis, readers can and have communicated their thoughts and ideas to me and to other readers. Throughout the writing of the thesis I have communicated the ideas of the thesis in a wide range of fora including presentations within my school and at educational conferences. By these means I am engaging dialogically with the reader and the public and offering my claims to public critique.

The process of dialogue in itself can be seen in terms of 'communicative action' (Habermas 1975). The thesis shows that my practice has moved from the coercive, marginalising, authoritarian approach described above to a practice where individuals' voices are heard in dialogical processes of deciding future plans, planning activities and carrying them out. In school this has been achieved through the implementation of a range of projects, including the Setanta project, and in NCVA through the Action Learning Group. I will pursue the idea of communicative action further in Chapter 1 and detail the work of these projects in Chapter 5.

The need to identify my standards of judgement

It is acknowledged that practitioner action research has much to offer in terms of informing good practice, but its capacity to generate theory is challenged by questions of what counts as quality and what standards of judgement can be used in assessing quality (Furlong and Oancea 2005). There have been calls on practitioner researchers to do serious work on identifying their own criteria and standards of judgement 'to show that they know what quality means in action research and that they are capable of articulating those standards and producing theories that stand the test of the standards in achieving originality, significance and rigour' (Whitehead and McNiff 2006: 2). Later in the thesis I respond to this call by offering criteria that can be used to assess the validity of my claims to knowledge. My criteria are based on the idea of transforming my ontological values into living standards of judgement (Whitehead 2005; Whitehead and McNiff 2006: 84). I will show the validity of my claim to know by showing the standards of judgement used in realising that claim. I ground my claim to know in personal knowledge, my sense that what I am doing seems right. My personal knowledge will be tested against the evidential base of the thesis that shows the realisation of my values in practice, as well as against criteria for social validation (Habermas 1987). These criteria include establishing the comprehensibility, the truthfulness, sincerity and appropriateness of the account of my work (Habermas 1987). I will assess the validity of my claim to knowledge through the achievement of my values in my practice. In Chapter 5 I will show the achievement of my values of justice, natality and plurality in my practice. I will explain how I transform my values into living standards of judgement in Chapter 6.

My claim to knowledge

In carrying out my research I have investigated my capacity to enable young people and colleagues to think for themselves and to act on their own behalf. I have learned how to teach, or in other words, I have learned to arrange the conditions of learning in order to find ways of enabling other people to feel valuable. I am claiming to know what I am 'doing' in my practice, and by 'doing' I am claiming to know my practice. In this way I am bridging the theory/practice divide. By enabling people to speak for themselves, to exercise their agency in their lives, to take control of their lives, to overcome negative influences in their lives and to become critical, I am claiming that I have made myself critical. While I have become critical my students have also become critical. My claim to knowledge is that I know my practice. In the process of coming to know my practice I have generated my living epistemology of practice as well as my living theory of practice; and my living theory of practice is grounded in my core values based in justice, creativity and freedom and in my capacity to encourage people to think for themselves and regard themselves as knowledge generators. Central to my living theory of practice is the idea of reconceptualising ICT as political action. As the theory is embodied within myself this is a living theory (Whitehead 1989).

The thesis is an account of the development of my living theory of practice. While my practice is about contributing to a just and caring society, my living theory of practice is about how I have encouraged myself and others to work in solidarity to exercise our agency through communicative action (Habermas 1975). I have made brief reference above to some of my experiences within my practice in school and as ICT consultant to the national awarding body, NCVA. Over a period of time I have changed my practice in both institutions from one that was authoritarian, controlling and coercive to a practice that is relational, co-operative and enabling. This has been accomplished through a process of communicative action, in many cases using ICT as a medium for action. The process of achieving this change in my practice forms the basis of my original claim to know my practice.

My learning has been stimulated by my experience of dissonance when my values are not being realised in my practice. My research has involved a process of looking for ways to bring my practice into line with my values. As I did this, I found inspiration from other

areas of work and from the literature. I came to understand that a learning process could be collaborative, relational and liberating, and that learning can be understood as a reciprocal process. So I need to learn how to help my students to learn. In this way my learning is improving as my students learn. But my students' learning benefits from my learning. In the evidence base that is presented in more detail later you will find one of my students indicating that his learning had improved as a result of a web design project. But the web design project had grown out my learning that project work enabled students to take control of their learning. Taking control of your own learning is a powerful encouragement to learn. I have come to understand that knowledge is something that we may create together. I create knowledge as I work with other people who are creating their own knowledge. A claim in the thesis is that I know some of the ways that I learn. The evidence of my learning can be seen in the change in my practice. My early practice was as a didactic, controlling, traditional teacher. My later practice shows me involved as a collaborative co-learner.

Within these processes of change the transformational quality of ICT has been a focus of my learning. ICT may be a context, a tool, and a form of representation or a methodology. But the focus is my learning – the claim to knowledge is around my learning. Developing understandings of my learning is an aspect of dealing with the dissonance within my life and it enables me to take control of my life and assist others to do the same.

This thesis provides the account of my research which shows some of these processes through which I have come to understand my learning.

A living form of theorising

I have indicated above that my preferred theoretical approach to my work is a living theory approach. This has been a deliberate choice, in light of the fact that a number of different theoretical approaches could have been taken to this work. Propositional, dialectical or living theory approaches would have been possible. A propositional approach tends toward seeking definitive answers arrived at through a linear form of logic. I empathise, however, with Schön's view that

> In the varied topography of professional practice, there is a high hard ground overlooking a swamp. On the high ground, manageable problems lend themselves to solution through the application of research-based

> theory and technique. In the swampy lowland, messy and confusing problems defy technical solution.
>
> Schön (1987: 3)

The contrast between Schön's high, hard ground overlooking a swamp is reminiscent of the contrast between Plato's Cave and the clear sky. In *The Republic* Plato (2003: 179) describes the world of human affairs in terms of shadows and darkness, and instructs those who aspire to truth to leave the cave of human affairs and stand under the 'clear sky of eternal ideas'. Plato's advice represents the classic dichotomy of theory and practice. Possibly Plato would have chosen to stand on Schön's high, hard ground and Schön would be more comfortable struggling in Plato's cave. I find my work lies in the swampy lowlands and the dark shadows and does not lend itself to technical solution. However I do not accept that work in the swamp or the cave cannot be theorised. I suggest that a theory of the swamp or of the cave needs to take the form of a living theory of practice.

The approach taken in the thesis towards addressing how ICT can be used to take political action in attempts to improve organisational learning draws on the development of ideas arising from the 'New Science' which suggest that organisations need to be conceptualised as transformative processes that recognise the agency of transformative individuals (Wheatley 1992). The metaphors of the new science transfer to how the practices of social scientific and educational enquiry are conceptualised. New paradigm research in education embraces newer forms of enquiry such as action research. Like the 'New Science' these newer forms of educational enquiry emphasise uncertainty and the need to embrace contradiction. These new forms offer the prospect of entering into Plato's cave and Schön's swamp and being able to work there without the certainty of the 'high ground' or 'the clear sky'.

Whitehead (1989) has developed the idea of 'living theories'. He sees practice as a form of real-life theorising and calls the theories developed in this way 'living theories of practice'. I have come to appreciate the need for new models to reconceptualise social processes and the education of social formations (Whitehead 2003b; 2003d; 2004). In my work as an educator and as an administrator I have explored these issues and found ways of understanding my teaching and administration as educational practices. This work supports Boyer's (1990) concept of the New Scholarship by developing a theory grounded in my practice and the practice of colleagues, and supports Schön's (1995: 27) development of

Boyer's ideas by contributing to an epistemology which is relational and inclusive in nature and therefore challenges the norms of technical rationality. I am practising Boyer's scholarship of integration by drawing on work from different contexts, my school context and administrative context, and bringing them together in a single integrated theory of practice.

The significance of my research

Within the thesis I am contributing to a new scholarship of educational enquiry (Whitehead 1999). Whitehead's work is part of an evolution of ideas started by Boyer (1990) when he developed the idea of a new scholarship of teaching. Schön (1995) advanced this idea by arguing for the need for a new epistemology for the new scholarship of teaching. Whitehead (1999) further advanced this with the idea of a new scholarship of educational enquiry. I see my contribution to a new scholarship of educational enquiry in the sense that I am involved in developing my living educational theory. I am putting that theory to the test in my practice and offering it to public scrutiny. By offering my work to public scrutiny in the thesis, on the Internet and elsewhere, I am contributing to a knowledge base to show how I have developed my personal theory of education. My contribution to the knowledge base is presented in the form of a multimedia thesis and in that way I show how I am transforming propositional theory into a living form of theory.

This thesis reflects my learning in a programme of work extending over many years. In undertaking a self-study of my practice I am studying my educational influence in the self-studies of colleagues and students. These self-studies, my own and those of colleagues and students, form a part of the education of social formations (Whitehead 2003b; 2003d) by the influence that they have had in changing the forms of practice within institutions. I pursue the idea of linkage and connectedness throughout this thesis and I draw on the work of Bateson (1979) to theorise them as a web of connection that, I have learned, provides the links to different strands of my work. The various projects, described later in the thesis, contribute to the formation of sustainable good societies (McNiff and Whitehead 2005) by the change they engendered within their environment and in the way that they contribute to the work of others. The projects support changes to the social order. By this I mean that the projects support changing the way that particular groupings live and work together, and

what kinds of discourses they use to negotiate how they should do this (McNiff and Whitehead 2005).

The groupings that I have in mind are those formed by my colleagues, students and me in our daily work and practice. The kinds of discourses used are dialogical in nature. I relate my work and the work of my colleagues and students to the ideas in the literature around dialogue. The importance of dialogue as a way to understanding appears in the writings of a wide range of authors (Bohm 1996; Burbules 1993; Freire 1972; Gadamer 1979; Habermas 1984). Gadamer's use of the metaphor of conversation as a means of coming to understand the subject matter at hand can be seen in my thesis in the accounts of students interviewing each other about their work and hopes and ambitions (see Chapter 5). The realisation of Habermas's idea of an 'ideal speech situation' can be seen when two Prime Ministers respond to difficult questions posed by young people (see Chapter 5). It can also be seen when NCVA staff present their research reports at an education conference (see Chapter 5). Burbules (1993) lists some of the virtues or emotions which are necessary for dialogue: concern, trust, respect, appreciation, affection, hope. These virtues can be seen in the evidence of students' work available online (www.ictaspoliticalaction.com).

The work of educators detailed in this thesis, although undertaken in the context of a school programme, frequently does not entail formal teaching; rather it is that form of teaching which is, paraphrasing Buber, 'undertaken most successfully when educators are not consciously trying to teach at all but when they act spontaneously out of their own lives' (Hodes 1972: 142). It is the form of teaching and learning that involves developing relationships of trust, commitment and friendship rather than focusing on formal curricula, pedagogies and methodologies. Later in this thesis, and in the enveloping multimedia version, examples will be given of 'teachers acting spontaneously out of their own lives' through the support given to the Leaving Certificate Applied programme and in supporting initiatives of the Setanta project. Throughout the thesis there is a struggle to represent wholeness within the confines of the linear linguistic form which we recognise as the form of a traditional thesis. Bohm's (1995) challenge to fragmentation and the development of his idea of an 'implicate order' is reflected in this struggle and in the multimedia representation of the thesis which attempts to provide a non-linear, interactive, unified view of life which, rather than being simplistic and linear, is complex and web-like. The evidence in various multimedia formats is available on the website

www.ictaspoliticalaction.com. I will develop these ideas around linearity and diversity in Chapter 4.

My contribution to the knowledge base of educational enquiry

The main focus of my research is in examining my educational influence and transforming my embodied knowledge into explicit knowledge and from explicit knowledge into public knowledge (Varela *et al.* 1993). In making my embodied knowledge public I am responding to Snow's (2001: 3) call to systematise personal knowledge so that it will become publicly accessible and contribute to the knowledge base of teaching. In my thesis I show this process in action and explain its significance. In particular I aim to show my educational influence in the learning of others while I support them as students, administrators and colleagues. I explain how ICT have exhibited a transformational quality in supporting my learning and the learning of colleagues. I explain how my educational knowledge has developed through my practice, as I have engaged colleagues and students in enquiries into their learning as they ask and research the question: how can I improve what I do? The production of the multimedia version of this thesis at www.ictaspoliticalaction.com is part of the process of systematising my personal knowledge and making it public. The forum facility on the web site invites public critique of the thesis and supports a collaborative approach to the building of the knowledge base of teaching.

Forms of the thesis

An important part of this work has been evidence of the impact of change brought about by my initiatives through the medium of the technology. I am making the case that technology has a transformational quality within classrooms and in other places of work. I go beyond that by using technology to transform the doctoral thesis from a purely linguistic form to a living form which enfolds (Bohm 1992) the linguistic within it. Eisner (1997) has warned that using alternative forms of data representation is not without promise and perils. The promise and perils may be even greater in attempting an alternative representation of the thesis. Nonetheless the multimedia thesis, at www.ictaspoliticalaction.com, addresses one of Eisner's principal reservations about alternative forms: the constraints imposed by our publication system on material that does not take printed form. The multimedia thesis is in

a web based format that offers the promise of clearer representation and wider dissemination than the printed form. You can see this also in the accompanying DVD in Appendix C.

Over a period of some fifteen years I have undertaken action research as part of my practice in my work as a teacher and consultant. At this point I see action research as an integral part of my practice. I have taken this approach because I perceive a need to operate out of a theoretical base rather than seeing my practice simply as an operational activity that is carried out unproblematically. Within this framework I do not distinguish easily between theory and practice. I see practice as a form of theorising and theory generation as a form of research practice. The significance of this approach is that practice can be theorised in a way that shows how I am contributing to new forms of practice and new forms of theory and I can show how practice and theory are related.

I see my work as morally committed practice. As such it cannot be carried out routinely but demands an ongoing process of examination and reflection. I draw on Schön's (1991) ideas of 'reflection on action' and 'reflection in action' to improve my learning and as a means of helping others to improve their learning. Within this process I have developed my living theory of my learning (Whitehead 1993). It is not universally accepted that practitioner research has a part in generating theory of high quality (Whitehead and McNiff 2006: 157). This thesis addresses the issue by providing, not just a description of workplace learning, but also explanations of my research and of my living theory of learning. I used the methodology of educational action research, which involves an enquiry into one's practice, to understand that practice better and by reflection on that practice to understand better the process of improving that practice.

Action research cycles were used to gather data in order to identify concerns. Reflection on these concerns produced plans for change giving rise to further rounds of data gathering and evaluations of the effectiveness of actions taken (Lomax 1996: 24; 1994b). My approach to action research follows that set out by Whitehead (1989; 1993). I have experienced myself in a range of contexts that have positioned me as a 'living contradiction' in my work, and I understand the nature of my action enquiry as a series of steps which arise from the following:

I experience a concern where some of my educational values are being denied in practice.

I imagine a solution to that concern.

I act in the direction of the proposed solution.

I evaluate the outcome of the solution.

I modify my practice, plans and ideas in the light of the evaluation.

However my view of the process is more complex than simply following these steps. Each of the steps gives rise to questions. The questions are often recursive and the steps become iterative.

I hope the brief outline given here indicates the methodological framework I have followed in carrying out this study. I hope that this framework is obvious throughout the thesis. The linguistic thesis is represented in a series of steps similar to those in an action inquiry. Chapter 1 provides the background to the thesis by addressing the question 'What is my concern? Chapter 2 develops these points by addressing why I am concerned. In Chapter 3 I explore what I might do to address my concerns and attempt to reduce the dissonance in my professional life when my values are denied in my practice. Chapter 4 concentrates on how a reconceptualisation of ICT in terms of new forms of theory might contribute to addressing my concerns. Chapter 5 accounts for the action taken to bring my practice in line with my values. In Chapter 6 I address issues of validity and the influence of the research. Chapter 7 deals with the significance of the research.

I now turn to Chapter 1 which sets out the background to my research.

Chapter 1 – Background to the research: What is my concern?

I make this preliminary note in advance to prepare the reader for the two forms of the thesis. The thesis has been written in two forms; the one you are reading now is in linguistic form. It is also available in multimedia form as a web site at www.ictaspoliticalaction.com and a copy of the website is available on DVD-ROM in Appendix C.

The linguistic version of the thesis is best read in conjunction with the multimedia thesis. Within the thesis I explain how I believe ICT has a transformational quality. That quality of transformation has been employed in transforming the traditional thesis into a multimedia form. In some cases the multimedia form of the thesis has the capacity to convey ideas and provide evidence more clearly. In making this claim I am drawing on the ideas of theorists like Eisner who has said that '…Not everything knowable can be articulated in propositional form' (Eisner 2002: 7).

Introduction

In my practice as a teacher and administrator I sometimes find the people I work with – students, teachers and administrators – are frequently marginalised and silenced and not treated as if they have a significant contribution to make. I believe these practices are grounded in forms of institutional logic within schools that plug learners into 'bolt down seats and lock–step curricula' (Cook-Sather 2002: 3). Teachers are similarly controlled by being regarded as 'skilled engineers' who guide students through curricula whose form and content are determined elsewhere. Curriculum itself is conceptualised as being held by gatekeepers who transfer discrete packages of knowledge by didactic means (Kleinsasser *et al*. 1994). The work of administrators tends to be conceptualised in similar mechanistic ways, being regarded as implementing functional events, requiring simple collation and reporting. These conceptualisations are actualised in the instances of frustration that I have referred to previously in terms of students being removed from class and administrators expressing frustration about how they are viewed. Both sets of behaviours are regarded as institutionally unacceptable. This situation denies my values of inclusion and justice. As a teacher and consultant of ICT I have therefore attempted to improve and theorise my practice by engaging with students, teachers and administrators in asking the question: 'Can

I reconceptualise ICT as political action?' In other words can ICT be used in a way to enable people to exercise self-determination for self-development?

In this chapter I will address the underlying concerns that led me to research my practice. My work is underpinned by my ontological values which are based in justice, creativity and freedom. I will relate these ontological values to a range of conceptual frameworks, in particular to those established by Arendt (1958), Foucault (1977), Habermas (1975), Lukes (1974; 2005) and others. These frameworks focus on matters of justice and freedom, with the abuse of power and control forming the major factor denying justice and freedom. I will explain how I experience myself as a 'living contradiction' within my working contexts when my ontological values are denied in my practice. I will describe how I came to realise that the same logics of domination and control that permeate school practices permeate the literatures and how this set me on the path to developing my living theory of practice in order to address these issues.

I will start this chapter by drawing on Freire's (1985) location of human beings as both subjects and objects of history. I also locate myself as the subject and object of my history, and in that way show how I have come to carry out this research with others as active participants and as real subjects making history by being continually critical of our very lives (Freire 1985: 199). In a real sense I am also the subject and object of this thesis. First I tell some of my background to contextualise this study.

My history and culture make me while I make my history and culture

I grew up in a working class area of Dublin as one of ten children. None of my siblings attended third level education apart from one brother who attended a seminary. None of my generation of forty-two cousins entered third level education from school, although a number returned as mature students. Of my Leaving Certificate cohort of one hundred and twenty six, four entered third level education directly from school. Clearly third level education was not common in my social milieu.

Two years after leaving school I joined a local community group called the Young Christian Workers (YCW). This movement set out to enable young workers, who were often disadvantaged by their lack of education, to become leaders. It supported us in doing this by using the 'enquiry method' or the 'See-Judge-Act' method (Fievez and Meert 1974). The method enabled us as young workers to meet in a group to engage dialogically with

each other as we examined our daily situations at home, at work and socially. We were encouraged to look for mismatches between our experience of life and what we believed in as Christians, to reflect on these situations, to arrive at actions to be taken and, after the action was taken, to re-evaluate, reflect again and move on to new actions (O'Neill 1996). The methodology provided us with the means of acting in solidarity to improve our lives as a means of enabling each of us, collaboratively, to become aware of our situation and the situations of our fellow workers. It provided us with an approach to examine, analyse and confront the often unjust realities of our lives. It also provided us with a means of effecting change in our lives. The YCW introduced me to the ideas of Paulo Freire (1972) and his emancipatory approach to enabling workers to learn from their own lives, to educate themselves by raising their consciousness of their lives and taking action to improve their lives. Although it did not enter my consciousness at the time, my experiences within the YCW held out the prospect of challenging the systems that I would subsequently work within and find ways of practice that would be life-affirming for those involved.

Some five years later I was teaching in a large boys' secondary school in north Dublin. There was a wide mix of students in the school; some were highly academic and ambitious in a traditional sense. Others were not academic, and their ambition was harder to see. I could identify with many of my students. Their backgrounds were similar to mine; they lived in similar areas with similar problems to the one I had grown up in. But the dominant view of education within the school was traditional. The school was regarded by many as a 'very good school', with 'very high standards'. Many students responded well to this model of education but some did not. Those who did not reminded me of myself and my friends in the YCW movement, and in them I could see possibilities: many of the YCW members did not excel in school but were a formidable force of young worker activists.

In my class work I became involved in many activities which attempted to support students by following approaches which tried to place the students at the centre of their own education (O'Neill 1996). I became involved in this work, relying on my YCW methodology and my intuition. At the time I did not consider my YCW work to be educational. I now realise that it was probably more educational both for my friends and myself than many of the things that I do in my classroom. By this I mean that much of what goes on in classrooms in my school, my classroom included, fits into what might be called traditional education (Dewey 1938: 17). The subject matter is a given body of

material which has been worked out in the past. Within this view the main function of school is to pass this on to a new generation. In addition rules and standards have been worked out and students must develop habits which are in conformity with those rules and standards. Within this model of handing down subject matter and standards from the past, the teacher's function relates to the possession of knowledge of the subject matter and standards and the ability to pass it on to a more or less docile and obedient student body. The students' role is to accept with docility and obedience what is being offered. This approach to education 'is to a large extent the cultural product of societies that assumed the future would be much like the past' (Dewey 1938: 17). However, the reality we face today is that, in many aspects of our lives, change is the norm, not the exception, and the traditional model suffers from issues of relevance and acceptance from a student body that has members who are no longer docile. The theme of change is relevant not just to my school practice but to my practice as a consultant to the national awarding body, NCVA, which is the context to which I now turn.

In 1995 the Department of Education and Science estimated that there might eventually be 15,000 candidates for certification by NCVA (Rialtas na hÉireann 1995: 73). However, by 1998 the number already exceeded 21,000 (NCVA 1998). The increasing demand for certification without additional personnel to handle it was leaving administrative staff feeling frustrated and inadequate. In NCVA it was clear that the future would not be the same as the past, and there was a need to find ways of visualising a new future and finding ways of getting there (Schön 1987: 5).

I was aware of Dewey's idea that most people act habitually in patterns transmitted by imitated practice requiring little use of critical engagement (Glass 2001: 17). At the same time many of the aims and purposes of teachers are not the result of conscious choice but are the result of constraints contained within a social structure that they have little if any control over (Carr and Kemmis 1986: 130). The dominant model in use in schools depends on this. This is probably also true of educational administration. Within NCVA, certification administration staff felt that they were powerless to change a system that they found inadequate and frustrating. I undertook a collaborative project to find ways of improving what we do. When I asked my colleagues about their work they expressed their frustration directly in terms of the detail of handling the candidate entry data, as communicated in the following extract from my masters dissertation:

> This form can justifiably be described as a 'minefield' to those of us with only average powers of observation. It is infinitely easier to accomplish recognition by using the names of things rather than using codes as in the case of this form. The difficulty is compounded by… [the fact that] codes may differ from each other by a single digit or a single letter
>
> (O'Neill 1997: 37, emphasis in original)

When I asked them to explain further, they expressed how the increasing numbers of candidates for certification were contributing to their frustration:

> I accept that the problems that are outlined above may not impinge greatly on centres with a small number of candidates. However, in our case, with candidate numbers at 700 (approx.) and growing, it is imperative in the interests of accuracy and convenience that the system can be made as simple and streamlined as possible.
>
> (O'Neill 1997: 38)

My insight into this situation was that we were operating within a social system that was assumed to be unproblematic. Within social systems that are taken for granted there is a need to elucidate conditions that distort self-understanding and reveal how they can be eliminated (Carr and Kemmis 1986: 136-7). One of the difficulties in carrying out research within one's workplaces is that the routines and the actions of everybody involved may seem so obvious that in order to ask questions about the rationale behind the actions we somehow have to 'un-familiarise' ourselves with it in order to be able to illuminate the taken for granted. The idea of 'making the familiar unfamiliar', sometimes phrased as 'making the familiar strange', is widespread in art (Hawkes 1977: 62-67) and semiotics (Lemon and Reis 1965) and its origin has been attributed to the German poet Novalis (Chandler 2001). My approach to this has involved attempting to make the familiar unfamiliar by critically examining what I experience as commonplace and ordinary in the light of insights gained elsewhere, including insights gained outside of teaching, learning and educational administration, and from critically engaging with the literature. In doing this I empathised with the idea that traditional models of learning no longer work for many, and new models that place people at the centre of activity are required.

These ideas are not confined to the field of education but are becoming apparent in many fields, such as economics. Economist Arie de Geus found that many Fortune 500 companies do not last beyond forty or fifty years (de Geus and Senge 1997). Drawing on the work of other authors (Collins and Porras 2002), he suggests that companies die

because their managers focus on the economic activity of producing goods and services, and they forget that their organisation's true nature is that of a community of humans. Such companies develop routines as a means of operation. Routines may be taken because we don't want to take decisions. We create so many routines that after ten or fifteen years we can no longer see beyond them.

De Geus argues for the need to develop a 'living company', a company that welcomes change and innovates. He cites Nokia as such a company. Thirty years ago Nokia was primarily a paper manufacturer. Today we recognise it as a high technology company. Nokia has been able to transform itself. De Geus's ideas have resonances for my work. I recognise how my work in school and with NCVA focuses on 'outputs'. In school the outputs are examination grades; in NCVA the outputs are certificates issued. In relation to these practices we have developed routines. In school these routines are based around how we teach and how we behave. In NCVA they are based around processing data and issuing results. Some of these practices may not work any more but we continue them because they have become routines. In the past in school I have had the expectation of students behaving in particular ways. When they do not behave in those normative ways I have assigned various punishments like written exercises or detention or exclusion from class. My experience has been that these do not work. However these activities tended to take the form of routines which were carried out even if they do not work. It seems to me if we wish to transform our practice there is a need to get out of established roles (Tsoukas 2002: 423) and disrupt rules and routines (Beech *et al.* 2002: 473). In moving forward therefore a key question is 'What are the factors that permit or restrict transformation?'

So, in the next section I will begin to address this issue by explaining the conceptual frameworks that underlie my research.

Conceptual frameworks of my study

Social practices, including educational practices are informed by different sets of values. Dewey (1997) claims that the purpose of traditional education is passing on the learning of the past to a new generation. Foucault (1977) might argue that it is also about control. De Geus and Senge's (1997) approach is based on valuing people and building communities of practice (Lave and Wenger 1991; Wenger 1998). In each case practice is based on its underlying values or logics. The relationship between a person's sense of being, what the

person knows and how the person carries out their practice is important. Expressed in more abstract terms, my understanding is that ontology can transform into epistemology and into practice in the sense that a relational sense of being can be transformative (Whitehead and McNiff 2006). A relational sense of being can develop relational ways of knowing leading to relational practice. This can be seen in the thesis in the transformation of ICT into political action. Propositional ways of being can lead to routines (Tsoukas 1998), whereas relational ways of being tend to be based on experiences which lead to narratives shared in communities of practice (Orr 1996). Within my school we have a mission statement that places emphasis on respect. But mission statements are propositions; they do not necessarily lead to action.

I believe many institutions, including my school, operate on propositional logics. Within such a mindset, respect remains an abstract value. As a result it is seen to be important to have a mission statement valuing respect but it is not seen as necessary to reveal the behaviours or to change the routines within the organisation that deny that respect in practice. A living mission may not be a statement at all but may be evident in practice. In relation to my work I have come to appreciate that I need to look at underlying logics. When I draw on writers like Arendt, Habermas and many others I need to be aware that their theories are propositional. The challenge for me is to make use of the inspiration that I gain from them in a living way. Consequently, I attempt to enfold their propositional theories within my living theory. The evidence of my success will be in the quality of learning relationships formed.

Within my work I experience contradiction and uncertainty. I experience myself as a living contradiction when my practice is in conflict with my values. This happens in school when I exclude a student from my class while claiming that I respect people and the diversity among people. I experience this contradiction when I teach class through didactic means, when I know that there are students whose ways of knowing are kinaesthetic or visual or interpersonal (Gardner 1993; Gardner and Hatch 1989). As a result my mode of teaching discriminates unnecessarily among students. In NCVA I experience contradiction when I expect administrators to deal with large volumes of data and to interpret it all correctly without error. I experience uncertainty when I attempt new ways of working with students, colleagues or administrators. My uncertainty is based on moving away from the security of routines and taking risks in the hope of contributing to improving our practice. My

experience of contradiction and uncertainty within my work leads me to provisional answers formed within a web of connection (Bateson 1979). Dialectical approaches accept that life is full of contradictions. However the dialectical theorists have generally spoken about dialectical theory in a propositional way (Whitehead and McNiff 2006: 32). In generating my idea of ICT as political action I am putting my theory into the literature and attempting to transform propositional theory into living theory. By this I mean that my living theory of ICT as political action is based within my practice.

You may wonder how this transformation occurs in reality. Let me explain how I have incorporated propositional theory within my living theory.

I have recognised that, in the past, I have used traditional didactic modes of practice and I have been authoritarian and controlling in my work places. In examining my practice and engaging with the literature I began to conceive of the idea that my students might know something of their own and my practice. I therefore proceeded to undertake a study which involved asking them about their experience of our classes. I have recounted the research elsewhere (O'Neill 1994a). When I asked my students about my classroom practice they told me:

> You talk too much.
>
> We have too much writing to do.
>
> We want to make more things.
>
> (O'Neill 1994a)

My experience of engaging with my students and seeking their views of classroom practice became a key part of improving my practice. This became the first step in developing ways of practising that are more democratic and participatory for those involved. Parallel to what I was doing in school, I initiated the formation of the Action Learning group in NCVA, and supported colleagues in carrying out action research enquiries which gave colleagues the opportunity to take control of their practice in ways that had not happened previously. I carried out my action research project into supporting them in carrying out their research into their practice and modifying their practice in the light of their findings. My research into supporting them formed a process of enablement by which they were able to use their ways of knowing and their ways of learning to bring greater meaning to their

lives. The comments of colleagues in relation to some of the changes undertaken show their move from frustration to satisfaction within their workplace:

> The response in the centres to the changes in the forms, the response we got at the information seminars was nothing but delight!
>
> (cited in O'Neill 1997: 51)

A similar satisfaction was expressed in relation to the benefits of the Action Learning Group that I had initiated and supported:

> [It was] clear that the participants viewed the group as a very positive learning experience.
>
> (Deane 2000: 132).

In school I have developed modes of teaching, particularly through ICT, that focus on learning relationships rather than didactic practices. The effects of changing my practice can be seen in the work on web sites by Leaving Certificate Applied (LCA) students (see http://www.ictaspoliticalaction.com/webs/lca2002/Default.htm). LCA is a programme that allows students whose interests and inclinations are not particularly academic to remain within mainstream school and achieve the Leaving Certificate like their more academic schoolmates.

> Unusually in an Irish context, the LCA programme has been designed on a modular basis, organised in half-year blocks or sessions, around a common curriculum framework. It is pre-vocational in character and is aimed primarily at those students who do not wish to proceed directly to third level education and those whose aptitudes, needs and abilities are not adequately catered for by the established Leaving Certificate. Perhaps the most distinguishing feature of the Leaving Certificate Applied is its emphasis on participants learning by doing, applying knowledge and skills to undertaking tasks and solving problems in an integrated way in the real world. In doing so, there are significant levels of interaction with the local community
>
> (Gleeson 2002: 87).

Drawing on ideas from the literature, the approach that I was trying to develop within the LCA programme was based on group learning that builds on individual learning. While students carried out their work on an individual basis some of the time there was an emphasis on integration and collaboration. By setting tasks that drew on different aspects of their programme I encouraged integration in learning (Boyer 1990). When the students were developing their websites I encouraged them to include aspects of their other courses.

> We were told what we had to do as part of this task and that we had to try to think of ideas for what we could do as part our key assignment. We also set up a diary and we [were] also informed that we would be required to integrate our other subjects and use them as part of our final product.
>
> (Fitzgerald 2002: 5)

The students made their choices around the medium for that learning. I will address this in more detail in Chapter 5 but for the moment let me mention my uncertainty in relation to this work by citing a specific example.

When invited to choose topics for developing their web sites, one student decided to develop a World Wrestling Entertainment (WWE) website. I felt distinctly uneasy about this as an appropriate topic for a web site built as a school project. However I lived with my unease and was surprised with the outcomes for the student involved. In his report on the project he indicated that there were three distinct aspects to his learning. First he learned more than he previously knew about wrestling. Second, he learned new ICT skills. Third, he learned about himself. In his report he said:

> I used to think I was no use at computers, now I think I am quite good. I think computers might be useful to me in the future.
>
> (Fallon 2002: 2)

The student was involved in learning not just about matters external to himself; he was also travelling on a voyage of self-discovery. On this voyage he was starting to take control of his life by planning for his future.

My idea of 'ICT as political action' is grounded within practices like those above and others detailed in Chapter 5. I have drawn on Arendt's propositional ideas around political action. I have shown the realisation of these ideas in my practice. I believe that the student involved in building the WWE website was involved in political action, as were the members of the NCVA Action Learning Group. Each in their way had moved on from activities that could be considered labour or work and into action. 'Action is the activity undertaken by people that enables them to make their place in the world' (Arendt 1958: 145). The people involved in the activities mentioned above were taking their place in the world. I am claiming that through my actions of creating the conditions of learning I have enabled young people to show how they can realise their natality. Based on this evidence and that given later I claim that I am taking Arendt's propositional theory and incorporating it within my living theory of practice.

Within the activities described above I have provided the supportive relationships that enable my students and colleagues to do what it is that they want to do. By developing a form of practice for me that allows people to feel that what they are doing is important, I am enabling them to take control of their lives and plan their futures. Relational forms of knowledge can generate relational forms of practice and relational forms of theory. 'ICT as political action' is such a relational form. Within relational forms of being, knowing and practice, I am encouraging people to be free thinkers, to think critically and to ask awkward questions to achieve an open society (Russell 1988).

This view is extended by Said (1994), who, in arguing for the intellectual to challenge normative assumptions, sets a challenge to teachers and would-be leaders. The challenge is to question the dominant system and in particular the attitudinal system. This point is especially relevant for traditional forms of schooling. A key aspect of most schools, my own included, is the hierarchical nature of human relationships where different people have differing positions and differing roles. So the expectation is that teachers teach and students learn. There is no expectation that teachers learn or that students teach, or that co-learning can take place. When I set out to improve my practice by devising the idea and undertaking the formation of a web design class that included students, teachers and the principal as learners and sought a student from the nearby university to 'teach' the class, I was challenging the attitudinal system that sees a strict hierarchy within schools and identifies teachers as knowers, and students as *tabula rasa* to be written on. Similarly, when I set out to improve my practice by initiating and supporting the Action Learning Group in NCVA, by involving workers at all levels within the organisation in examining their practice and offering their reflections on that practice for critique within the group, I was challenging the normative attitudinal system. This system sees one part of the staff as 'knowing' policy makers and another part as 'doing' administrators who implement that policy without contributing to it and without questioning it. But the challenges to the attitudinal system went beyond these activities. By offering people the opportunity to learn and to think for themselves I was offering them the means to challenge their attitudes. My support for the Action Learning Group and for the web design projects involved encouraging students and colleagues to create their living theories and test their validity.

These activities, among others that I initiated and supported, enabled people to challenge existing orthodoxies and decide new methods of working and interacting. This was the

case with the approach that I took to supporting students in carrying out the personal reflection task detailed in Chapter 5 where students explain the ways of learning that work for them. While this task is a prescribed part of the Leaving Certificate Applied programme the approach that I developed in carrying out the task enabled students to take control of their learning and, by reflection on that learning, to understand better their abilities and talents and to plan how they would use those abilities and talents in the future. In this way they set about authoring their futures and, instead of being passive consumers of education, they became active creators of their own lives.

The motivation for my work and for my research is driven by my personal values base. I have values in relation to people. These have particular expression in relation to education. First, I believe everyone is a unique and special individual. As a teenager working with youth groups in the Young Christian Workers (YCW) I formulated this naively by stating: we are all unique individuals, children of God, and as such have a special place in the universe. This place can only be filled by one. Consequently to deny a person their place in the universe is the most serious wrong that can be done. As I looked for a theoretical base for my work I found that similar ideas can be seen in Arendt's (1958: 8-9) concept of natality. Natality emphasizes the possibility for original human agency: each person has the capacity for a new beginning, for contributing something unique to human experience. Arendt's conception of natality drew me to her work on 'The Human Condition' (1958). Her ideas on human activity posed a challenge in relation to my activities within my practice as teacher and consultant.

The framework of political action

I have referred to Arendt's (1958) examination of 'the human condition' where she offers new ways of looking at the world and at human affairs based on justice. At this point I want to engage more fully with Arendt's ideas and show how they can form the basis for a reconceptualisation of ICT as a transformational medium with the potential to support individual human agency rather than how ICT are commonly seen: as a productivity tool. In Arendt's view human activity can be divided into three types. She calls these labour, work and action and she represents these as a hierarchy. Labour is the activity that is not undertaken for its own sake but in order to provide the necessities of life (Arendt 1958: 83). Labour can be seen as those everyday activities that we undertake to get by: those that we

do not necessarily choose to do but which we have to do. I am reluctant to name activities which constitute labour because I am aware that another might see a higher order activity in those that I describe as labour. Nonetheless, I will offer these suggestions tentatively and invite you to consider them and we can engage dialogically with them. In the introduction I have indicated how I engage dialogically through the thesis, and I ask you to bear those ideas in mind now.

It seems to me that from the point of view of the teacher in a school, mundane tasks like maintaining the attendance rolls or organising the classroom furniture could be seen as labour. From the perspective of the ICT teacher or the ICT administrator running the virus scanner or ensuring the network or email works could be seen as labour. This is effort that leaves nothing behind and the 'result of this effort is almost as quickly consumed as the effort is spent' (Arendt 1958: 87). These are vital jobs that need to be done and need to be repeated day after day but they are not core functions of the teacher or ICT administrator. Frequently as a teacher of ICT I find my time taken up by mundane activities. Many other teachers of ICT report the same. If a student cannot access a working computer or if the Internet connection is unavailable it is difficult for the student to get involved in transformational activities through the medium of ICT. For me as a teacher of ICT I need to find ways of working with ICT that go beyond labour. The activities that I detail later in relation to building a robust ICT infrastructure form an important part of moving beyond ICT as labour. A robust and dependable infrastructure provided me and my students with the tools required to explore ICT in more life-affirming ways.

Arendt's second form of activity is work. Although the terms 'work' and 'labour' are often used interchangeably in everyday discourses, Arendt (1958: 80) argues there has always been a difference between them. Her argument is on the etymological basis that every European language, ancient and modern, has separate words for work and labour. If we proceed on the basis of her distinction, the 'work of our hands' can be seen as the production of durable artefacts (*ibid:* 136). People who undertake 'work' are often craftspeople and artists who make objects which are durable in the world. A key contrast between labour and work is that labour does not produce lasting goods; but work produces the 'sheer unending variety of things' which constitutes human artifice (*ibid:* 136). In common with many others I have acknowledged the superiority of work over labour and the importance of the 'work of the hands' when I encourage students to bring home the

clock that they made for the mini-company or the rain detector constructed in Technology class. An important aspect of these items was their durability. For some students the clock was still on the kitchen wall many years later. When I provided opportunities and supported my colleagues and students in developing multimedia presentations or web sites I was supporting them in developing 'durable artefacts' (*ibid:* 136) which in many cases had a 'use value' and could be used repeatedly. These activities could, in Arendtian terms, be judged 'work'. In moving my conceptualisation of ICT from labour to work I am making some progress toward a reconceptualisation of ICT but this is some distance from a transformational conceptualisation of ICT.

Arendt's third type of activity offers an interpretation that could support a transformational view of ICT. She proposes a type of activity which she calls 'action' and she associates speech with action (Arendt 1958: 175-243). In Arendt's view action is a public category, a worldly practice that is experienced in our intercourse with others, and so is a practice that both presupposes and can be actualized only in a human polity (Yar 2000: 8). Action is primarily about the disclosure of the agent in speech and action (Arendt 1958: 175). She makes the link between action, speech and disclosure clear in her initial framing of the chapter where she addresses the concept of action. Arendt starts the chapter by citing Dinesen: 'All sorrow can be borne if you put them in a story or tell a story about them'[1] and Dante: '…nothing acts unless [by acting] it makes patent its latent self'[2] (Arendt 1958: 175). By using these as initial references for her discussion of action she links action and speech with the narrative form. There are suggestions that the use of the quotation from Dinesen, a self-proclaimed story-teller, is in contrast to the Latin quotation from Dante and to the discussion of Greek philosophy and politics that follows (Wilkinson 2004). On the contrary I believe that Arendt was making the point that storytelling plays a key role in the life of the *polis*.

The link between action, speech and self-disclosure provides important grounds for my work with students. It suggests that the highest form of activity that can be undertaken in class is not learning by rote or through abstraction or by hiding behinds roles like teacher

[1] No source given. It may be paraphrased from a comment made by Isak Dinesen *alias* Karen Blixen in a telephone interview published in The New York Times Book Review on 3 November 1957 (and reprinted in 2000 in a collection of interviews and talks edited by Else Brundbjerg. *Samtaler med Karen Blixen* [Interviews with Karen Blixen] Copenhagen: Gyldendal, 254-55).

[2] Dante, no source given. A later reference (p 208) suggests that this is Arendt's translation of a quotation from Dante *De monarchia* i. 13

and student but by revealing oneself as a human being. That self-disclosure is revealed though speech and action. While working with my students on their web design projects I engaged with them in dialogical processes of deciding what work we would undertake. By choosing to design a particular web site and publish it my students were self-disclosing: they were saying, 'I have an interest in doing this and in making my interest public'. By writing reports of their experiences they were reflecting on what they had done and revealing their inner thoughts. One student revealed his insecurities at the outset of the LCA programme but his sense of satisfaction and achievement is made clear in his later reflections:

> When I was just starting I would never have thought I would be able to use a computer at the level that I can use a computer today. Even things as simple as typing was hard at first, and when we went onto the other things it took a good while to get my head around it…I learned something new nearly everyday since the start of LCA. In the past year and a half I have learned so much about computers that I did not think it was possible.
>
> (Clifford 2004: 2)

Another student gained deep insight into his abilities and gained the confidence to articulate his realisation of his capacities and inclinations.

> I found out that I am capable of learning on my own initiative. I found out that I am capable of learning things when I write them down.
>
> (Kearns 2004: 5)

By developing an innovative approach to the personal reflection task and other ICT based activities I was enabling my students to engage in political action through the medium of ICT. By choosing to support my students in this way I was self-disclosing. I was revealing the ways that I preferred to work with my students: in emancipatory processes involving dialogue and action. I believe that these reflections indicate that I have learned how to teach in a way that enables others to learn. In my approach to teaching I use ICT to enable others to learn. At the same time I teach them to use ICT to develop their agency. ICT is used in a productive sense by my students, colleagues and me working collaboratively. We each position ourselves as agents who are using ICT to realise our potential. This enablement shows that I value these young people and my colleagues.

In Arendt's terms, action is the activity undertaken by people that enables them to take their place in the world (Arendt 1958: 176). Central to the idea of action is the idea of 'plurality'. Plurality is often taken to refer to the diversity among people. Plurality in some respects is

a contradictory term in that it refers to the sense in which we are all the same as humans: that we are all different. So plurality has the character of both equality and distinction (*ibid:* 175). Within my work I attempt to value plurality by valuing the differences between people. As a novice teacher and occasionally later, my actions in excluding students from my class from time to time suggests that in practice I valued conformity rather than diversity. In hindsight I believe that students who refused to conform to ideas that they should dress in a particular way, sit in a particular way or speak at particular times threatened my need for a particular conception of order. I punished these students in a variety of ways. As I came to understand that people come to know in different ways and learn in different ways and have different inclinations, I have begun to value their plurality by opening up ways of learning and acting that support them within diversity. By rejecting normative assumptions about how people are and should be I am working toward providing greater equality among people by recognising people's individualities, or in Arendt's words 'distinction' (Arendt 1958: 176).

In more abstract political terms, if people do not have equality they cannot understand each other or see the needs of each other. If they were not different they would not need speech or action to make themselves understood. It is the plurality among people that is the basis of action. Each person is capable of new action and new perspectives and they will not fit a tidy predictable model. Only the experience of sharing a common world with others who look at it from different perspectives can enable us to see reality in the round and to develop a shared common sense (Canovan in Arendt 1958: xiii). Let me take these propositional ideas and present them in a living way.

In one of his personal reflection task assignments, Matthew (Reilly 2004) choose to carry out his task by using a website that provided ideas on writing a covering letter to accompany his curriculum vitae in support of a job application. In the assignment I asked Matthew to select the three most important points made in the online article and discuss them with three classmates. In Matthew's reflection he wrote:

> I discussed these points with three members of my class… D. and S. agreed that they think they would use these points but M. said they weren't the points he would have went with.
>
> (Reilly 2004: 1)

Matthew's account shows him entering into dialogue with co-learners. By entering into dialogue they were expressing their equality. Within dialogue they encountered plurality:

they did not have the same perspective on what was the most important point in the online article. Matthew does not give a full account of the discussion that took place but from the equanimity of his account it appears that he accepted that there were different points of view. While engaging with the members of his group on an equal basis he recognised the distinction among the membership. The particular innovative approach that I had taken to the Personal Reflection task enabled Matthew and his classmates to decide on the content of their learning, to make their decisions on what was important in their learning, to engage dialogically with each other about that learning and through this process embody the principles of plurality in the form of equality and distinction.

In addition to plurality, Arendt claims that of the three activities, action has the closest connection with natality. Natality is the new beginning as a result of birth that holds out the prospect of further new beginnings by the new born acting. Essentially natality can be seen as the recognition of the uniqueness of the individual, not as a result of some special talent or ability, but simply because they were born. All humans as a consequence of their birth hold out the possibility of starting new things. When I enter a classroom I can choose to stifle those new beginnings or I can choose to enable new beginnings. In my practice as a teacher I have often stifled new beginnings by seeking conformity rather than creativity. I have justified stifling new beginnings on the basis that I have a course to cover, or we don't have time. However, through the activities described above and later in this thesis I explain how I have supported new beginnings. One of the consequences of this is that I have started to expect the unexpected because people are capable of action, of beginning something new. Natality points to the uniqueness and 'specialness' of every person despite what the appearances may be sometimes. The implications of this for me and for other teachers and students of ICT is that ICT can be conceptualised as action when it involves the use of multimedia tools and technologies to support original human agency – this can be 'action' in the Arendtian sense and within this action in the context of ICT, the unexpected can be expected. In the brief account of Matthew's activities above, Matthew was accounting for the new born acting. By his action he was starting a new beginning; in his speech he was disclosing himself. In the web of relationships that he formed in dialogue he started a process which eventually emerges as the unique life story of the newcomer as he influenced the life stories of those around him (Arendt 1958: 184). I will present these life stories in greater detail in Chapter 5.

Arendt's conceptualisation of human activity, although presented in a propositional way, offers an analysis that could form the basis for my living theory of practice. It seems to me that school activity that I have difficulty with could be seen in Arendtian terms as labour and occasionally work but rarely action. The challenge from reading Arendt is to develop school practices which take the form of work or action rather than labour. A key question is: does traditional didactic teaching provide scope for action? It seems, to me, not. Within our schools quiet classes are often prized but this is in direct contrast to Arendt's conception of being fully human. In Arendt's terms, action is the pinnacle of human activity and action is primarily about the disclosure of the agent in speech and action (Arendt 1958: 175). On that basis the humanity of the silenced class would not be fully realised. Excluding students from class is often because of the student's unwillingness to conform. Arendt's emphasis on plurality emphasises the difference between people. This suggests that striving for conformity is lacking in humanity. For me, as a practitioner, trying to develop a practice which realises the values that I consider contribute to full humanity, Arendt provides a unit of analysis against which to test the validity of my practice. Within the detailed account I give later, evidence is provided of changes in my teaching practices that start the process of moving away from labour, and into work and on to action.

Arendt speaks about how action allows each individual the opportunity to give meaning to human life. In recognition of people's natality, educators have a responsibility to support those that we work with 'to be the best' (Arendt 1958: 19). That responsibility lies, in the first instance, with themselves. My first responsibility as an educator is to be the best that I can be. I can be the best that I can be by supporting others in their struggles to be the best that they can be. This responsibility is not a consequence of my work. It is a part of my natality. I carry this responsibility simply because I am alive. The responsibility lies with me in the various places that I live with my students, my colleagues, my family and friends. The responsibility is to support others to realise their natality. I have given indications of how I do this in the previous paragraphs and I will address this in more detail in Chapter 5. Arendt's ideas hold out the prospect of challenging traditional views of education by providing a model based on action within the world, rather than one of conformity to the institution. Moving from existing practice to a new model is not a single change event but a wide range of differing responses in varying circumstances.

My initial attempts to address the dissonance in my practice therefore focussed on moving my work towards practices that enabled students to exercise more control. In the section below dealing with the development of self-instructional guides I will indicate how this approach, while still being restrictive, offered students the opportunity to exercise a greater level of control over their learning. By taking this approach I removed myself from being the focus of attention, teaching from the top of the class, to a situation where I was in a position to give attention to individual students. This fundamentally changed the relationship between students and teacher. This was an intermediate stage in moving students towards greater autonomy. When I eventually initiated the Setanta project and an innovative approach to the LCA personal reflection work (see Chapter 5) I provided much greater autonomy to students and thus contributed to their realisation of their natality.

The framework of communicative action

While my belief in natality is important, simply believing that every individual has the capacity for original human agency is not enough. In contrast to traditional views in education and educational research, I see education as a means of expressing one's original human agency. I see learning as being central to this. Consequently, I see learning as a lifelong process, not in the sense that we all need formal learning and retraining throughout life, but in the sense that to live is to learn (see Dewey 1916: 358-60). While the conventional view is that learning takes place within specific locations and contexts, I take the view that learning is not bound by context or location. My learning does not begin and end in the classroom or the lecture hall; my life is the living embodiment of my learning. My thinking is influenced by Habermas's (1975) idea that learning is part of the human condition: humans cannot not learn in processes of social evolution. This is also my vision for my students and colleagues. Learning is not something that is 'done to' them or that they 'do to' others; learning is a process that we participate in together. While there is a view that learning is a characteristic of the individual learner, my experience of myself and my students is that the learning that I value is enhanced, transformed and developed by cultural interaction among people. This may be a matter of individual learning transforming into collective learning.

The challenge for me from this understanding, as a teacher and consultant on ICT, has been to devise ways that support this model of learning. In my case, throughout this thesis it

should be apparent that having realised that I do not learn particularly well within formal processes that take place within a classroom or at lectures, I have taken the initiative to support social and relational forms of learning through initiating the formation of a series of communities of practice (Lave and Wenger 1991; Wenger 1998). These include the communities formed by colleagues within the LCA programme, colleagues from school and the university that form the Setanta project, and colleagues within NCVA in the Action Learning Group. In the nature of communities of practice these groups of people overlap in many cases. My learning takes place within these communities, drawing on each other's experience and practice to devise new ways of teaching, learning and administering. From these communities I have devised new forms of learning that do not necessarily involve teaching. By providing the conditions that allow my students to engage in video conferences with students in distant countries or with world leaders I have enabled them to engage in a form of learning which is not bounded by location or context but which takes place where people come together with common interests. Ideas which help to explain how I changed my practice over a period of time are pursued later in this thesis and in the accompanying multimedia thesis (see DVD at Appendix C and www.ictaspolitical action.com).

In Arendt's conception, action is centrally connected with both natality and plurality. But the feature that links action and plurality is speech. Within the projects which form the basis of my research I have positioned communications in a central role. When choosing the first web based project for the Setanta project I strongly supported the students in the selection of an online art gallery. The gallery has the potential to bring the communication of aesthetic values closer to a wide range of students. At the same time, while establishing the organisational structure of the Setanta project, I placed communications at its organisational core by bringing together the students and staff of the school with the students and staff of the university in a dialogical activity to enhance the learning of all. The work I undertook collaboratively with students and staff to establish an infrastructural communications network throughout the school is an aspect of supporting communications within the school. The programme of videoconferencing with students in other cities and other countries, which I initiated and co-ordinated, was another aspect of supporting communications. These activities have communications, speech and dialogue at their core and throughout them. Buber has established the pedagogical worth of dialogue and revealed

the significance of 'relation'. He wrote – 'All real living is meeting' (Buber 1958: 25) and looked to how, in relation, we can fully open ourselves to the world, to others, and to God. The Setanta project, the LCA task work and the NCVA Action Learning Group supported dialogical processes which supported 'meeting' and enabled relational forms of learning. By undertaking these projects I believe I was promoting 'real living' (*ibid:* 25).

The emphasis on speech is in marked contrast to analyses of traditional education by Dewey (1938), Freire (1985) and Giroux (1992), among others, which focus on silencing voice. My experience of taking the steps toward a pedagogy of dialogue is that people are diverse. I started with the desire to engage with people and set about finding and creating opportunities to move outside the strait-jacket of the traditional classroom. I sought support and supporters among like-minded people. I developed practices within class that challenge traditional ways of being. I pursued school activities that take place outside of school. The wide range of activities described in the thesis form some of the steps toward a pedagogy of dialogue. I hope that this will be apparent as you proceed with me through the thesis.

Arendt's linking of speech and action has similarities with Habermas's idea of communicative action. Habermas breaks Marx's concept of 'sensuous human activity' into two essential types of human action: 'work' or 'purposive rational action' and 'communicative action' or 'social interaction' (McCarthy 1981: 22). This differs significantly from Arendt's tripartite division in some respects but Habermas develops rules around speech and action that act as a basis for autonomy and new forms of democracy. For Habermas, 'work' is the purposeful, rational use of tools for the satisfaction of human needs; 'communicative action' is interaction through which the knowing subject comes to know himself or herself through the eyes of others. The distinction between work and communicative action is essential since it is commonplace to be liberated from material want and still be enslaved in the ideological prison of institutional language. This can be the case in our increasingly prosperous global societies where products provide a good way of life and allow us to be seduced into 'one-dimensional thought and behaviour', which works against critical examination (Marcuse 1964). Challenging norms of attitude and behaviour is not easy. It may mean being involved in battles for ideas which can extend to battles for job security and professional recognition (McNiff and Whitehead 2000: 3). Said says that it can mean life or death for some (Said 1991). Battles over ideas have certainty affected

the health of colleagues and, I believe, has resulted in death for some. In such circumstances it can be easier to 'go-with-the-flow' and live within a relatively comfortable authoritarian environment. It is, however, possible to form enclaves of critical practice within a traditional environment and through them provide a better way of life. I believe that the communities of practice which underpinned the Setanta Project, the LCA programme and the NCVA Action Learning Group form such islands of critical practice and made a difference for community wellbeing. Initiating these communities and working with them and within them form a central part of my understanding of my practice and of the development of my living theory of practice. I will engage in more detail with the formation and mode of being of these enclaves in Chapter 5.

Habermas's theory of communicative action starts from a position that saying is a form of doing. In other words speech or indeed language is a form of activity. However as speech is normally directed toward someone then speech is also a social activity. Every utterance has a propositional and an interpersonal structure (Habermas 2000: 75). Speaking is at the one time saying something and at the same time addressing someone. However, speaking of its nature does not remove distortions and Habermas's ideas of speaking as action or communicative action necessitates the imagination of an ideal speech situation. For Habermas, the public sphere is 'a discursive arena that is home to citizen debate, deliberation, agreement and action' (Villa 1992: 712). Here individuals are able to share their views freely with one another in a process which closely resembles true participatory democracy. Everyone with the competence to speak and act is allowed to take part in a discourse. Everyone is allowed to question any assertion whatever. Everyone is allowed to introduce any assertion whatever into the discourse. Everyone is allowed to express her or his attitudes, desires and needs. No speaker may be prevented, by internal or external coercion, from exercising their rights to speak and to challenge others' assertions (McCarthy 1981: 305). For Habermas, the ideal speech situation anticipates a form of life in which autonomy and responsibility are possible. This is a form of life that I envision for myself, my colleagues and my students. This is an ideal far removed from the traditional classroom as described by Dewey (1938: 17-23) or from the traditional authoritarian school I find myself in. However I believe that the activities that I have initiated, begun to describe in this chapter and will engage with in more detail later show some of Habermas's

characteristics of a free speech situation and show the incorporation of propositional theory into living theory.

When a student is enabled to ask a prime minister, "Mr Ahern, how can Ulster Unionists trust you when you make a statement hoping for a United Ireland in your lifetime?' and receives a reply from the prime minister, I believe there are key elements of an ideal speech situation in place (see www.ictaspoliticalaction.com/pages/northsouth.htm). In posing his question the student is, in effect, making 'any assertion whatsoever'. By responding, the prime minister is acknowledging the legitimacy of the student's assertion. The entire group, prime ministers and students, are exercising their right to speak and to challenge each other's assertions.

Following the North/South schools link it became clear to me that video conferencing offered considerable possibilities for young people to engage with other young people to share experiences and ideas. Using this medium they could, with leaders in our society, pose questions and express views. At the inaugural meeting of our Comenius project I undertook to organise a video conference with these possibilities. With colleagues and students I planned the video conference with a number of threads. One of the threads involved students from my school, St Aidan's, and Loreto Grammar School, Omagh, asking and answering questions about each other's experiences of school and of each other's local environment (see www.ictaspoliticlaction.com/pages/comenius.htm). This process of asking and answering questions is part of a process of reaching understanding which is considered to be a process of reaching agreement among speaking and acting subjects (Habermas 1984: 286-7). The second thread involved teachers from St Aidan's, IES Margarita Salas in Madrid, Gymnázium Jana Papanka and Gymnázium Ludvíka Svobodu in Slovakia, and Loreto Grammar School in a conference discussing their experience of school and of teaching in their respective schools. The third thread involved students from St Aidan's and Omagh Grammar School in a conference with two candidates for election to the European Parliament, Mr Ben Briscoe and Mr Proinnsias de Rossa. All the participants were involved in what could be considered as approximating to an ideal speech situation.

Setting up the video conference presented me with a series of challenges. There were the technical challenges involved in getting the video conferencing equipment installed and operational. In Arendtian terms I see this type of ICT activity as labour – routine activity

that has to be done (Arendt 1958). Creating an environment to enable political action offered me another range of challenges. I looked for volunteers from the students involved in the Comenius project to take part in the video conference. But I was aware that taking part in a conference is not easy for the students involved. Getting involved in speaking publicly is difficult for some. Using the technology can also be a challenge. Video conferencing technology is not perfected and often the picture and sound are not synchronised. At the same time any movement by the participants can cause the image on screen to break up. These technical artefacts can contribute to the difficulties faced by the students. It was clear to me that we all needed to learn how to take part in the conference.

I sought the help of a colleague, Anne O'Driscoll, who had considerable experience of training students for public speaking and had supported the students who took part in the North/South link videoconference. Anne and I undertook a programme of supporting our students in drawing up questions and practising asking and answering each other's questions. However, while this enabled the students to develop skills of composing, asking and answering questions, it did not prepare them to deal with the challenges of the technology. I came up with the idea of setting up a 'video conference training suite' using our video conference system as one half of the suite and the school video-camera and TV as the other half. In this way we supported our students in rehearsing for the conference by providing a simulation of a conference with two groups of students within the classroom.

Finally we organised a 'dress rehearsal' where our students and students from Omagh Grammar School built their self-confidence by taking part in a conference with each other. Throughout this, Anne provided the students with guidance around making their questions clear and speaking so they could be understood. Eventually they took part in the conference mentioned above. I see Anne's and my involvement with this work as an aspect of the 'web of enablement'. The account I have given here shows some of the steps required to enable young people and teachers to speak for themselves and to exercise their agency in their lives. Through supportive caring relationships they can overcome negative influences in their lives and become critical. Through these same processes I have made myself critical. An important aspect of becoming critical is developing and demonstrating a capacity to speak.

Habermas deals with the ideal speech situation propositionally and, to my knowledge, offers no examples of how it might be practised in reality. Other educationalists have

drawn on Habermas's work but often they have followed his approach so closely that they also undertake it in a propositional manner, remaining at an abstract and theoretical level. Nonetheless, the idea of an ideal speech situation provides a model against which experience of real speech situations can be measured. Discourses within the classroom and indeed the computer room could provide one such comparison. The accompanying video and photographs of my students' participation in Internet based activities, and in particular their electronically mediated conferences with national and international leaders, illustrate attempts to provide everyday examples of ideal speech in practice (see video and photo evidence at www.ictaspoliticalaction.com/pages/comenius.htm; DVD at Appendix C). The conversational or dialogical nature of these interchanges can be seen as '…the encounter between men [*sic*], mediated by the world, in order to name the world' (Freire 1972: 61). So these encounters and the outcomes of the encounters are educational practices. They are educational practices which contribute to '…[a] humane collective life [which] depends on vulnerable forms of innovation-bearing, reciprocal and unforcedly egalitarian everyday communication' (Habermas 1985: 82).

Later in the thesis I will give a detailed account of my work with the Leaving Certificate Applied (LCA) class when we collaborated in building websites. I have referred earlier to one student who wished to build a website about 'World Wrestling Entertainment' and I will address this in more detail later. Initially I had doubts about this as a topic but I let him continue nonetheless. The forms of communications entered into by my students and me as their teacher as they collaborate in producing web based learning materials were clearly innovation-bearing in that they were new practices based on new technologies. The dialogue between my student, Keith, and me when he expressed his desire to design a World Wrestling Entertainment website for his project, is an example of a student making an assertion and turning that assertion into action and indeed self-reflective action. His teacher's, my, response is part of that dialogue when I listened to his arguments, put aside my prejudices and trusted him to carry out a worthwhile project. In the event my trust was rewarded when he went much further than producing a worthwhile web site and analysed his learning in relation to the development of the website.

When students and teachers joined together in a training programme, which I have described above, where the students and teachers could not be identified in terms of their institutional roles, I believe that they were involved in unforcedly egalitarian everyday

communication. Within these activities teachers participating as students and students participating as teachers were involved in vulnerable forms of communications because the practice challenged the norms within their society.

In the examples given above I show my engagement with the literature around the human condition, democratic participation and justice. This literature is largely propositional. I believe that my research shows a living realisation of the ideas contained in these key literatures and as such represents the incorporation of propositional theories into my living theory of educational practice that is grounded in a view of ICT as political action.

Control and power

I have described several activities which significantly changed my practice within school. Enabling students and colleagues to engage dialogically with each other through the medium of ICT is a substantial change from my original inward-looking classroom-based didactic practice. However, as colleagues and I attempted to change our practice in school we constantly encountered obstacles from authorities. It seems that attempts to promote life-affirming practices frequently lead to oppressive responses from the proponents of orthodoxy. The desire to sustain their positions can lead to organisational strategies of control. Within my practice I found that simple matters such as access to a photocopier became very important.

One particular attempt to modify my classroom practice involved photocopying worksheets for use in my class. But access to photocopying was strictly controlled. I was allowed to make 1500 photocopies per year. It seemed to me that school authorities had effective ways of controlling what I do without ever having to challenge me directly about what I was doing. In the event I photocopied the worksheets outside of school and proceeded with my plans. With coercive practices of this nature in place I decided that I needed greater understanding of issues of power and control. In order to advance my understanding of the reality that authoritarian forms tend to dominate in institutions and in schools in particular, I needed to engage with ideas around control and power. These are important themes in terms of understanding how the organisations I practise in function. Reconceptualising ideas around authority, power and control could be important to me in relation to developing new practices of learning, teaching and administration. In this section therefore I will engage with the ideas of some key theorists. I needed to engage in a process of

making the familiar unfamiliar and the unfamiliar familiar as part of a process of exposing those aspects of the existing social order which frustrate the pursuit of rational goals (Carr and Kemmis 1986: 130).

One of the activities that the LCA class had to undertake as part of the course was an IT task. In supporting my students through this task I pursued a balance between giving them the freedom to decide what they wanted to do and providing them with support so that they could achieve what they set out to do. This necessitated taking a dialogical approach to teaching class. Indications of the dialogical nature of class work with the LCA group can be seen in one of my students' task report when he says:

> 6 Sept 04: In our first class we had a meeting [about] what our Task assignment should consist of and what was expected of us. We discussed the plan and time value of the Task and that each student should come up with their own individual idea. Our IT teacher told us of past examples and how much credits that each got and which told us the level of work expected. The teacher, who is Mr O'Neill, told us that the Task idea should integrate with other subjects like, Religion, Maths and Art.
>
> (Sheridan 2004: 2)

This is an entry from Chris's journal which he maintained to support himself through the development of his task. This is the first entry and so relates to the initial preparation for the task. The journal entry fits into a web of enablement that supported Chris in his learning. I will deal with this briefly now but it should be more apparent in Chapter 5. The opportunity to take part in the LCA programme allowed Chris and his classmates to learn in an environment that valued experiential approaches to learning rather than didactic approaches. In his website (www.ictaspoliticalaction.com/webs/dan/index.htm), another student wrote:

> In school I am doing a course called Leaving Certificate Applied. It has helped me a lot to stay in school. It is a great idea for people who are not very academic in school. In LCA I have learned a lot of new things like computer skills and art. These skills I would not have learned doing the normal Leaving Cert. It is a great way to stay in school and concentrate on skills that you have.
>
> (Butler 2000)

Dan's comments raise questions about the relevance and appropriateness of the established academic Leaving Certificate and how it is taught. However, it is not just participation in the LCA but the type of participation that is important. Maintaining the journal, which I

encourage students to do while carrying out their tasks, enables Chris to plan and reflect on his work (Sheridan 2004). The journal entry shows how work is planned. Instead of traditional didactic processes of classes starting with instructions this class started with a meeting where I, as teacher, set out the parameters for the task but emphasised individual choice, where my students asked questions and spoke about their initial ideas for the task.

The short entries above, from a student's journal (Sheridan 2004) and another student's website (Butler 2000; www.ictaspoliticalaction.com/webs/dan/index.htm), show evidence of planning, self-direction, collaborative work, dialogical processes and a relationship between teacher and students that enables each to achieve their goals without coercion. These excerpts hold out the prospect of a different conceptualisation of authority and of power.

Generative transformation and the 'New Science'

Within my practice my experience of traditional models of teaching and administration is that they are controlling, limiting and closed. In attempting to theorise my work I seek models that are emancipatory, encouraging and open-ended to provide inspiration. McNiff draws on work by Bateson (1979; 2000), Bohm (1992,1995,1996), Wheatley (1992) and other writers in an area commonly referred to as the New Science in her development of the idea of generative transformation (McNiff 2000; 2002). She describes her awe at the capacity of living systems, resting on a finite number of components, to produce infinite numbers of novel phenomena (McNiff 2002: 56). She uses the example of infinite numbers of faces being generated from a small number of components: noses, eyes, mouths. To illustrate the infinite capacity for possibility she cites the development of an acorn into an oak tree. She uses these biological models as metaphors for personal development – 'We all have the potential to be more than we are' (*ibid:* 56). However she indicates that the realisation of this potential is contingent on politics not intruding and distorting those potentials. The potential that all people have for self-recreation and self-generation can be extended to the area of research. Research has this same capacity for regeneration. Working with these ideas McNiff has developed her personal theory of the nature of action research as a spontaneous, self-recreating system of enquiry. Within this model she is happy to work with systematic processes as described by other action researchers but she has difficulty if these processes are seen as linear or strictly sequential. She leans toward

an unpredictable model of enquiry where one can know where one is starting but where subsequent steps are far less certain and indeed may be totally unpredictable.

In my research I experience similar difficulties. While many models for research suggest the need for careful planning in advance, my research suggests a much more provisional approach to planning where it is possible to set general aims, but the implementation of plans has to be carried out sensitively as the unexpected so often happens. Such an approach is supported by research into science and particularly physics in the twentieth century. Capra (1992) refers to how Heisenberg's work on quantum theory has affected the nature of twentieth century scientific enquiry:

> In transcending the Cartesian division, modern physics has not only invalidated the classical ideal of an objective description of nature but has also challenged the myth of a value free science. The patterns scientists observe in nature are intimately connected with the patterns of their minds; with their concepts, thoughts and values. Thus, the scientific results they obtain and the technological applications that they investigate will be conditioned by their frame of mind.
>
> (Capra 1983: 77)

It appears that the claim is that the objective certainty that existed in science from the time of Newton and Descartes no longer holds. While Newton could predict the motion of the planets he would have had less success predicting the weather. This is because fluid motion, which follows the Navier-Stokes equation, is non-linear and therefore small changes in air currents can produce big changes in the weather (Gleick, 1994: 24). He would not have had such success in predicting the motion of an electron, or predicting the movement of share prices on Wall Street. Rorty (1989: 6) has cautioned that the fact that Newton's vocabulary allows us to predict the world better than Aristotle's does not mean that the world speaks Newtonian (cited in Jenkins 1995: 101). Propositional approaches could lead one to believe that the world spoke Newtonian. However, many processes in life are mathematically non-linear and therefore are far less predictable. McNiff (2002: 5) embraces the unpredictable and indicates that her one certainty is the need for uncertainty. This has resonances for my experience of practice. In my workplaces I find uncertainty and unpredictability is commonplace. So when I make plans in my classroom they often do not work out as I plan. Later I will describe in detail an initiative that I took with one of my classes which involved building electronic circuits to make lights flash and buzzers sound. I considered this a very liberating activity. One of my students asked me one day, "We're

not writing again, are we?" (see Chapter 3). What I saw as an interesting, fun activity he could only see as 'writing'. This unpredictability suggests that rigid planning is not very helpful but planning needs to be more contingent and responsive to events.

New paradigms in science have parallels in education and in educational research. From these ideas I draw confidence for my research. Many of my practices produce classrooms that appear to be less orderly and less predictable. So instead of students sitting quietly in their places there are students moving around, talking and making a noise. But out of this apparent chaos come well-designed web sites (www.ictaspoliticalaction.com/webs /lca2004/Default.htm), booklets to teach young people to play the guitar (www.ictaspoliticalaction.com/pdf/lca/guitar.pdf), meetings with leaders in the community (www.ictaspoliticalaction.com/pages/comenius.htm) and self-reflective journals (www.ictaspoliticalaction.com/pdf/lca/SoccerCoachReport.pdf) (see also Appendix C).

It seems irresponsible to take an approach to educational research that does not take into account the points above. Reason (1988) expresses such a view. He suggests three changes that are required in order to move to a post-positivist or post-modernist approach. He identifies these changes as participatory and holistic knowing, critical subjectivity, and knowledge in action. His argument for participation is a significant one in terms of educational research. It seems to me from what I have said already that the scientific approach does not bring about improvement in education but developing high quality relationships, and supporting people to achieve their goals does. Educational situations are extremely complex and to try to view the situation objectively when the teachers, administrators and curriculum developers are so clearly a part of the situation seems naive. Bohm (1995: 134) speaks of the impossibility of separating the observing instrument from the observed. Elements of complexity suggest that all those involved in the process must participate in the enquiry and be prepared to put their claim to knowledge to the test. This, of its nature, suggests that a holistic view must be taken (Bohm 1995: 134; Lomax 1996: 7; Wheatley 1992: 9). In my research I have taken this approach. My LCA students maintained their personal journals of activity in their tasks. The journals formed the basis of their Personal Reflection Task and are an important part of this research. For my part this is what I am doing – I am investigating my capacity to enable young people to think for themselves and act on their behalf.

McNiff's efforts to reconceptualise scholarship 'in order to develop an integrated form of theory that is capable of explaining the emergent integrated form of human interests' fits with the reconceptualisation of science that engages with the ideas of Bateson, Bohm and Wheatley (McNiff 2000: 137) and resonates with my reconceptualisation of ICT as political action. While traditional scientific approaches may not work well in the emergent areas of quantum mechanics and ecology, McNiff argues that 'traditional categories of human interest – technical, practical and emancipatory – need to become embedded within a newer inclusive interest that aims for the development of community.' McNiff's view of knowledge is that it is not something 'out there'. Knowledge is a transformational process within the knower: as knowledge transforms so does the knower. This process pushes the knower to extend their capacity to know. In the process, older forms of knowledge are embedded within newer forms.

Forms of the thesis

In writing this thesis I am confronted with a concern around linearity. Conventional practice around writing a thesis would suggest that I should do this in a highly organised linear fashion. However, my learning, which I will describe in this thesis, suggests that many matters are understood better as webs of connection where one can jump in at any node and proceed by learning what is relevant to you at that node rather than proceeding linearly from the start, to the middle and on to the end. At this point I think it may help you if I jump to a node which is not logically at the beginning of this thesis and explain one aspect of my learning.

I have learned that my learning proceeds from reflection on episodes of my everyday life, using insights gained elsewhere. I gain deep insights by relating stories from my experience and reflecting on them in the light of my other experiences, and of other people's experiences and theories. I believe that you need to understand that this will be my approach in presenting this thesis. So in the sections which follow I will provide vignettes drawn from my own or others' experiences and explain that vignette in the light of my learning, drawing on existing theory where appropriate. This approach is an aspect of my theory of practice which I will return to in more detail below.

The multimedia version of this thesis is presented as a publicly available website, which is also contained in the DVD attached as Appendix C. The design of the website draws

heavily on the ideas contained within the thesis. Central to these ideas is the 'web of enablement'. The multimedia thesis forms its web of enablement by using the web metaphor to enable others, students, colleagues and interested others, to engage with my research. If you wish to access the thesis from the point of view of the chapters a collection of links down the left side of the pages allow you access the thesis in this way (see Figure 1.1). The links offer you a more traditional linguistic approach and allow you to download a chapter of the linguistic form of the thesis. Links across the top of the pages are to the projects, like the Setanta project and LCA programme, and are the contexts for the actions. They are links to the contexts that captured my data. Within these links you can directly access students' websites, the booklets produced for their tasks and their task reports. It is in this area that you gain direct access to videos of students engaging with each other and with political leaders.

Another set of links at the left of the pages represent the key themes of the thesis e.g. knowledge base, political action, communities of practice. I believe this is a fundamentally different way of writing a thesis and engages with many of the issues raised by people like Eisner (1997). It is not just a matter of taking the linguistic thesis and putting it on the internet with links to a few documents. It is offering you a different way of looking at the thesis. You can jump in and out of this thesis without reading it from end to end. If the piece that catches your attention is 'communities of practice' you can start from there and see where it takes you. Emphasising the outward looking inclusive nature of the thesis are links to some key external web sites like Jack Whitehead's Action Research network and Jean McNiff's website.

Fig 1.1– Homepage of the multimedia thesis at www.ictaspoliticalaction.com

The dialogical nature of the research is emphasised by the online forum. The forum is a space for discussion. You can login and comment on the thesis and others will be able to comment on your comments. So the thesis in itself is opening itself to engagement and dialogue.

Throughout the site there are links to other material. For example, in the LCA section there is a link to a website produced by students taking part in LCA. One is to a website created by Mark McKay in 2001. Mark produced a website telling other students about LCA. He was focusing on providing information. So, for example, he provides a description of the subjects that can be taken on the LCA programme.

Principles of good design are important in developing a website. Those principles are used in developing this multimedia thesis. Among the principles of design is the idea of carrying a theme throughout the site and this is often accomplished, in part, by the use of a logo which assists in branding the site. Often variations of the logo are used in different parts of the site. Such an approach has been taken with the multimedia thesis. But a novel approach has been taken to developing the logo. A web site analysis tool has been used to examine the website and to create an image representing the structure of the web site.

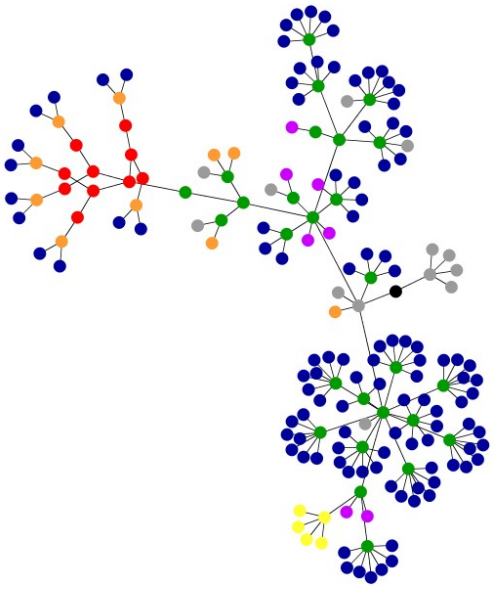


Fig 1.2 – Image representing the website www.ictaspoliticalaction.com and therefore representing the thesis. 19 September 2007

This may seem like a simple choice of logo. But the choice is important. The different colours and lines in the logo represent different elements of the website and therefore of the thesis. The development of the logo is a combination of physics and art to produce an unusual representation of the website and the thesis. One of the unusual elements is that it graphically shows the web of connections within the web site. You can see within this that the different parts that make up the website – which make up the thesis – are a little like fractals. Various parts are not the same but there are similarities. The image makes up the whole thesis but the thesis is made up of component parts which fit together in various ways. Although the components are the same throughout the website they produce something different in various places. This is a living realisation of Bateson's idea of patterns that connect (Bateson 2000). The pattern repeats itself, the situations are different, the realisation is different. The pattern is the constant – it is a novel creation. All the parts of the thesis connect to make up the whole as all the parts of the image connect to make up the whole. Neither the thesis nor the image is an isolated event; all the parts are linked to each other dynamically. The image is not static. Every person who contributes to the thesis by interacting with the website enables the image to change. The thesis shows the types of patterns that are needed to connect. The multimedia thesis challenges the notion of how a thesis works and provides a completely different model of the thesis.

Within the thesis the video clips and computer multimedia artefacts provide the possibility of opening the window on learning undertaken and understanding gained by people that cannot readily be represented in a propositional form of words and numbers. This is not a rejection of the form of words and numbers. Word and numbers appear regularly throughout the thesis. Rather than being a rejection, it is a recognition that words and numbers sometimes elucidate and sometimes obscure. In some cases the use of multimedia artefacts enable the viewer 'to be enveloped' after only a few seconds. The multimedia approach used within the research and the multimedia approach to producing the thesis is recognition of the variety of ways through which our experience is coded. Eisner (1997: 7) reminds us that the selection of a form of representation affects what we see. I believe that the multimedia representation provides a richer representation than would be provided by words on a page alone. Multimedia representation appeals to a variety of intelligences and acts as a way of activating wider ranges of intelligences (Gardner 1993; Gardner and Hatch 1989). The honesty of the behaviour, of the reactions, of the emotions in the multimedia representations provides a sense of authenticity. Within the data provided in the thesis we can come to know the people involved and we will see them as whole people, unique individuals with contributions to make. This level of particularity and dimensionality are conditions of things being 'real'. The multimedia representation approaches 'reality'.

Among the perils of alternative forms of representation is the lack of precision offered by alternative forms (Eisner 1997). This leaves them open to the challenge of ambiguity, but ambiguity is a potential source of insight. The peril of ambiguity and the promise of insight can both be addressed by offering data to public critique.

I will pursue these ideas and examples of denying my values in my practice in Chapter 2. In the following chapters I will address how I have attempted to bring my practice into line with my values.

A living theory of learning

Having identified myself as a living contradiction when my values are denied in my practice, I set about undertaking a personal action enquiry. This follows the form set out by Whitehead (1989; 1993) which seems like a highly structured systematic process of observe, describe, plan, act, reflect evaluate, modify. I subscribe to the general idea but I find, in practice, that conducting an action enquiry is a less coherent, messier process.

McNiff (1988: 43; 2002: 57) questions the capacity of existing models of planning, acting, observing, reflecting, re-planning to adequately express the steps required in carrying out an action research enquiry. She suggests that the model needed to have the capacity to show multiple problems at the one time. She provides a three dimensional 'spiral of spirals' which suggest secondary concerns being addressed without losing sight of the central concern (McNiff 1988: 45).

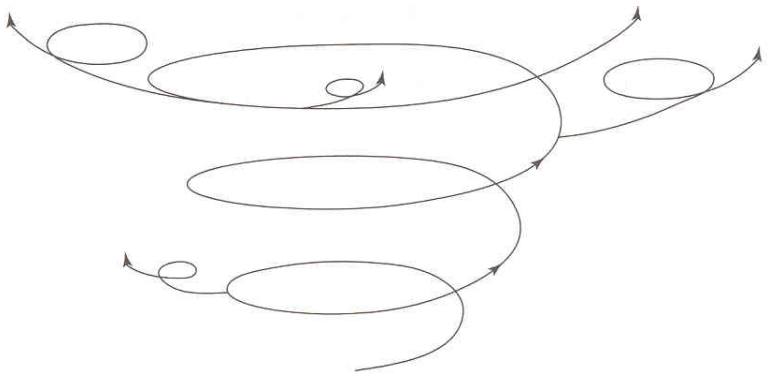


Fig 1.3 – The visual which would represent the action is a three dimensional spiral of spirals (McNiff 1988: 45)

In the event I have carried out many spirals of enquiry (McNiff 1988: 45; 2002: 57) and I lean toward McNiff's (2002: 56) description of a spontaneous, self-creating system of enquiry. I don't see my research as a discrete piece of work with a start and a finish; rather it is a complex web of enquiries spread over time and space. To assist you let me describe a portion of one of these spirals:

- I experience a concern where some of my students are not successful in the five subjects usually regarded as a minimal pass in the Leaving Certificate.
- I hear that there is a programme that these students could follow that could be more suited to their learning styles.
- I join with colleagues in evaluating the new programme.
- I work with colleagues to devise an implementation plan.
- I support colleagues in securing the agreement of school authorities in introducing the programme.
- I undertake to teach information technology on the new programme.

This could be the logical end to an action enquiry cycle but it is the start of a series of action enquiry cycles that took me through six years of teaching the LCA programme. While involved in this series of enquiries I was at the same time involved in carrying out a

spiral of enquires which supported the Setanta project, Comenius project, North/South links and Action Learning projects. The action enquiry spirals for each of these overlapped with each other and with other enquires which are not accounted for in this research report. I believe I am living out a generative transformational evolutionary process which McNiff suggests is beyond words (McNiff 2000: 56). The interwoven, enfolded process is difficult to communicate in ordinary words.

In reflecting on the complex nature of my research I find it useful to compare it to fractals. Fractals are complex geometric shapes which in their familiar form are attractive coloured geometric graphs. But fractals have properties that are unusual for geometric shapes:

> They are generated by relatively simple calculations repeated over and over again, feeding the results of each step back into the next.
>
> They are infinitely complex: they reveal more and more detail without limit as you plot smaller and smaller areas.
>
> They can be astonishingly beautiful when computer displays are used to animate the images.
>
> (Tyler *et al*. 1991: 3)

My research follows a model of carrying out relatively simple steps, the steps of an action enquiry, repeated over and over again with the outcomes of one step feeding into another. It is a constant, daily, process of examining my practice, imagining approaches that fit better with my values and modifying practice. In imagining new approaches I incorporate insights gained along the way.

This makes the process complex, and examining any particular detail shows more and more details. You may have noticed that when I drew on Chris's and Dan's reports for their LCA tasks the analysis was rather onion-like in terms of the layers within layers that can be revealed. The multimedia representation of this research will be beautiful and much better at representing the complexity of my research than words alone.

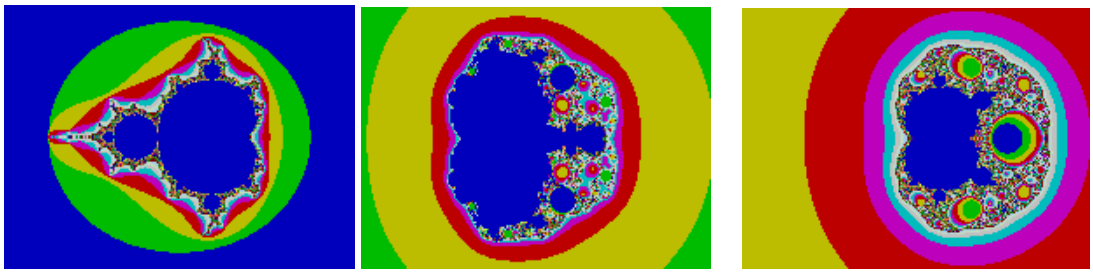


Fig 1.4 – Fractals from the Mandelbrot set generated using Fractint v. 18.21 (http://spanky.triumf.ca/www/FRACTint/fractint.html)

While carrying out my spirals of personal action enquiries I realised that the same tension that Arendt identifies between the role of the spectator and the role of the actor is evident in much research into education (Coulter and Wiens 2002). Frequently research into education follows the social science model in that the researcher is external to practice. In other words the researcher acts as a spectator and observes practice. Additionally, the account of the research is the researcher's account. The participants in the research are the objects of the research. Action research, on the other hand, appeared to provide a model that I could be more comfortable with. However in some modes of action research practitioners carry out their practice, observed by a researcher, often from the university. It is the role of the researcher to observe, describe and explain the research. Those taking part in the research are again objects while the researcher generates the theory.

This model of research did not appeal to me as I believed that I was perfectly capable of observing, describing and explaining my practice. From my work with my students I was also aware that they were perfectly capable of observing, describing and explaining their practice. On reading Whitehead (1993), I began to realise that I was in fact generating my living theory of education and in fact my students were doing the same. I will provide the evidence that grounds this claim in Chapters 5 and 6.

This thesis addresses issues regarding the quality of action research accounts by providing not just a description of workplace learning but also explanations for my research. While doing this I develop my living theory of learning which is grounded in my practice. While my living theory of practice incorporates propositional knowledge it is based in my lived experience of being a teacher, co-ordinator of ICT, consultant and person (Evans 1995: 132). As part of showing the quality of this work I articulate the standards of judgement that I will use to evaluate my work. I will make these standards of judgement available to the wider educational research community within this thesis and publicly at www.ictaspoliticalaction.com. This will enable my standards of judgement to be assessed so that agreement can be reached on how my account should be judged in its own terms. I will pursue these issues of validity and quality in Chapters 6 and 7.

Summary

In this chapter I have set out my ontological values of justice and freedom. My values are underpinned by a view of people's place in the world and their right to determine their

place in the world. The view is centred on individuals as actors and not spectators. This view is carried forward to how I see education and educational research. I have placed these values within the conceptual frameworks of justice, control, freedom, generative transformational forms, living theories and alternative forms of representation. However, within my practice I frequently find myself in situations that deny these values. In particular the authoritarian nature of my school and the demands of change within NCVA result in people not being treated as if they have a unique contribution to make. Drawing on my ontological values and their underlying framework I cannot see myself as a spectator in my work as teacher and administrator and instead I am impelled to take action to bring my practice in line with my values. So I decided to act, with others, to find ways of teaching and administration that allow people to feel honoured and valuable. As the core of my work in school and NCVA is within the areas of ICT I have framed my research question in that context and I am asking, 'Can I reconceptualise ICT as political action?'

This thesis is an account of my attempts to bring my practice in line with my values. While doing this, I provide explanations for my practice and in this way develop a living theory of practice. I will enable this theory to stand as high quality theory in achieving originality, significance and rigour by presenting my criteria and standards of judgement to public scrutiny and assessment in order to test the validity of the knowledge claims of the thesis.

Chapter 2 – Contexts: Why am I concerned?

Before dealing with the contexts of the research in detail I draw your attention to two pieces of video on the web site. The first of these, taken from a national television news broadcast, shows a number of students engaging with Prime Minister Tony Blair and Taoiseach Bertie Ahern within the context of a video conference (http://www.ictaspoliticalaction.com /pages/northsouth.htm). The second piece of video shows one student asking Mr Blair about changes to the line up at Newcastle United football club and another student asking Mr Ahern how Ulster unionists can trust him when he makes a statement calling for a united Ireland in his lifetime (http://www.ictaspoliticalaction.com/pages/northsouth /blairahern.html).

The video exemplifies ICT as political action, not because of the two politicians involved but because it shows young people engaging with each other and with leaders in their community and pursuing ideas that matter to them. In my view, the young people are taking their place in a civic public sphere where their views and ideas matter.

Within the video the young people's confidence in themselves and in their engagement is obvious. They show that they are able to take their place in the public sphere and understand the importance of what they are doing.

Introduction

This chapter outlines the contexts of my research, and offers my reasons and purposes for undertaking it. I explain that my contexts often hold the reasons for my research in terms of concerns around the realisation (or not) of my values in practice.

In the previous chapter I indicated that my work is underpinned by my ontological values of creativity, justice, freedom and transformational forms. I have related my ontological values to a range of conceptual frameworks (Arendt 1958; Berlin 1998; 2003; 2006; Bohm 1992; 1995; 1996; Capra 1983; 1992; Habermas 1973; 1975; 1979; 1980; 1984; 1985; 1987; McNiff and Whitehead 2005; 2006; Wheatley 1992). The frameworks centre on justice and freedom. But addressing matters of justice and freedom often necessitates considering issues of abuse of power and control which work against the exercise of justice and freedom. I have explained that in my working contexts I often experience myself as a living contradiction when my ontological values are denied in my practice (Whitehead

1989; 1993). This experience of myself as a living contradiction provides the impetus for me to undertake my research. In this chapter I will explicate the issues that underlie my experience of myself as a living contradiction. I will show these issues in relation to the two main contexts that I work within. These are the contexts of my practice as a teacher of ICT and as a consultant of Information and Communication Technologies (ICT) with a national awarding body.

Let me give two brief examples of my experience that gives rise to my concerns. When I started teaching I focussed considerably on personal mastery of my subject area and my teaching practice. I used creative approaches to teaching science focussing on providing a stimulating class by using practical work and interspersing book-work with slideshows, film strips and field work. However, I also had a considerable focus on testing to see how we were doing. But after a time I began to feel uneasy while testing. Testing may have been highly motivational for some students it was humiliating for others.

My analysis of this situation is that I was running a traditional authoritarian class. I was using a 'didactic model' (Dewey 1997) or 'banking model' (Freire 1972: 45-50). I was functioning as the gatekeeper transferring discrete packages of knowledge to the student (Kleinsasser *et al*. 1994). While this model worked well for some students it served others poorly. In fortnightly tests some students failed every time. My observation was that students who failed early in the year rarely improved. It seemed to me that the process of testing was a model for my approach to teaching; the failure in testing was symbolic of the failure of the model. As a consequence I had concerns about what I was doing to some students.

But in some respects testing was an aspect of a wider failure. I will deal with my dissatisfaction in relation to my class work in more detail in the next chapter. But in brief, it seems to me that the impact of testing was not confined to the students involved or to my class, but on a wider level it had systematic implications, because results of testing were an important part of the school culture. While the results of the tests reflected on the students in the classroom they reflected also on the teacher outside of the classroom. Each year when major state examinations results were released to the school both teachers and management studied them carefully. This put me under greater pressure to push my students to do well. My more recent insights into power and control within schools enable me to analyse this in terms of Foucault's model of institutions as the panopticon (Foucault

1977). At this point I will just say that I can now see myself internalising control within this situation.

Within the context of the NCVA, administrators were attempting to work with a massive expansion of the further education sector without the additional resources required. Administration staff indicated that it was impossible to continue with the level of expansion without resources or without new ways of working. But approaches to work were not determined by the staff involved; they were determined externally. Trying to cope with the expansion in demand with no way of dealing with the increased workload, and being denied the opportunity to devise new ways of working made this difficult for the administration workers.

These are two examples of everyday concerns in relation to my practice. I will give more detailed accounts of some interventions in my technology class which illustrate my concerns later. I will do the same in relation to NCVA. Concerns like these are important in the thesis because they provide the basis for me to undertake a self-study of my practice in order to improve that practice and to attempt to bring my practice into line with my values.

The two situations outlined above may appear like two relatively simple problems that should be easily solved. However, as I worked to solve these problems I discovered that in each case they had underlying reasons and influences that went far beyond my direct work. For example, I could have just stopped testing my students but that would have resulted in difficulties with the authorities in the school and with parents. In NCVA we could have worked harder to handle the larger volumes of work but this is a limited response. As I studied my activities in school and in NCVA I began to understand that curriculum, pedagogy and administration are all influenced by the dominant logics within organisations. The difficulties that affected me in school and NCVA were part of a larger web of influence. As I examined this web the range of my concerns widened. In this section therefore I will indicate what the areas of concern were and indicate why they concerned me.

The nature of and reasons for my concerns

My concerns arise in various areas of my work in relation to a range of different matters. I have concerns in relation to my practice as a teacher and consultant; to the practice of

authority within the institutions that I work; and to my learning and how it influences my practice. I have concerns in relation to educational research and educational theory and how they affect practice within education. While examining my practice I have become concerned about the way ICT can be used in education with an emphasis on efficiency and potential for productivity rather than its life-affirming qualities.

By setting out my concerns I am showing the reasons for undertaking my research. Traditional research frequently sets out simply to describe and explain issues. Indeed it has been argued that 'the philosophers have only interpreted the world, the point is to change it' (Marx and Engels 1978: 145). Because of my values around creativity and generative transformational forms I have a desire to take action to address my concerns and bring my practice into line with my values (McNiff 2000; 2002 *inter alios*). Experiencing myself as a living contradiction provides the reasons for my research, but the research is not an end in itself (Whitehead 1989). The research has purposes. In addition to setting out the reasons for my research I also set out purposes. While I have multiple concerns I also have multiple purposes. My primary purpose is to remove the dissonance between my values and my practice by improving the justice of my practice (Festinger 1957). This overall purpose is expressed in a variety of ways. They range from my personal purposes to improve my learning and support my students and colleagues in improving their learning, for the purpose of making a contribution to theory, and contributing to the knowledge base of educational research (Hiebert *et al.* 2002; McNiff 2002b; 2003; Snow 2001).

To assist you in following my thinking I have separated my reasons and purposes. In this chapter I will detail the reasons for the research and in the next chapter, the purposes which were most important in carrying out the research will be addressed. Because my research is focussed toward developing a personal living theory of practice it is important to see that the purposes for my research are closely aligned to the purposes of my practice. The focus of my practice is to move away from a traditional didactic and authoritarian approach to teaching and develop emancipatory pedagogies that may enable young people to think for themselves and make their contributions to life. Within NCVA the focus of my practice was to move away from traditional approaches to administration which usually focus on efficiency (Callahan 1962) and move towards a model offering the possibility of questioning the basis of the work we were doing by examining our underlying individual and organisational values and assumptions (Argyris 1982: 160). This would open the

possibility of using a model that was educational for those involved and enabled administrators to think for themselves and make their own contributions.

I see my work in the two organisations as closely related, as being of significance for each other and influencing each other. I started in my teaching career as a teacher of Junior Science, Biology and Physics in a large secondary school. As new technologies have come to be seen as important in education my focus has moved toward new technologies. These have included Junior Technology, sometimes called Craft, Design, Technology in other contexts, and Information and Communications Technologies. Before starting my research I had been appointed information and communications technologies (ICT) coordinator for the school. While the thrust of my work as a teacher is to teach and support the development of ICT within the school, the government sponsored development plan 'Schools IT2000' has given this work a particular focus (Government of Ireland 1997).

My school context is a traditional one. The school is under the trusteeship of the Irish Christian Brothers and like many schools of its type has an authoritarian system. The school is considered by staff and parents to be an academic institution with a record of good discipline. In this context, 'academic' means a traditional school with traditional views of how students should be taught and how they should behave. The teaching staff is largely male although that has been changing rapidly in recent years. The student population is all boys.

My second work context is that of information and communication technologies consultant to the national certifying body, National Council for Vocational Awards (NCVA). NCVA was an Irish state agency set up in 1991 to develop and make awards in the area of further education and training. At its formation some 8,000 students were taking Post Leaving Certificate (PLC) courses (Department of Education 1995). These were post-compulsory education courses. Many of these courses prepared school-leavers for employment in specific vocational areas. In addition to the PLC sector, programmes offered second chance opportunities to young people who for one reason or another left compulsory education early. Many of the PLC and other programmes had no system of certification in Ireland and indeed many courses were certified from outside the country by bodies like City and Guilds of London, Royal Society of Arts and others. Under the terms of the Qualifications (Education and Training) Act 1999, NCVA was subsumed into the Further Education and Training Awards Council (FETAC) in 2001 (Government of Ireland 1999).

My work in NCVA involves my interaction with administrative staff in handling data, designing computer programmes to process data and designing forms and other documentation. As part of my practice I researched with development officers, teachers, school administrators and staff who process the data and I used feedback from all to modify the practice of the certification section (O'Neill 1997). My enquiries focused on understanding the nature of the programmes being certified, understanding the special administrative difficulties posed by these programmes and devising means of certifying the programmes speedily without compromising their integrity. Between 1994 and 1998, I spent considerable time devising computer programmes, designing forms, developing procedures, talking with teachers, centre co-ordinators, administration workers and development officers, all with the intention of devising means of administering the system of assessment in a way which would be educational for the students and the workers involved. A detailed account of this work has been given elsewhere (O'Neill 1997).

During 1997 I took a substantial step in my learning as I came to realise that the approach that I had been using has been described as 'single loop learning' (Argyris 1982: xii; 159). Single loop learning is essentially about refining existing policies and procedures and making them more efficient. This works well for routine programmed activities or emergency situations that require prompt unilateral action. The model in use is the one that Schein (1996) in his three cultures model calls 'The Engineering Culture'. People working in this culture show a preference for people-free solutions, have an absolutist view of reality and are safety oriented. It was becoming clear to me that an 'engineering approach' would not enable learners and administrators to achieve their potentials. Argyris offers a second model for learning which he calls 'double loop learning'. That is learning that involves 'non-routine, non-programmed, difficult issues that cannot be solved unless we examine our underlying individual and organisational values and assumptions' (Argyris 1982: 160). The 'double-loop learning' model offers the possibility of questioning the basis of the work we are doing rather than simply making our present activities more efficient. Schön has asserted that the way forward will not be achieved only by analytic techniques, 'but the active synthetic skill of designing a desirable future and inventing ways of bringing it about' (Schön 1991: 16). This gives rise to one of my key concerns:

I have concerns that the current approach to administering the process of certification is not educational for learners or administrators and requires a radical rethink of how we work.

Concerns about practice – whole class teaching

While teaching as a traditional teacher I meet many students who are happy with didactic approaches and others who are resistant to learning in this way. I am not sure why this is. Perhaps it is the constraining nature of the classroom. It is implausible that everyone will find that sitting still in a two foot square for six hours a day is the most effective way to learn, or that reading books or writing into a copy book is the most effective way to learn for all people (Gardner 1993; Gardner and Hatch 1989). From my observations I find that some students find activity works better; either moving continuously or the opportunity to move around a room from time to time. For others it seems to be the sense of taking control of what they are doing rather than passively listening that enhances their learning.

The kinds of logics in use in schools are the logics used in many institutions (Schön 1971). They are traditional western, linear, propositional logics. In our western society we are literally schooled to think in a particular way using a particular form of logic, and that logic supports the reproduction of the dominant culture (Bourdieu 1992; 2000; Illich 1995). The discourses in use are communicated through culture to teach us to think in particular ways. One of these is the model of the teacher as possessor of knowledge which must be imparted to students. Despite this, I find as I teach that when I am trying to impart something to my students I am often imparting something else instead. This phenomenon in schooling has been termed 'the hidden curriculum' (Jackson 1968; Snyder 1970). In addition many students are learning things that you never set out to teach. Despite the extensive control measures that we use in schools, students are good at organising themselves, their time, and each other when they are doing things that they want to do. Many think in ways that are not generally acknowledged in traditional schools (Gardner 1993; Gardner and Hatch 1989). While the school looks for order in terms of students sitting in place, dressed appropriately and for students to write well formed essays with a beginning, middle and an end, many children do not think in a linear propositional way; yet their ways are not accepted within the school. I have values in relation to people participating in quality educational experiences. However, the teacher-centred classroom approach which I have used so often does not acknowledge students' diverse ways of learning and knowing. Despite my emancipatory values I find myself operating within strict orthodoxies using the logics of control. As a result, within my practice I frequently do not provide my students with a quality educational experience.

These were my thoughts about school and schooling. I had little idea of what my students thought of my teaching. Within the authoritarian system that I operated students did not discuss teachers or what teachers did. If students discussed teachers they did not do it where a teacher could hear. At a later point I began to understand the value of looking for my students' views and I will deal with my experience of this in the next chapter. This gives rise to my second major concern:

I have concerns that the modes of thinking underlying my practice result in me missing opportunities for influencing learning. At the same time these modes of operation are preventing my students improving their learning.

Concerns about practice – keys as symbolic control

A recent edition of the 'Time Team', a popular TV programme which undertakes archaeological excavations, featured the discovery of a medieval skeleton during a dig on the site of an old priory. The casual viewer could see little, apart from a small bundle of bones in a hole in the ground. One of the archaeologists, Phil Harding, told the viewers that this was a woman of high status. He knew this because he could see a few small pieces of corroded metal on a chain which had been a set of keys. "She is a woman of high status," he said. "The keys show she has control over the sacred places." Her keys were an element of symbolic control: an element that was still interpretable a millennium after her death (Bernstein 1996; Bernstein and Solomon 1999).

Throughout my teaching life school keys have always been important. Access to keys is often restricted. Within my school, keys belong to a 'security suite of keys', which means copies cannot be made. Teachers have a key for their own room, but not for other rooms and not for entry to the school. Traditionally keys are not easily available for access to computers or video players. The question of access to keys might seem trivial but access to keys is a question of symbolic control. The old principle of domestic economy that if you 'look after the pennies; the pounds will look after themselves' is carried through to institutions in terms of control and domination. In my school small matters like access to keys, to rooms and to photocopier paper is strictly controlled. It seems to me that this means the institution does not need to look after the major issues of domination. Because the principles of domination have been internalised in relation to small matters, control does not need to be imposed in more important matters. Domination and control are

established as part of the culture. Within schools the established orthodoxy is that good teachers have good control. The result of this thinking is that you must exert control in order to consider yourself a good teacher. This orthodoxy reinforces the internalisation of control. Foucault (1977), drawing on Bentham's idea of the panopticon model of prison, claims that within the panopticon external surveillance becomes unnecessary because control becomes internalised within the jailor and the prisoners. From this I express my third major area of concern in the following way:

I have concerns that within my workplace a social formation exists which has internalised domination and control and that this social formation is denying the creativity of individuals and preventing them from realising their natality.

Concerns about the social order – democracy

Historian Eric Hobsbawm (1995), in his analysis of the history of the twentieth century, claims that there were only twelve states in the world that remained democratic during the interwar period, from 1918 to 1939. Five of the states were in Europe. The only European countries with adequately democratic political institutions that functioned without a break throughout the entire inter-war period were Britain, Finland (only just), the Irish Free State, Sweden and Switzerland. This would appear to indicate that Ireland has had an enviable record of democracy. However, McCarthy takes a different view. 'An Irish man sees authority as something conferred on him from above. There is no tradition which says a man must first govern himself – dynamism from below has never been a feature of Irish society' (McCarthy 1969: 42). The experience in Irish education draws more from McCarthy than Hobsbawm. 'The dominant pattern is one of church ownership and management…with the state having central control of curriculum and assessment' (Drudy and Lynch 1993: 118). Within the pattern of church ownership the pattern of management is such that the churches, in the form of the religious orders which run the majority of secondary schools, maintain complete control. This is accomplished by having a board of management of eight members. Four members are nominated by the religious order which act as trustees, two elected representatives of parents and two elected representatives of teachers. The trustees appoint the chairman to the board. In the event of a tied vote the chairman has a casting vote. The controlling religious authority has an effective veto on any decision made by the board of management (*ibid:* 81).

Religious-run secondary schools form by far the greatest proportion of post primary schools in Ireland. They have a strong academic tradition (which means a concentration on academic subjects) (*ibid:* 6-7). However the principal curricular option at senior cycle – the Leaving Certificate – has been evaluated as unsuitable for a substantial proportion of senior cycle students (Curriculum Awareness Action Group 1991). While the most educationally disadvantaged groups improved their position in absolute terms through higher rates of participation, they have not gained any great advantage in relative terms with middle class groups (Drudy and Lynch 1993: 118). In 2004 Lynch was still lamenting the inequality in Irish schools but this time placing the responsibility on the intellectual tradition in schools. She claimed that 'One of the most significant omissions in Irish education is the absence of a strong intellectual tradition focused on equality, human rights and social justice' (Lodge and Lynch 2004: 105).

The disadvantage experienced by some students through the Leaving Certificate programme was emphasised by a recent decision of the Equality Authority (2006). The Authority determined that two students had been discriminated against by the Department of Education and Science under the terms of the Equal Status Acts, 2000-2004. The equality officer stated that it was worthy of comment that there is an assumption running through the submissions made by the Department that 'the examinations process is sacrosanct', and that it is 'absolutely objective'. No evidence, she stated, was produced to confirm this viewpoint. The equality officer appeared to be indicating that the logics underpinning Department policy did not permit the officials to see the injustices that they were perpetuating. One of the difficulties with inequality and injustice is that it can become part of the logics of institutions; in effect it can become institutionalised and it can be difficult for those within an institution to see it.

Alienation from much of what goes on in school is a key factor in the marginalisation of students. Drudy and Lynch (1993: 5) tell us that 20% of students undertaking the Leaving Certificate achieved a grade 'E' or less (failed) in thirteen out of thirty-two subjects. In 2005, the National Council for Curriculum and Assessment (NCCA) confirmed this, stating that 20% of students leave school before the end of senior cycle and a further 20% perform badly in exams (NCCA 2005: 13). My students express it less scientifically: 'School is boring', 'What use is Physics?', 'The rules are stupid!' Their bad behaviour is a way of acting out their frustration. In many cases they are frustrated because they cannot engage

with education as they meet it in their classroom. Education is something which is 'done' to them.

The management style of my school is one which is hierarchical and authoritarian. The predominant attitude to this style by both teachers and students is one of compliance. However, there are students within the system who feel alienated, and respond, in frustration, with aggression. Some students and some teachers are marginalized – the students because of their bad behaviour, the teachers because they are seen to be unable to cope with the bad behaviour.

A key element in the marginalization of the teacher is his/her isolation within the classroom and his/her isolation professionally. The physical isolation within the classroom is in part caused by the traditional 'egg-crate structure of schooling' (Lortie 1975 cited in Fullan and Hargreaves 1992: 11). This results in a teacher being alone in a classroom of some thirty students. If these students do not want to be there then this can be a lonely classroom. The 'egg crate structure' of schooling does not refer only to the physical isolation of the teacher. Professional isolation may be worse.

Shortly before he retired a few years ago, my Deputy Principal of fifteen years remembered my first day at school: "I gave you a text book, showed you to the room and we never saw you again for the rest of the year," he said. I was initially pleased at this compliment to my capacity as a new, young teacher to cope. But this was really a reference to my 'ability' to cope with isolation, not to make demands, and not need support. Is this really admirable? To what extent is coping with isolation educational? Professional isolation limits access to new ideas and solutions that might enable a teacher to deal with new and challenging situations. The stress of isolation can fester and accumulate, leading to greater frustration and further isolation (Fullan and Hargreaves 1992: 10). The isolating structure of many of our schools leaves little opportunity for participative action.

Apple (2003: 12) describes the situation where the citizen's only opportunity to participate in the democratic process is by 'voting' or 'buying'. He refers to this as 'thin democracy'. He contrasts this to 'thick democracy' where community activists and parents and sometimes students themselves are full participants in the development and articulation of policies and where even the principal is elected by the local community (Gandin and Apple 2002; 2003). In my school the citizen-student has no means of participating in the

democratic process. The citizen-teacher participates by voting for board of management members. But the board has been designed so that one group, the trustees, always has a voting majority.

As I examine my practice within school I realise that the concerns I have are not unique. Many others have voiced the same concerns and theorised them well. The difficulties that I experienced in relation to the testing of my students can be examined in the light of Drudy and Lynch's (1993) analyses of Irish education. The difficulties that I face are not unique to my classroom but appear to be part of the institutional structure of Irish education and indeed traditional education outside of Ireland. It appears to me that access to higher levels of participation in the decision making processes around education is key. If I were assessing participation in decision making in my class or school using Arnstein's ladder of participation (1969; 1971), or one of the modifications of it (Hart 1992; John 1996; Lansdown 2001; Treseder 1997), my classroom practice and indeed school practice would be placed at the lowest level; one that 'assumes a passive audience, which is given information which may be partial or constructed'. This lack of involvement in decision making may lead to the perpetuation of systems which do not meet the needs of those that the systems are purportedly set up to serve.

My fourth area of concern therefore relates to the logics underlying traditional education and may be summarised as follows:

I have concerns that the model in use in the traditional systems operating within our schools and in official policies discriminate against some students and prevent them achieving their goals.

In addition I have concerns that the academic model of the established Leaving Certificate is unsuitable for a proportion of the students that I teach.

I am concerned about the lack of opportunities for participative action within my professional community.

Concerns in relation to educational theory

Education is often seen in terms of a 'transmission metaphor', where knowledge is transferred from the 'knower' to the 'learner' (Sfard 1998). The model, which Freire (1972: 45-50) refers to as the 'banking model', is the dominant model in use in schools in

Ireland (Green 1995). I have often and still find myself accepting this status quo. The tendency to accept the status quo is in part accounted for by our approach to knowledge. Korthagen and Kessels (1999: 7) distinguish between Aristotle's concepts of *episteme* and *phronesis*. Schools and perhaps all organisations are dominated by *episteme* – knowledge which aims primarily at helping us to know more 'about' a situation. The banking model is good at helping us to know 'about' things. By contrast, *phronesis,* which Korthagen and Kessels translate as 'practical wisdom', places the emphasis on perceiving more in a particular situation and finding a helpful course of action on the basis of strengthened awareness. A more perceptive approach can lead to alternative readings of a situation and may reveal alternative means of challenging oppressive power relations.

The traditional scientific approach to solving problems has been to break them down into their component parts. Solving the difficulties posed by the components is usually easier than solving the problems of the whole. This has given rise to the tendency to fragment various areas of work (Bohm 1995: 1-26; Wheatley 1992: 8). The disciplines approach to educational theory is one example (Hirst 1966; 1983). The underlying principle is to break education down into the disciplines of the philosophy of education, sociology of education, history of education and so on. These theories 'about' education should then be applied by the practitioner/teacher to solve the problems of their practice. However my experience of learning and of teaching is that it does not work like this. It appears to me that rather than a fragmentary approach, a holistic one is required. The separation of theory and practice into different areas and valuing of the contemplative over the practical extends back to Plato and his Cave allegory (2003: 179). This approach is reflected in the divide between classroom teachers and educational researchers (Coulter and Wiens 2002: 15). Zeichner (1995: 154) has expressed the situation clearly: '…for the most part educational researchers ignore teachers and teachers ignore the researchers right back…' It seems to me that the inter-relationship between practical, technical everyday work and the theoretical, philosophical, and epistemological ideas that affect them is an important part of practice. Practice and theory are closely inter-linked, and separating them into different areas of work to be carried out by different people does not make sense to me. I find, in my work, that theory and practice are influencing each other and informing each other. The process of change within my work occurs because of the interplay of practice and theory; and maybe even to speak of interplay is a mistake. Interplay suggests that practice and theory are two different

things working together. Practice and theory can be related aspects of the same thing. Niels Bohr suggests such an idea when responding to Heisenberg's explanation of his Uncertainty Principle. Peat's (1996) commentary on this suggests that 'classical' thinking is so ingrained in us that: 'indeed it is part of the language we speak, immediately upon opening our mouths we cannot help but talk about individual objects' (*ibid:* 46). It may be that classical thinking, leading to fragmentation, prevents us from seeing unity of theory and practice. My concerns in relation to educational theory therefore can be summarised in the following way:

I have concerns that the dominant form of theory in education is propositional in nature. It is based on a transmission metaphor and a 'banking' model and there is considerable resistance to change. The use of this banking model is tied to our ideas of educational theory.

Concerns about method – technical rationality

Schön (1983) argues that scientific research has traditionally been seen as the basis for professional practice. Social science research is based on the models of medicine and engineering with their emphasis on 'measurement, controlled experiment, applied science, laboratories and clinics' (Schön 1983: 39). The dominant view of professional knowledge is as the application of scientific theory and technique to the problems of practice (*ibid:* 30). Within education and elsewhere the dominant model is a technical rational model (Schön 1987: 3). The problems I face defy technical rational solutions and therefore I have concerns around approaches based on technical rationality.

In this section I set out my concerns in relation to my work. As noted, these concerns relate to two different contexts of work, teaching and administration, in two different organisations. One organisation had an authoritarian structure, while the other was much more egalitarian. Despite these differences the underlying practices in each organisation were similar and my concerns were similar. In keeping with my view of the web-like nature of life, these concerns are wide-ranging and diverse but not unconnected. In fact connectedness is a key feature of my concerns. My concerns relate to my practice and my learning from practice. However my practice and my learning are affected by the institutional structures that I work within and the philosophies and practices that underpin the structures. As I am involved in developing my living theory of learning and supporting

others in developing their living theories of learning and administration the dominant views of theory are my concern. Among the dominant theories that concern me are theories of ICT in education. Let me explain.

In a school conversation about what we should be teaching as part of ICT I suggested that I did not think doing the European Computer Driving Licence (ECDL) was a good idea. I suggested that ECDL was a narrow skills based qualification and I suggested that we should be doing more worthwhile things with ICT in schools. One colleague responded, "Oh, we don't need to get caught up in all theoretical stuff." My colleague apparently saw ECDL as a fundamentally worthwhile thing to do, as a given. I believe that this thinking ties in with the key values within schools which are order, uniformity, control, and not challenging the status quo. These values are linked with education as product, as a commodity. Dewey, in his examination of traditional education, identified the pedagogies that are associated with traditional education as didactic and controlling. He suggested that good teachers 'will use devices of art to cover up the imposition so as to relieve it of obviously brutal features' (Dewey 1938: 17-23), but this does take away from its brutal nature. Eisner echoed these sentiments sixty-five years later:

> This search for order, this desire for efficiency, this need to control and predict were then and are dominant values today. They are values that pervaded the industrial revolution and they are values that reside tacitly beneath current efforts at school reform.
>
> (Eisner 2002)

ICT can fit into this methodology in that it can work in exactly the same way. Many computer assisted learning (CAL) systems do precisely that. They provide a controlled and controlling approach to using ICT. Many people support ICT systems within schools because of their capacity to assess and report, and in many respects assessing and reporting can be tools of control. The major literatures on ICT reflect, among others, the vocational rationale for introducing ICT – it will help students to get jobs. While this is a worthwhile endeavour in itself it is a limited view of the potential of ICT and of education. Hawkridge (1990) lists seven rationales for the introduction of ICT into schools. Among these is the vocational rationale. He also includes the catalytic rationale. This is described as the ability of ICT to promote change. This raises the question of what type of change. Is it just productivity and efficiency? Many ICT tools are developed as productivity tools (see Bromley 1998: 6-8, 21, 22; Callaghan1962; International Society for Technology in

Education 2000; NAEYC and NAECS/SDE 1992). The concept of productivity suggests reproducing 'the given' in larger amounts in shorter times. However, Apple makes a case for taking alternative views to the obvious when he says that texts can be and are subject to oppositional readings.

> …Where something comes from – a subject position from the state, a commodified piece of popular culture such as a rap CD, or a product for use in schools such as a text book – need not determine its political or educational use in any concrete situation. Context and the balance of power in the specific situation do count.
>
> (Apple 2003: 14)

An oppositional view of productivity tools enables them to be used to support original human agency in contributing something unique to human experience (Arendt 1958). The dominant view of ICT is a technical rational view of technology. Within this worldview ICT can be dominating rather than emancipating. Marcuse (1964) has examined the dominating role of technology in 'One Dimensional Man'. I will pursue his ideas further in Chapter 4. For the moment I summarise my concerns in relation to the ICT in the following:

I have concerns that the dominant form of theorising ICT is around productivity. The kind of knowledge underpinning this is instrumental, functional, and utilitarian.

Concerns about my capacity to act

In my role as form teacher I hear students being referred to as 'uneducable' and 'unable to learn'. I am told that they 'should be placed in a sin bin'. Students tell me that their teacher 'is mad'. 'He throws you out of the class even before you get in!' 'He says you're not doing your work even when he has not given you any!' When I meet these situations and hear these things; when I see how students, teachers and administrators are affected, 'I am no longer of the opinion that one can simply be a bystander' (Arendt 1994: 4-5). I have a responsibility to think as an independent person and resist the dehumanisation of students, teachers and administrators; I have a responsibility to 'support them in being the best that they can be' (Arendt 1958: 19). I could avoid addressing these conflicts. Bakhtin (cited in Apple 2003: 223) describes the use of balconies at carnivals in the middle ages. The affluent were both attracted and repelled by the cultural, political and bodily transgressions that accompanied carnival. They used a balcony to allow them to experience the 'smells,

the noise, the possibility of loss of control, the undercurrent of danger, all of this was fascinating. But the bourgeoisie could not let go of their safe havens… one could be in and out, almost participant but mostly observer…' (Stallybrass and White 1986). Can I (after Adorno 1981) '...call everything into question and criticise nothing'? (Osborne 1996: xii cited in Apple 2003: 223). I believe that I cannot. I must engage in some way, but how? My response is to follow Schön's advice: 'If she [*sic*] is to deal with it competently, she must do so by a kind of improvisation, inventing and testing in the situation strategies of her own devising' (Schön 1987: 5). My work proceeds then, after Schön, 'by a kind of improvisation' engaging with students, engaging with teachers, engaging on a basis that is open to others' points of view, which is free from coercion, which accepts others as equal participants (Mezirow 1991: 78).

I draw inspiration from Eisner's (2002) suggestions regarding what education can learn from art.

> Consider first the task of working on a painting, a poem, a musical score. That task requires, perhaps above all else, the ability to compose qualitative relationships that satisfy some purpose.
>
> (Eisner 2002: 4)

Within my work I will attempt to develop qualitative relationships with my colleagues and students that support all of us moving toward realising our natality.

> In the arts ends may follow means. One may act and the act may itself suggest ends, ends that did not precede the act, but follow it. In this process ends shift; the work yields clues that one pursues. In a sense, one surrenders to what the work in process suggests. This process of shifting aims while doing the work at hand is what Dewey called 'flexible purposing.'
>
> (Eisner 2002: 6)

Eisner's comments suggest that detailed planning, including the setting of aims and objectives and declaring milestones and tollgate reviews, is not the ideal. More can be gained by 'flexible purposing', taking tentative steps and capitalising on the emergent features. My way of proceeding will owe more to exploration and discovery than to prediction and control.

> How something is said is part and parcel of what is said.
>
> (Eisner 2002: 6)

How ICT is learned matters, how one speaks to a student matters, what a classroom looks like matters, how one tells a story matters. I strive to ensure that the content of the work underlying this thesis is congruent with the form. When I attempt to support students in empowering themselves, the nature of the work undertaken will be empowering.

> Not everything knowable can be articulated in propositional form.
>
> (Eisner 2002: 7)

Eisner draws on Michael Polanyi (1966) who speaks of tacit knowledge and says, 'We know more than we can tell' (Polanyi 1966: 4), and on Dewey who asserts that while science states meaning, the arts express meaning. Meaning is not limited to what is assertable. In many cases, work with my students and colleagues will take a multimedia form supporting the representation of the tacit and the aesthetic.

> The sense of vitality and the surge of emotion we feel when touched by one of the arts can also be secured in the ideas we explore with students, in the challenges we encounter in doing critical inquiry, and in the appetite for learning we stimulate.
>
> (Eisner 2002: 9)

In developing educative relationships I strive to provide a sense of vitality and a passionate approach to learning through the media used and in doing this develop a new culture of teaching and learning.

Summary

Within this chapter I have presented my concerns in relation to my practice and in relation to educational theory. Earlier I indicated that my principal concern arises from studying my practice as a teacher in an autocratic school and from studying my practice as an administrator in an organisation pressured by high levels of change. The focus of my work became the pursuit of ways of working that did not deny my values of justice and respect. As I undertook this work I came to appreciate that we were not just facing problems to be solved but situations that required engagement with and an in-depth understanding of the power structures and the logics in institutions. As my work turned toward research I came to appreciate that finding new ways of theorising practice required a similar engagement and in-depth understanding of the power structures and the logics that underpin research.

Because of this the concerns I address are wide ranging but not unconnected and deal with issues of justice and injustice, theory and practice, power and control, and of democracy

and authoritarianism. I have given some indication of an underlying approach to changing my practice. In the next two chapters I will give some account of what I might do to let go of my ‘safe haven’ (Stallybrass and White 1986 cited in Apple 203: 223) and address the matter of ‘experiencing myself as living contradiction’ (Whitehead 1993).

Chapter 3 – Taking stock prior to taking political action: What could I do about it?

In the previous chapter I have outlined how I experience myself as a living contradiction when my practice is in conflict with my values. Prior to undertaking this research my school work relied heavily on a banking concept of education (Freire 1972: 45-60). In contrast my values and experience led me to respect an emancipatory concept of education. While I have undertaken my work in an authoritarian institution, I believe that authoritarianism works against the individual achieving their potentials. A clear challenge for me was to attempt to bring my school-based practice into line with my values. In the current chapter I show how my background as part of an activist group of young people helped me to see an alternative to the didactic and authoritarian approach that I was using in my classroom. I continue by describing some of my early faltering attempts to take action to overcome the dissonance I was experiencing and bring my practice into line with my values. I do this by describing ways in which I have come to prefer to work.

The chapter continues by telling the story of how I came to the conclusion that my work within NCVA required a similar change of approach. This led me to the understanding that the differing contexts of my work could inform each other and led me to new ways of working. In addition to taking stock to prepare to modify my practice I outline my purposes for the research. While my concerns in relation to my practice were wide ranging my purposes were wide ranging too. At the same time I outline the theoretical basis for my approach.

I will start by outlining some features of my history that suggest a different approach to working with young people.

Can my history and culture provide me with a model to develop a new history and culture?

I have already referred to what Dewey calls a 'traditional model' of education (Dewey 1938: 17-23) and Freire calls a 'banking model' (Freire 1972: 45-50). These are the dominant 'theories-in-use' (Argyris and Schön 1974) in schools and are models which I have frequently used myself. However there are other models which do not depend entirely upon a 'transmission' metaphor (Sfard 1998). Another conceptualisation of education

involves ideas that the cultivation of individuality is important, that the opportunity to learn from experience matters, that skills and techniques are acquired as a means of attaining ends which appeal to the learner and that a learning model involves developing the capacity to embrace change. Within such models there are several characteristics of learning which appeal to me: the value of learning from experience or learning from doing; the recognition of all participants as knowers; valuing the autonomy of all learners/doers/knowers, and working in collaborative ways. Collaborative approaches which recognise the autonomy of the learner are important, and recognising that all participants in the learning process are knowers in their own right are features that appeal to me.

When I compare my practice in school with my practice as a member of the Young Christian Workers (YCW) group I find my practice within the YCW honours my values more than my practice as a teacher or administrator. Let me give an example to help explain the difference between the activities of the YCW group and much of what occurs in my classroom.

Many years ago, a friend, let me call her Mary, of one of the members of the group, whom I will call Paul, was dismissed from her job in the local grocers shop for being absent from work due to illness. Mary told her story to Paul who recounted it to the group. This was not recounted as a simple tale of woe but in the context of the 'Fact of the Week', where members of the group told of their experiences during their working week. These experiences were discussed by the group in the context of their values base and the group decided if action could be taken. In this instance Paul undertook to pursue action on behalf of his friend. Over a number of months Paul acquainted himself with various elements of labour law and discovered there could be a basis for an unfair dismissals case. He took this case, without legal or trades union representation, to an unfair dismissals tribunal and won the case. Mary was compensated for her unfair dismissal. Following this success, the YCW group undertook the establishment of a 'school-to-work' programme. The aim of the programme was to enable young people in schools to become aware of their rights and responsibilities as they moved from full-time schooling into the world of work. Such school-to-work links have since become a feature of many school programmes like Leaving Certificate Applied (LCA), Leaving Certificate Vocational Programme (LCVP) and Transition Year Programme (TYP).

I interpret the events of Paul and Mary's story as a 'practice of freedom' (Freire 2003), arising out of critical reflection whereby young people 'reflect and act upon the world in order to transform it' (Freire 1972: 28). In this situation, Paul identified a mismatch between his values and his experience of life. Whitehead (1993) might say that 'he experienced himself as a living contradiction'. While Paul respected the dignity of other people, clearly Mary's former employer did not. By entering into dialogue with the other members of the group Paul devised a plan to support Mary. However, his plan achieved more than that. By taking action to support Mary, he practised his freedom to act and became the author of his own life. Through reflecting and acting collaboratively upon his world, he transformed it. Paul and Mary, through communicative action, expressed their natality. Paul and Mary's activities involved both speech and action. The dialogical interaction provided by their membership of the group provided the basis for communicative action (Habermas 1975). But the group did not just provide a 'talking shop'. The dialogue within the group provided the basis for Paul and Mary to take action. Freire claims that closed societies are characterised by submission, adaptation and adjustment in favour of those with power: 'The adapted man, neither dialoguing nor participating, accommodates to conditions imposed upon him and thereby acquires an authoritarian and acritical frame of mind' (Freire 2003: 23-24). By contrast, in an open society, people can develop participation in common life, and therefore engagement in dialogue implies social and political responsibility (*ibid:* 24). The group that Mary and Paul belonged to formed an 'open society'. It supported them, through dialogue, in refusing to adapt to the abuse of power within their broader society. The nature of the activities that Paul and Mary undertook fits closely with Habermas's (1975) ideas of the exercise of 'communicative action' and Arendt's (1958) concept of 'political action'. In his action Paul's activities were more educational for him and his friends than many of mine are for me or my students in my classroom.

A key question for me is whether there are aspects of Paul's action that could provide me with a model for working as a teacher and administrator that would allow me to move away from the 'traditional model', 'the banking model', the 'transmission metaphor' and the 'closed society' that I work within. Are there opportunities within my 'closed society' to form a democratic enclave, where dialogue could occur and a space created for 'critical

enquiry' (*ibid:* 45)? How would such a model work within the classroom and could it work among colleagues?

My experience as a member of the YCW provided me with a practical understanding of how learning could be different. This was not a banking concept of education (Freire 1972) but a practical experiential model of education. But involvement in the YCW was not confined to providing a model of practice. It provided a methodology. As I came to understand this better I was faced with the difficulty of what this methodology might offer for use in the classroom. In the next section I will indicate how my thinking in relation to methodology and indeed pedagogy and curriculum were affected by undertaking the teaching of a new school subject. The newness of the subject offered possibilities because practices around the teaching of the subject were not yet 'congealed' (Crane 2001), and offered the possibility of a new approach to answering the key question within this chapter: 'What can I do about it?

Could a change of subjects provide a change of approach?

For the first few years of my teaching career I taught Science, Biology and Physics. After a time an opportunity arose to become involved with a new school subject called 'Technology'. Technology is referred to as Craft, Design, Technology elsewhere. Technology attracted me because it focussed on students undertaking project work and provided considerable opportunities for students to take control of their learning. In my first year teaching Technology I was assigned to a class group to teach both Technology and Science. I have previously written on my experiences teaching the group both subjects, and I draw on that work to clarify my reflections in relation to devising new ways of working. When I examined my work with this class group I found some interesting contrasts:

> …I believe there is a distinct difference between the two classes. The difference is not about content, it is about approach. My science classes tend to be focused on the teacher. I am instructing, demanding, directing, correcting. The students are listening, carrying out instructions, not listening, misbehaving. The environment is rather authoritarian. In my technology class it is not about me, it is about them. They are working, they are making, and they are co-operating. There is no need for me to impose order, they are controlling themselves. Technology is more educational; they are discovering for themselves, my role is more facilitator, helper, and advisor.

(O'Neill 1996: 1)

Teaching Technology was providing me with a new approach that was participatory for the students and collaborative for both teacher and students. However, after teaching the Technology course for a couple of years I was experiencing some concerns here also. By December 1994 I had undertaken an action research study into 'Motivating Junior Certificate Technology Students' (O'Neill 1994a). The initial attraction of Technology was waning. My values were in conflict with my practice and this could be seen in my reflections at the time:

> I am excited about technology… it is fundamentally interesting…it opens up a world of understanding, how things work, how things are made, why they work or are made…it allows me to understand and take part more fully in the things which affect my daily life…it allows me to use 'things' like pulleys and gears, resistors and transistors, LEDs and buzzers, computers and lathes.

But

> …kids in my class are bored…they break the pulleys and gears…they steal the LEDs and buzzers…they run around the room…they hang leads from other kids' jumpers.

(O'Neill 1994b: 2)

It was clear to me at this point that the students must hold the answer to my classroom difficulties; however my tendency to turn a concrete problem into an abstraction was getting in the way of my learning:

> … if I ask my pupils "Why, then, do you think you are poorly motivated?" I'm sure I will get an interesting answer, but probably not one I'll want. If there was a simple answer to how to motivate pupils, then we would have no problem. If I asked my pupils "Why do you burn holes in the desks or break the pulleys?" I might get more useful answers.
>
> So, eventually, I asked them. And they told me:
> "You talk too much."
>
> "We have too much writing to do."
>
> "We want to make more things."
>
> Well, it is not too difficult to find actions there!

(O'Neill 1994b: 2)

This account shows the development of my own understanding and my learning by engaging with my students in dialogue. As a result of engaging my students in dialogue the power relationships within my classroom were changing. We were moving from the traditional didactic relationship to one of collaboration on common tasks. In this way practice within my classroom was changing and indeed a new pedagogy was developing. There was the possibility of reconceptualising curriculum as an articulation of conversations of communities of practice. The idea of the teacher as facilitator is a hallmark of adult education (Apps 1991; Brookfield 1995; Knowles 1992). These steps showed the potential to move in this direction with young people.

But change often occurs slowly and these were important periods of learning for me. From this particular episode I learned that it was important to focus on concrete concerns rather than rushing to abstraction and then, deciding on action becomes easier. From this work it was becoming clear that in order to improve the quality of the work taking place within our classroom I needed the participation of students in deciding what was worthwhile work. The students were more than capable of telling me what worked for them. If I wished to support them in 'being the best that they could be' I needed to listen to them and support them in choosing the best ways for them to learn. "You talk too much", "We have too much writing to do", "We want to make more things", are clear statements. However my first inclination was to go into expert mode: 'But I know what is on the curriculum.' 'I know what the examiner expects.' 'I know… I know… I know…' But do I know how each of these individual students learns best? My tendency was to follow traditional education styles with linked pedagogies which are didactic and controlling.

Taking a lead from what the students told me I decided to focus on assisting them to 'learn' rather that trying to 'teach'. With this in mind I decided to make classroom activity more interesting by buying an expensive electronics kit. I had used the kit previously; for me it was really fun, exciting stuff! It was expensive but I convinced the principal that this was worth getting. We got the kit and work started. The students worked in pairs. The exercises involved setting up circuits from instructions on a work card, then pasting a diagram in your copybook and writing, usually a single sentence, an explanation of what happened. The circuits were easy to relate to because they were simulations of familiar devices like traffic lights, washing machines, music- synthesisers and so on. One day when I entered the classroom one student asked me, "Are we doing writing again, today?"

Incredulously, I asked, “What do you mean writing? We’re working on the kits!” “That’s what I mean, Sir, writing!” he said! I began to understand that work with these kits that I found fascinating, exciting and fun, some of my students could only see as ‘writing’.

This was another important episode of learning for me. I learned that it is important to be prepared for other people seeing things in a different way to you and to be prepared to give up things you thought were sacred (O’Neill 1994b). This experience was directing me towards Arendt’s (1978: 187) ideas of plurality. To be a good judge one needs ‘to look upon the world from another’s standpoint, to see the world in different and frequently opposing aspects’ (Arendt 1968: 51). Within my classroom there were many different standpoints. I needed to support my students in revealing their standpoints and then perhaps we could learn together. At the same time it was becoming clear to me that the role of facilitator of learning was not sufficient. In Schön’s metaphor of the swampy lowlands of the classroom, facilitation does not happen on neutral ground but in the real world where people bring their positions in the hierarchy of power relationships with them (Johnson-Bailey and Cervero 1997). Because the social context is duplicated in the classroom, facilitation reproduces the power structures that privilege some, silence some, and deny the existence of other learners (hooks 1994; Maher and Tetreault 1994). If all learners are to thrive, adult educators must go beyond the facilitator's role to negotiate directly the power dynamics in the classroom.

In another of my classes, John caused endless problems. He took up an incredible amount of time; he always seemed to have a problem with something and the rest of the class suffered because of the time I spent dealing with John’s difficulties. One day in desperation I sent him off to tidy up some clutter left by a previous class. I did this just to get him out of my way for a while. John loved it! He tided up all the mess and came back looking for more to do. So I appointed him equipment manager for the class. He gave out tools and equipment at the start and saw to it that they were collected at the end. Because of the responsibility he had taken he seemed to be able to get his work done and look after the equipment as well. This improved the smooth running of the class overall. It seemed John needed a purpose, he needed to achieve, and having achieved as equipment manager, he was able to achieve as a student of technology. Again this was a learning experience for me and again the learning operated on a number of levels.

The need to 'belong', to be 'part of' seems to be deep in us (Maslow 1943), and when a sense of belonging is developed, many problems disappear. At the same time I was learning in terms of organising my class. Action does not need to focus on an entire class. The individual is the important one. Often supporting an individual in changing, changes the entire class. There is certainly an element of group dynamics here. But perhaps most importantly in this situation I was pursuing a traditional role. I was being controlling. Like Dewey's 'good teacher' I was using 'devices of art to cover up the imposition so as to relieve it of obviously brutal features' (Dewey 1938: 17-23). So I distracted the student rather than confronted him. While I struggled looking for an action to take, John rose to the occasion. He transformed control into emancipation. He took a situation that, at best, was meant to distract him and provided himself with a life-affirming role within his community.

However this insight has only come to me recently. Reflecting on the episode at the time I suggested some thoughts on what I had learned:

> What then have I learned from all of this? Perhaps the most important learning is that I must be prepared to give up my own claim to knowledge. While what I know about technology may well be greater than what my students know at this point, I do not necessarily know the best way for them to learn. I must always be open to the possibility, maybe likelihood, that my approach today, to this particular class that I am teaching now, may not be the right one and I must be prepared to listen to what they have to say. And having listened, be prepared to change.
>
> (O'Neill 1996: 21)

These comments represented my view of what I had learned about my teaching at a particular point in time. The learning that I was undergoing was providing me with the basis to change my approach to working with my students. It appeared from this work that as I changed my way of working the students changed theirs also. I was discovering there was a relationship of influence between my students' learning and my learning and this influence was a two-way thing. In many respects the evidence of my learning is in my students' learning. A key part of my learning was that I was beginning to bring my values around the right of young people to be listened to and be heard into practice. These episodes highlighted the importance of 'relation' within our activities. John's new role changed his relationship with the members of the class, including me. The one small change in relationship resulted in a significant change in several lives. James Gleick (1994:

17) describes Lorentz's pioneering work in predicting weather. He describes the phenomenon of 'The Butterfly Effect' where small changes in input have a large effect in output. I was discovering that classroom situations can exhibit the Butterfly Effect where small changes can have large effects in people's lives.

NCVA – could changing the model of practice provide a more life-affirming approach to administering certification?

Before exploring the ideas that I was pursuing in attempting to work out what I could do to bring my practice in NCVA into line with my values, let me start by setting the context for the work undertaken in NCVA.

In 1992, the Irish Department of Education introduced a national system of certification for vocational education. Until then, certification was variable and standards were unclear. The Green Paper on Education (1992) indicated that 'course structures would be modular, graded by levels and standards based; in addition a credit system of transfer will be developed' (Rialtas na hÉireann 1992: 116). The aspirations in the Green Paper described programmes that would be flexible in nature.

Department of Education statistics indicated that some 15,000 students might ultimately undertake the examinations. The large numbers of students involved suggested that the system would need to be computerised. However, traditional computer systems do not lend themselves to the flexibility required to enable the various methods of assessment, external moderation and cross moderation, which combine to produce results for certification (O'Neill 1997: 7). Thus, there was a danger that delivering certification would be operated as a generalisable functional event, requiring simple collation and reporting, rather than an educational process, which requires interpretation and acknowledgement of the differentiated nature of the accreditation gained (Lomax 1994a: 16). Currently, delivery of certification is regarded as a straightforward administrative procedure; administration itself is regarded in a technical-rational light (Carr and Kemmis 1986: 132).

In attempting to bring my practice into line with my values I had worked in collaboration with administration staff to develop means of working that recognised the multiple relationships both within the certification procedures involved, and in the form in which assessment procedures are combined and moderated. While some successes were achieved, these were essentially about refining existing policies and procedures and making them

more efficient. In many respects the changes that were being made were largely technical changes. As mentioned earlier, these involved what Argyris (1982: xii, 159) calls 'single loop learning'. Argyris suggests that these work well for routine programmed activities or emergency situations that require prompt unilateral action but are not suitable for 'non-routine, non-programmed, difficult issues'. More complex situations require learning that involves 'examining our underlying individual and organisational values and assumptions' (Argyris 1982: 159-160). He refers to this as 'double-loop' learning. 'Double-loop learning' offers the possibility of questioning the basis of the work we are doing rather than simply making our present activities more efficient.

It became clear to me that the progress we were making and the learning we were undergoing was not enough to keep pace with the pace of change that we were facing in NCVA. There was an urgent need for us to change models. It was not enough for us to examine and correct the way we were doing things; our underlying assumptions needed to be challenged and modified if necessary. Clearly the problems we faced were not the administrators' problems but problems for the entire organisation. It was in this context that I realised that a process to support organisational learning and organisational change was required. It seemed that establishing a process of organisational learning within NCVA required the same sort of philosophy of learning that informed the work in school. It was into this context that the idea of forming an 'action learning group' was formed. Such a group would bring together 'people who are interested in critically examining their own work with a view to improving practice', as I stated in the project proposal (O'Neill 1998b: 1).

Starting the Action Learning Group was recognition that we needed to get out of established roles (Tsoukas 2002: 423) and disrupt rules and routines (Beech *et al.* 2002: 473) if novelty was to be encouraged. By setting up the action learning group I included people from various strands of the organisation who participated in different relationships to those in which they usually worked. The group provided a different approach to work than they were accustomed to. This produced the 'far from equilibrium position' required for change (Tsoukas 2002: 423). I will provide a more detailed account of the work of the Action Learning Group in Chapter 5.

Do the ways I prefer working suggest how I could bring my practice into line with my values?

I have for some time been teaching Science and Technology. A relevant question for me in the light of my experiences is which would I rather be teaching with a class right now? Would I prefer Science in which I have a theoretical background or Technology in which I don't? I would say Technology. If I look at my relationship with a class in Technology and in Science in general it is different. The technology class is more fulfilling for both teacher and students. When I asked my students which they preferred almost all answered the Technology class. The reason is that Technology is not about the content; it is about how things are done. Activity in the Technology class is not centred on the teacher. It is centred on the students. It is about the students working; they set the pace, get things going and make things happen. I, as teacher, am no longer 'in front' of the class. I prefer this class because I am more comfortable supporting the students as they take control of their lives, and this provides me with a more satisfying and rewarding environment to work in. In the Science class the focus is on the teacher. The Science class is more authoritarian and demanding. Technology class is more collaborative and enabling. I do things every day in my Science class that I do not want to do. Activity is too much about controlling the students. In Technology there is no need to control them, because they are controlling themselves. The students are liberated, they are given responsibility and they are finding out for themselves. I am facilitating that. My role in the Science class is that I am running the Science class; I am telling them what to do. The students frequently resist that. Technology is more educational in the sense that young people are enquiring for themselves or running their own lives. They are discovering things for themselves, working things out for themselves. They are making things happen, or not happen as they choose. In Technology I am realising my values, and as a result I feel more comfortable. Evidence of the enabling nature of the classroom culture in my Technology class can be seen at http://www.ictaspoliticalaction.com/pages/peaceful.htm

Technology class provides a good example of how I prefer to work. I am less happy with my Science classes because I find it difficult to operate in the same way. In Science class it is more about content to cover, whereas in Technology it is about an approach to follow. However, in light of my experience of teaching Technology and in collaboration with colleagues I have endeavoured to apply some of my learning to my Science classes. I have

undertaken a more project based approach to my science class. Evidence of this work can be seen at http://www.ictaspoliticalaction.com/pages/peaceful.htm

Are there ways that I can 'thicken' democracy?

In my work context I find myself working within authoritarian systems. Within such systems many of the aims and purposes pursued by teachers are not so much the result of conscious choice as the constraints contained in a social structure over which they have little if any control (Carr and Kemmis 1986: 130). Despite my gloomy assessment I still ask myself, are there ways that I could work in a more participatory manner? I find myself attempting to move from a position where participation is 'thin' to the point of non-existence towards 'thicker' democracy (Apple 2003: 12). It has been suggested that the solution lies in the 'Total School' (Fullan and Hargreaves 1992). 'The premise is that teachers and heads should ultimately make it happen' (*ibid:* 2). However, Fullan and Hargreaves (1992: 117-8) cite a variety of sources (Nias *et al*. 1989; Leithwood and Jantzi 1990; Fullan 1991) to support a claim that the development of a collaborative school is dependent on the actions of the school head. Within the school structure it would be easy to claim that the context of education is unsatisfactory but external factors make it impossible to do anything about it. Such external factors include timetabling, space, lack of support, centrally determined curriculum, and terminal examinations. If we focus on the internal constraints rather than the external constraints it may be possible to make progress. Hanafin (2000: 163) takes such a view in her examination of the constraints on establishing multiple intelligences classrooms. The internal constraints relate mainly to what I believe I can do. If I believe that the external constraints are overwhelming then I am immobilised. Immobilisation can stem from linear thinking. Apple suggests an approach that allows what appear to be external constraints to be overcome. He suggests that the fact that something is imposed does not necessarily mean that it must be treated as impositional (Apple 2003: 14). Hanafin and Apple are saying that the taken for granted need not be taken for granted. There are opportunities for challenging the status quo.

I believe that oppressive power relations have no place in education and that a democratic approach is central. But what are the steps that can be taken to 'thicken' democracy? Developing more participatory forms of learning require a fundamental shift in how we view learning. Learners need to be allowed to place themselves at the centre of their own

learning. Cook-Sather has commented that every reform in education has been premised on adults' notions of how education should be conceptualised and practised. She says, '…there is something fundamentally amiss about building and rebuilding an entire system without consulting at any point those it is ostensibly designed to serve' (Cook-Sather 2002: 3). Encouragement, support and empowerment are key elements in centring learning with the learner. The examples that I have given from the Technology class show some movement towards a more participatory classroom. I need to develop these ideas and my thinking around this further. Informing myself of ideas in the literature that support participatory modes of working is part of this process.

The changing nature of scientific processes

During the twentieth century a clear theme appeared throughout the literature of the philosophy of science regarding the changing nature of scientific processes (see for example Coveney and Highfield 1995; Woodhouse 1996). A new body of literature, popularly termed 'the new science', has transformed not only how science is understood but also how scientific knowledge is created and disseminated. Old paradigms which value concepts such as certainty, objectivity and the deterministic nature of cause and effect processes have been transformed by scientists working in a variety of disciplines, who suggest that scientific enquiry needs to embrace the ideas of uncertainty and unpredictability in natural processes. These evolutionary trends have been well described by, among others, Bohm (1992; 1995), Capra (1983; 1992), Gleick (1994) and Peat (1996).

The metaphors of the new science transfer to how the practices of social scientific and educational enquiry are conceptualised. New paradigm research in education embraces newer forms of enquiry such as action research. These newer forms also emphasise uncertainty and the need to embrace contradiction. Whitehead (1993), for example, speaks of experiencing oneself as a living contradiction, and undertaking an action enquiry in an attempt to resolve the dissonance. This is an experience with which I identify when I study my work situation in which my educational values are often denied in my practice as a teacher and as an administrator. To understand my situation more thoroughly I have engaged with the work of other researchers (for example Lomax 1994a; 1994b; 1996; McNiff 1988; 1993; McNiff and Collins 1994; Whitehead and McNiff 2005; 2006) all of

whom embrace ideas to do with the need for individuals to see themselves as informing the education of social formations, a key aspect of my enquiry.

The ideas of the new science also travel to how organisation is conceptualised. While undertaking my research for my master's degree in education (O'Neill 1997) I engaged with the literature of learning organisations as described by Argyris (1982), Schein (1996), Schön (1991; 1987) and Senge (1990; 1997). I now understand that organisations need to be conceptualised as transformative processes. Reconceptualisation is not an abstract exercise but an active process of recognising the agency of transformative individuals.

Reconceptualisation of organisation suggests a form of practice that relies more on a participation metaphor, where learning takes place by becoming a member of a community or culture and where participants take the perspectives of others into account (Lomax 1998). Freire tells us that the praxis that defines human existence is marked by a dialectical interplay between the way that history and culture make people even while people are making that very history and culture (Glass 2001: 16). What I am doing at present is influenced by my past history and culture, but that work is concerned with providing me with a new and changing history and culture. The history and culture in question is developed within communities of practice (Brown and Duguid 1991; 1996; 2002; Lave and Wenger 1991; Wenger 1998) and communities of learning which I practise within and learn within. A central aspect of this work is how the various facets of my life-world interact and illuminate each other. My learning does not take place only in a single location or at a particular time or with particular people. My learning also takes place when particular experiences in a particular location with particular people are viewed in the light of different experiences in different locations with different people. My communities of practice form a web of ideas, people, experiences, plans, disappointments, relationships and actions, which are linked. Drawing on perspectives from the new science regarding unpredictability and uncertainty I find that what I know about my practice is that I do not know. When a child comes to me with a problem I do not know the answer to his problem. The nature of knowing is dialectical – I work out with him how to deal with him. So I do not know in advance – what I know about my practice is that I need to work it out every time. So I am not working toward closure. My knowledge is open-ended and provisional.

Can I develop my own living theory of learning?

In this chapter I have outlined my personal background and how it has formed and informed my current practice and understandings of my practice. I have described how my first years in education were informed by my participation in the Young Christian Workers (YCW) movement and how this led me to examine my practice in an attempt to bring my practice into line with my values. During these early attempts at improving my practice I began to theorise my learning in terms of developing a personal living theory of learning. Among the ideas I was formulating at that time was that education was not so much about teaching as about learning. So I began to doubt the central role of the teacher as the possessor of knowledge which was to be imparted to passive, empty minds and began to see a process of collaborative learning where students and teacher were learning together. My learning was concerned with how to support my students in their learning. Their learning was substantially concerned with how to take control of their learning. This reconceptualisation of learning necessitated a democratic approach to school work where learners became central. Underpinning this reconceptualisation were Arendt's ideas of natality and plurality (Arendt 1958). My students with their wide diversity of skills, talents, abilities and interests are not better than each other – just different. Each and every one has the capability to start something new – what Arendt calls natality. It is my belief that ICT has the transformative generative potential capacity to support that natality.

Purposes of the research

In the previous chapter I have drawn attention to my concerns in relation to my practice. These concerns provide the impetus for me to research my practice but they also provide the purposes of my research which I set out now.

Personal purposes – Improving my learning

For me, the key purpose in carrying out research is to improve my learning, and by improving my learning to improve my practice. The improvement of my learning is based on my identification of a gap between my values and my practice (Whitehead 1989; 1993). I need to learn how to close that gap and bring my practice into line with my values. I address the issue of improving my learning on two fronts. I make a study of practice and theorise that practice in the light of insights drawn from others. Drawing on the work of

Arendt (1958; 1973; 1978; 1994) and Habermas (1975) I frame the initial question: 'How can I reconceptualise ICT as political action?' I go on to place my practice within the framework described by Whitehead (1989; 1993). I locate my understanding of my learning within frameworks established by Apple (1999; 2000; 2003), Argyris (1982), Dewey (1916; 1938), Lave and Wenger (1991), and Wenger (1998), and express the desire to locate this work within the wider literature particularly in relation to the 'New Scholarship' (Boyer 1990). I am supporting the development of a new epistemology for the new scholarship (Schön 1995) and this epistemology draws on the ideas of an epistemology of educational enquiry (Whitehead 1999).

Knowledge purposes – Contributing to the knowledge base of education.

In her presidential address to the American Educational Research Association in 2001, Catherine Snow, while supporting the wealth of knowledge possessed by teachers, called for that knowledge to be 'systematized so that personal knowledge can become publicly accessible and subject to analysis' (Snow 2001: 3). One of my purposes in carrying out this research is to respond to Snow's call.

I anticipate that this work will contribute to the wider body of literature in terms of the New Scholarship. I have drawn on Gardner's ideas of multiple intelligences (1989; 1993) in devising materials that appeal to those intelligences. Eisner's ideas (1997) on alternative forms of representation have informed the choice of materials used. The programme of work draws together insights from a range of contexts in an attempt to see the patterns that underlie successful change within organisations. But far from being linear processes these patterns are enfolded (Bohm 1992) within patterns that represent the relationship between learning and practice and indeed the patterns that represent relationships between people. This thesis unfolds some of these patterns to enable me to examine '…the unbroken wholeness of the totality of existence as an undivided flowing movement without borders…' (Bohm 1995: 172).

Social purposes – contributing to a good social order

A key value within my work is recognition of the uniqueness and diversity of individuals. I theorise this in terms of Arendt's (1958) concepts of natality and plurality. Recognising individuals' natality provides an impetus to contribute to the development of a good social order which will support individuals and groups in realising their natality. Key

characteristics of that social order will include a community of autonomous individuals working within systems characterised by a form of democracy which is participative rather than representative. The mode of communication within this community will be dialogical. The form of the social order will be negotiated self respect.

Can I reconceptualise ICT to support my students and colleagues in improving their learning by exercising their autonomy?

I experience my school environment as an authoritarian environment and my role within that environment is frequently authoritarian. Within a system that is as 'congealed' as this it is difficult to change. I use the word 'congealed' here in the way that Crane (2001) uses it when he claims, 'Congealed thinking is the forerunner of failure... make sure you are always receptive to new ideas.' I find my school environment has suffered from congealed thinking – with a lack of receptiveness to new ideas. Within such an environment ICT has a transformational quality that can assist change. It would be difficult to suggest to another teacher in my school that changing teaching methods might change the classroom environment providing a more constructive, collaborative and human environment for students and teachers. There may be much less difficulty in suggesting that ICT could be used in an Irish class or a religion class. In this way the teaching methods and indeed the power relations can change.

When it comes to working with ICT the power relations between teacher and student can be radically different. I say 'can' because they do not have to be. I have endured many computer programming classes which took place in a didactic classroom without a computer in sight. There was little collaboration in these classrooms. The projects that I will detail below, where students develop their web sites, develop PowerPoint presentations, get involved in video conferencing with other students, these projects represent at least some of the steps toward an 'ideal speech situation' (Habermas 1984). This is a situation where each participant has an equal chance to take part in dialogue; where dialogue is unconstrained and not distorted. What the idea of an ideal speech situation does is to provide us with some ways of identifying and exploring the distortions that exist in our practice and in our lives. The projects I describe can be seen to form a democratic enclave within an authoritarian system. The projects encourage the equal distribution of educational and social goods by developing within the classroom a different

form of relational space and as a result give rise to relational epistemologies (Schön 1995). These epistemologies indicate that what we know is in our relationships and how we come to know is through our relationships. Rather than being a pre-packaged chunk of knowledge to be delivered, curriculum can be reconceptualised as a creative conversation between teachers on the one hand and between teachers and their students on the other (Elliott 1998). In the process all parties, teachers and students, can learn to make choices about their life plans.

In search of a methodology

While examining my practice over a period of time I have used a range of techniques to analyse how I work in a classroom. For example as a novice teacher I used 'Flanders Interactional Analysis Categories' to study the interactions within my classroom (Flanders 1970). This involved taping a lesson, then writing down a number every three seconds that represents the type of interaction that was taking place at that time. I then formed a grid from the numbered categories that emerged. While Flanders offered a way of analysing interactions in the classroom it offered no help with improving those interactions. It seems to me that Flanders was developed using the logics that underlie propositional thinking that seek to describe the world without considering changing it. I therefore seek a method based on dialectical logics and living logics. Dialectical logics are the logics of open spaces. They see every statement as a response to a question. Living logics are the logics of relation and imagination (Whitehead and McNiff 2006: 35-40). My journey involved seeking a methodology that offered me new possibilities, a methodology that was open and creative.

In deciding on an appropriate mode of enquiry, it is important to consider the nature of the situation that we wish to look at, and from that, an obvious direction may reveal itself. I approached this programme of work in a not entirely disinterested way. I have personal values relating to the students' right to a quality educational experience, and to respecting teachers' and students' dignity by providing them with an experience of school which is not dehumanising and which is educational for them (Lomax 1996: 6). In relation to me, it was and is my deep-rooted desire to improve my professional practice (Whitehead 1993: 69), which will lead to my personal development as a teacher and as a person. I believe that this, in turn, can lead to improvements in the institutions in which I work. As the essential aims

of my work focus on the desire to respect the dignity of individuals on the one hand and a commitment to change a situation for the better on the other hand, it seemed to me that the method of educational action research was and is an appropriate method of enquiry.

McNiff, Lomax and Whitehead (1996) refer to the appropriateness of action research as a research method in such a situation when they say

> Action researchers tend to be working intentionally towards the implementation of ideas that come from deep-seated values that motivate them to intervene.
>
> (McNiff, Lomax and Whitehead 1996: 9-10)

Kemmis and McTaggart express similar thoughts:

> The linking of the terms action and research highlights the essential feature of the method: trying out ideas in practice as a means of improvement and as a means of increasing knowledge…
>
> (Kemmis and McTaggart 1988:9)

Rearick emphasised the importance of a dialectical approach and the emphasis on supporting change:

> Action research is conceptualized within their community as the dialectical process that leads to change.
>
> (Rearick 1999: 1)

As one of my objectives was self-development and the development of my understanding of my work I believe that I was generating what Whitehead calls ‘a living form of educational theory’ (Whitehead 1993: 67). Bassey (1995) identifies three different types of research: theoretical research, evaluative research and action research. He says, theoretical researchers and evaluative researchers describe, interpret and explain events, whereas

> Action researchers are intent on describing, interpreting and explaining events while they seek to change them for the better.
>
> (Bassey 1995: 13)

With these points in mind, it seems appropriate that action research should have been the research method favoured by me for this project.

Because this research project was an examination of particular aspects of what I might call my ‘normal work’, then it was necessarily ‘insider research’. However, insider research has been the subject of some criticism. Robson warns of some of the dangers.

> The disadvantages are, however, pretty substantial. Your addition of the role of researcher to that of colleague is difficult for yourself and your colleagues.
>
> (Robson 1996: 298)

He goes on to talk of the difficulties of interviewing colleagues, ethical and relationship issues surrounding the acquisition of confidential information and other difficulties. He also mentions the advantages of insider research:

> …Generally you will have an intimate knowledge of the content of the study, not only as it is at present, but in a historical or developmental perspective. You know the politics of the institution, not only as a formal hierarchy but also how it 'really works'…. You will know best how to approach people…. You will have 'street credibility'.
>
> (Robson 1996: 297)

I had a clear intention to research my situation hoping to improve the situation, to enhance my professional development (Lomax 1996: 7) and to contribute to the enhancement of that of my colleagues, and to ensure that information and communications technology provided a better and more humane service to those who availed of it. To this end, it seemed to me that the advantages of insider research far outweigh its disadvantages for my work. However, Robson's warnings are not to be taken lightly and suggest that aspects of the research project would have to be treated sensitively, and ethical issues would be of great importance. I have addressed these issues by securing the permission of participants to carry out the research. As this is a collaborative work and the organisations that I work in are clearly identifiable, even if anonymised, I secured permission of participants to acknowledge their participation. I reassured my participants that they could withdraw at any stage from the research. I co-signed an ethics statement that gave these assurances with participants (Appendix A).

My approach to action research follows that set out by Whitehead (1989; 1993) and I follow the key steps that he uses. In my case the steps may appear more complex than usual. This is in keeping with the dynamic web-like nature of my life experience, and as a result my concerns and my approach to them are not linear and closed but dynamic and open-ended, and the apparently unconnected are connected. I have experienced a range of 'living contradictions' in my work, the example I give here is from my work in school:

I experience a concern where some of my educational values are being denied in practice:

I believe that every person has a unique place in the world and has the potential to make new beginnings. I work within a highly authoritarian environment. My students, my colleagues and I suffer within that environment. Our lives are affected by the logics of domination that are the dominant practice.

I believe that knowledge of ICT is important for all students. Many of our students leave school without any ICT experience because of difficulties in fitting it into an already crowded curriculum.

Many of our teachers are 'missing out' on the advantages that ICT can offer to teaching and learning because they do not have the skills to use them or sufficient access to them

I imagine a solution to that concern:

If we could devise a way for teachers and students to work collaboratively a democratic enclave could be formed within an authoritarian system.

If we could devise a system for enabling teachers to use ICT in teaching their subjects then the educational experience of teachers and students could be improved.

I act in the direction of the proposed solution:

I collaborate with colleagues to devise ways of working with each other and with students that emphasise the logics of relation rather than the logics of control.

An infrastructure is put in place to enable a school-based intranet to be developed.

I put a proposal to fellow teachers regarding developing content for an intranet.

I support teachers and students to develop content for the intranet.

I evaluate the outcome of the solution:

Teachers and students were interviewed about their experience of the development.

I studied students' and teachers' reports of their actions.

I examine my reflective journal.

I modify my practice, plans and ideas in the light of the evaluation:

I develop the infrastructure to extend the Intranet throughout the school.

Additional subject material is added to the intranet.

I encourage additional teachers and students to participate.

I devise projects that support collaborative learning.

I believe the brief outline given here indicates the methodological framework I have followed in carrying out this study. I hope that this framework is obvious throughout this paper.

It is not possible to assess in absolute terms all the types of improvement in practice that I am looking for. An indication of improvement can be gauged if the participation rates by teachers and students increase and if the volume of content on the intranet increases. However, I believe a better picture of the current situation and of any improvement in the situation can be gauged by conversations with those involved.

I therefore gathered data by the use of interviews with the main participants: teachers and students, administration staff, development staff and others, as recommended by researchers of educational research design and methodology (Bell 1995; Robson 1993). I produce my data in later chapters. I negotiated access to students' artefacts and their reports of their work and I use these as evidence of students' learning and of my learning. I conducted interviews at a number of stages during the study. By comparing reflections on the interviews, I am able to show if an improvement had taken place (Elliott 1991). The evidence that I generated from the data can be directly related to my values and to the standards of judgement that I have proposed for judging the quality of my research.

Summary

Here is a summary of my thesis so far. In the first chapter I have addressed what my concerns are in relation to my practice as a teacher and a consultant on information technology. My concern centres on the dissonance that I experience as my values are being denied in my practice. Consequently I experience myself as a living contradiction.

In Chapter 2 I have indicated why I am concerned. I have related some experiences to show why I am concerned. These experiences reflect the autocratic practices, strict orthodoxies and the logics of control that permeate my workplaces.

In this current chapter I have addressed what I could do about these concerns. I have taken my ontological values and, using these as the basis of my practice, provided reasons and purposes for carrying out my research in an attempt to bring my practice into line with my values and remove some of the dissonance from my practice. In this chapter I have also shown why I chose an action research methodology for my research. As Information and Communications Technologies are at the core of my work in the next chapter I will consider the role that ICT could take in terms of what I did about my concerns.

Chapter 4 – Reconceptualising ICT

Information and communications technologies (ICT) are central to this thesis. The advances made by various technologies over recent years have implications for teaching and learning in schools, colleges and other educational institutions (Farren 2006: 61). But there are dangers in taking a sycophantic view of technologies (Snowden 2005: 6). To avoid adopting a sycophantic or a sceptical view I adopt a critical stance in evaluating my approach to pedagogy, and engage critically with the ideas of key thinkers in the literatures. In this chapter I will explore how technologies, both general technologies and ICT are conceptualised generally. In doing this I will pursue some of the recent history of new technologies and how they have been conceptualised. I will then set out a basis for my original idea of reconceptualising ICT as political action. My experience is that technologies are often treated unproblematically. In this first section I place my experience of technologies into context and, by engaging with various conceptualisations of technologies, provide the basis for the development of my reconceptualisation.

I have referred previously to my background as a teacher of Science. Having taught Science for some years I undertook teaching the new school subject called Technology. This subject is much broader than ICT and could be regarded as dealing with general technologies. The syllabus for this subject divides the knowledge and skills required in the subject into four major sections: Communications, Craft and Materials, Energy and Control, and Technology and Society. While the subject Technology contained elements of information technologies, its scope included the areas of electronics, energy conversions, structures, materials processing and the social implications of using technologies. For clarity throughout this section, whenever I refer to technolog(y)/ies I am referring to general technologies. When I am dealing with computing related matters I will refer to information technologies (IT) or information and communications technologies (ICT). There may be times when the distinction between these is not clear and this is because I believe that a sharp division between various technologies is somewhat artificial. For example, while computers are clearly concerned with information and communications technologies it is the case that materials processing, energy conversions and many other technologies are also centrally concerned. I see a value in taking a more holistic view of technologies.

While taking part in professional development courses, both as tutor and learner, for the purpose of teaching this new subject, in common with colleagues, I defined technology as 'the application of science'. It is likely that this interpretation of technology is a common view of technology and extends back to Bigelow (1830: 338), who referred to technology as 'the practical applications of science'. This is part of the confusion that links science and technology as if they were different expressions of a single entity. This has resulted in science and technology being seen as 'an indivisible pair' (Rose and Rose 1969). The common perception of science and technology as a pair is underlined by Mayr (1976: 666) when he comments '... practical usable criteria for making sharp neat distinctions between science and technology do not exist'. However this conflation of technologies and science is confounded by histories of technology that extend their treatment to a period before Mesopotamian civilisation (Derry and Williams 1960), whereas the scientific revolution is usually afforded a much shorter life. It is curious that in an authoritative history of technology in a book extending to nearly eight hundred pages that the authors decline to define or explain what they mean by Technology. Instead, they treat it unproblematically. In some cases the distinction between science and technology is seen in terms of the theory/practice debate: science offering the theory that informs technology's practice. One account sees them as poles of a magnet, far apart but nonetheless part of a whole (Mayr 1976: 666). Sparkes (1992) points out that even though science and technology overlap in an area which might be referred to as 'applied science', there are a number of important differences between the two. These differences include the goal of science as the pursuit of knowledge and understanding for its own sake, whereas the goal of technology is to create artefacts and systems to meet people's needs. The Irish Department of Education and Science, in defining the aims of the subject Technology leaned towards Sparkes' view: 'Technology is the achievement of human purposes through the disciplined use of materials, energy, and natural phenomena' (Department of Education and Science 1989: 2). While this statement could stand considerable analysis it places technologies clearly within the realm of human agency and admits the potential social purpose of technologies as opposed to a view of technology as having agency of its own that may dominate human purposes (Friedman and Kahn 1997: 302-311).

The debate about the provenance of technology has a parallel in information technology. Some date the start of computing to the differential machine which Charles Babbage

devised in 1827 to calculate logarithmic tables or to his analytical engine devised but not built in the 1830s. Because of this work Babbage was known to some as the ‘father of computing’ (Bowden 1971). The advent of modern computing probably arrived with the invention of the ‘Colossus’ in 1943. The Colossus was an electronic computer built at the Bletchley Park research centre in Britain and designed to crack the German Enigma coding system used to send secret messages for military purposes. At the same time the 'Harvard Mk I' was built at Harvard University with backing from IBM. The Harvard Mk 1 was a general purpose computer. These computers were among the first of the ‘first generation’ of electronic computers. ‘ENIAC’ (Electronic Numerical Integrator and Computer) which was completed in 1946 is regarded by some as the first modern computer. A key feature of ENIAC and other first generation computers was their sheer size. ENIAC weighed about 30 tonnes. The size and expense of building and maintaining these computers suggested that they would only ever be owned by governments and major corporations. Thomas J. Watson, chairman of IBM, is reputed to have remarked that, “I think there is maybe a world market for five computers”. There is some doubt if Watson did, in fact, make the remark (Maney 2003).

The next major step in the history of computing was the invention of the transistor in 1947. Transistorised computers are normally referred to as 'Second Generation' and dominated the late 1950s and early 1960s. Despite using transistors and printed circuits these computers were still large and power hungry and were largely confined to the military, government and university establishments.

The explosion in the use of computers began with 'Third Generation' computers. These relied on the integrated circuit or microchip. The first integrated circuit was produced in September 1958, but computers using them didn’t begin to appear until 1963. In 1971, Intel released the world’s first commercial microprocessor, the 4004. ‘Fourth generation’ computers were developed, using a microprocessor to locate much of the computer's processing abilities on a single chip. The microprocessor allowed the development of microcomputers. These personal computers were small and cheap enough to be available to ordinary people. The first such personal computer was the MITS Altair 8800, released at the end of 1974, but it was followed by computers such as the Apple I and II, Commodore PET, Zinclair ZX and Spectrum and importantly the IBM PC in 1981. Although the capacities of computers, in terms of speed, processing power and storage, have increased

since 1981 it is generally accepted that modern computers still belong to this 'fourth generation' of computers. The key characteristics of fourth generation computers that enabled their proliferation is their small size and low cost. While these factors allowed ordinary people to get their hands on computers throughout the 1970s and 1980s it was something of an enthusiast's activity and it was not clear what non-enthusiastic people would do with them. The entry of computers into the lives of most people was dependent on the development of new software and cheap communications technologies.

While a short history like this gives some indication of the origins of computers and of the level of change that promoted their development, some people think other aspects of their origins are more important. For some commentators the warlike origins and their role as an instrument of war is an important element in the provenance of computers (Kahn and Friedman 1998: 160). The military aspects of computers can be found at many stages of their development.

In response to the Russians launching Sputnik, the first technologically constructed satellite, into space in 1957, President Eisenhower formed ARPA, the Advanced Research Projects Agency (Krantzberg 1962). The people at ARPA understood that a post-nuclear America needed a command and control network that could link city to city and base to base. But they were aware that no amount of protection could save such a network from nuclear attack and the headquarters would be particularly vulnerable. The solution provided by the Rand Corporation to ARPA was a network without a central authority and which would continue to operate even if it was in tatters. ARPAnet was born in 1969 with four nodes on the network. ARPAnet was opened to non-military users later in the 1970s. But these non-military users were mainly the large universities which had major military research contracts. ARPAnet was eventually divided into two networks, the civilian Internet and the military Milnet. At this point the Internet was still largely a technical tool. The Internet gained its 'friendly face' when the World Wide Web was invented by Tim Berners-Lee in 1989. Berners-Lee was a physicist working at Conseil Européen pour la Recherche Nucléaire (CERN), otherwise known as the European Particle Physics Laboratory. He was looking for a way for physicists to share information about their research – the World Wide Web was his solution.

Berners-Lee's invention provided a key element in opening up computers to the public at large. In all there were four key elements. These elements were small cheap computers

developed as the 'fourth generation' of computers; the availability of 'friendly' and easy-to-use software with point and click interfaces like Windows and MacOS; software which appealed to people like the World Wide Web, email, forums; and, finally, broadband communications. Integrated circuits made the hardware cheap enough for ordinary people to buy. Point and click interfaces including Windows, MacOS and web browsers enabled non-technical users to make use of the technology. The World Wide Web, email, and social networking tools provided non-technical users with a reason to use computers. Broadband technologies provided the Internet with sufficient speed to support user-oriented applications.

In addition to supporting non-technical users these factors have opened up the possibility for interactive education undertaken in a collaborative way with new and novel means of representation. Making a choice between focussing on the potentials of the technologies and on the origins of information technologies has spawned widely diverse views of computing. The poles of these views are represented on the one hand by an enthusiastic or perhaps sycophantic view and on the other by a sceptical view. Focussing on the technology itself, one side takes the view that technology is beneficial and the only real questions are technical ones about how we use the technology (see Bromley 1998: 2). The second view is that technology is inherently harmful and must be avoided (Oppenheimer 1997; 2005; Postman, 1995). It seems to me that both of these views are instrumentalist, perhaps even fundamentalist, and arise from a perspective where technology has agency of its own (Friedman and Kahn 1997: 302-311). In the following sections I will examine both of these positions and propose a third view that sees technologies as neither inherently good nor evil but dependent on the purposes of the people using them. If the people using them have transformational purposes then the technology can be transformational. In this way I take a view of technology that is not value free and must be treated problematically. When choosing to use technologies it may be important to focus on the agency of people, not the agency of the technology.

The evangelistic view of technology

Irish government policy in relation to ICT in schools was developed in response to the International Data Corporation (IDC) ranking Ireland in the third division, at position 23, 'in terms of its preparedness for the information age' (Government of Ireland 1997: 14).

The policy document, stating that there are compelling reasons for integrating ICT into schools, lists reasons that bear a striking similarity to the rationales of Hawkridge *et al*. (1990). Hawkridge provides seven rationales for the introduction of ICT into schools. These are social, vocational, pedagogic, IT industry, cost effectiveness, special needs and catalytic rationales. The government policy lists four categories of reasons for integrating ICT into schools. First it argues that there are social benefits and cites the Bangermann Report (European Union 1996) on the dangers of the creation of a two-tiered society of information 'haves' and 'have-nots'. The policy document argues that there are vocational and economic reasons. These reasons are based on the claim that 'knowledge and familiarity with technology will be an important dimension of employability in the information society' (Government of Ireland 1997: 15). Third, there are pedagogic reasons. 'ICT can improve the quality of educational experience by providing rich, exciting and motivating environments for learning' (*ibid:* 15). Finally, there are catalytic reasons for ICT integration. 'The use of computers can accelerate positive trends such as increased emphasis on information handling and problem solving and reduced emphasis on memorising facts' (*ibid:* 16).

The uncritical approach to the use of technology in schools was extended by the Minister for Education and Science, Mr Michael Woods. In announcing the second phase of Schools IT2000 in December 2001 he said:

> The pace of development in information and communication technology is blistering. My vision is to equip our young people to take advantage of these new technologies at the earliest possible stage in their education both to give them the ability to use the technology and to open up for them the wonderful vista of resources provided by such facilities.
>
> (Woods 2001: 1)

The thrust of Hawkridge's rationales can be seen in government policy around the world (see European Commission 1996; Singapore Ministry of Education 1997; Government of Ireland 1997). The underlying assumption is that computing technology benefits all students in a neutral manner which is independent of unequal distributions of power, and independent of class, gender, ethnicity or other factors (Bromley 1998: 2). O'Dwyer (1998: 5-11), Director-General for Education, Training and Youth of the European Commission, continues this approach by focussing on how schools get the technology. He referred to the

numerous studies which showed the educational benefits of ICT, and then outlined the recognised obstacles to the use of educational multimedia in schools:

- Lack of user-friendly multimedia equipment and software for teachers and pupils;
- Insufficient quantity of equipment, which is often technically obsolete, sometimes insufficiently used and rarely connected to telecommunications network;
- Insufficient quality and quantity of educational software adapted to the needs of users;
- Difficulty of integrating educational multimedia into teachers' educational practice; and
- Lack of teacher training and information.

O'Dwyer's approach is to treat technology in an instrumental way. The questions are of a purely technical nature dealing with how to apply the technology. The underlying assumption is that anything involving new technologies must be an improvement (Bromley 1998: 2).

Jones *et al.* (1994) focus on access to technology but from the 'equity' point of view. Their concerns were with the 'equitable and effective' access to technology. In their study they describe four indicators – connectivity, ubiquity, interconnectivity, and equity – that denote equitable and effective access to technology. The indicators proposed by Jones *et al.* (1994) focus on a combination of technology and human intervention. So while they see a need for technology to be ubiquitous – it must be everywhere – and there must be connectivity – there is a need for networking, both local and wide – they also see a need for interconnectivity. In their view interconnectivity is not about connecting the technology but about connecting people. Equitable access includes access that allows students and teachers to collaborate in various ways. Connecting people is not enough; there must be equity among users. So specific steps must be taken to ensure that minority and marginalised people gain access.

Ceruzzi (2005) proposes a reason for the determinism surrounding technology and ties it to the so-called Moore's law. Gordon Moore, one of the founders of Intel, the microchip manufacturer, observed in 1965 that the number of transistors that could be placed on an integrated circuit had doubled each year since the integrated circuit was invented (Moore 1965 cited in Ceruzzi 2005: 584). This became known as Moore's Law. The implication

of Moore's Law is that computers would increase in power exponentially. The increase in the number of transistors that could be placed on an integrated circuit has been such that Moore's law has held true since Moore's observation, with the slight modification that the time interval for doubling has stretched to eighteen months. Moore's Law provides the basis for the increasing power and decreasing costs that have allowed computers to become part of our everyday life. The increasing power provides the capacity for user friendly applications, while decreasing cost makes it possible for ordinary people to gain access. In this way the effects that Moore's Law described have played a key part in providing the plethora of new technological creations referred to above and the impact these have had on the way we live, work and learn. Ceruzzi (2005: 586) maintains that public acceptance of technological determinism has been driven by Moore's Law because the continuing expansion in the power of computers has led to a continuing expansion in the capability of computers. This in turn has led to the notion that computers determine where we can go and what we can do. Microsoft contributed to this idea with its successful advertising slogan in the 1980s: 'Microsoft – where do you want to go today?' In support of his claim that Moore's Law has driven technological determinism, Ceruzzi cites cases of people feeling powerless to shape, much less resist, the models offered by particular technologies.

The sceptics' view of technology

While there is a large body of digital evangelists, there is a smaller but equally significant body of digital sceptics. Many of these see technologies as a threat to a better way of life that predated modern technology. In the brief survey of technologies given above I have indicated that technologies can be traced back to the origins of humankind. With this in mind, and as part of my process of understanding better what I do and of improving what I do, I see a need to examine whether technologies have always been a threat to humankind or if modern technologies are fundamentally different to technologies that preceded them. Marcuse (1964) suggests that modern technologies are different. He criticizes both communist and capitalist countries for their lack of authentic democratic processes. Neither type of society creates equal circumstances for its citizens. Marcuse discusses the factors which inhibit criticism and analysis of society. He believes that people are not free because they function within systems. If people were really free, they would be free from these systems. He regards these systems as the result of technological development: 'A

comfortable, smooth, reasonable, democratic unfreedom prevails in advanced industrial civilization, a token of technical progress' (Marcuse 1964: 4). Ideas like freedom of thought, speech and conscience which promoted and protected free enterprise, were originally critical ideas. These have become institutionalised and have lost their critical aspect. Marcuse sees the technological products of society carrying with them prescribed attitudes and habits which bind the consumer to the producer. However these products provide a good way of life, better than we have had before, and so consumers are seduced into 'one-dimensional thought and behaviour' which works against critical examination.

Despite the view that technology has provided a 'good way of life', a number of commentators challenge this position in relation to digital technologies and criticise their use in education and elsewhere. Oppenheimer (1997) asserts that '…there is no good evidence that most uses of computers significantly improve teaching and learning'. He supports his position by citing claims for the impact of earlier technologies, like television and radio, on education that have never been realised. In 1922, Edison claimed that 'the motion picture is set to revolutionise education…and will supplant the use of text books.' In 1945 the director of Cleveland public schools radio station claimed that radios would, in time, be as common in the classroom as the blackboard. B.F. Skinner (1954: 94), the psychologist, claimed that teaching machines and programmed instruction would enable students to learn twice as much with the same effort. Oppenheimer sees current initiatives to introduce computers into classrooms as part of the same technological 'delusion' and draws on Cuban's (1986) conclusions that as each round of technological advances failed to achieve their promise, a pattern emerged that blamed a range of other factors: lack of money, teacher resistance and school bureaucracy, but never the technology. Eventually, when criticism began to be directed at the technology, a new technology was rolled out and the sequence started all over again. Oppenheimer argues that 'The purpose of the schools [is] to, as one teacher argues, 'Teach carpentry, not hammer'…we need to teach the whys and ways of the world. Tools come and tools go. Teaching our children tools limits their knowledge to these tools and hence limits their futures' (Oppenheimer 1997: 62).

I have considerable sympathy for this final point but it begs the question: Does 'using technologies' and 'teaching tools' amount to the same thing; or are there ways of using technologies that are not simply teaching tools? From my experience I can see that teaching IT skills is frequently about teaching the tools. For example, teaching word

processing skills is often about teaching MS Word which amounts to teaching a particular tool. But I contend that a word processor could be used in a life-affirming way that involves learning tools, and learning the tool is not an end in itself but a result of the life-affirming practice. In this way using ICT can be liberating rather than limiting. I will provide instances of such uses of ICT in the next chapter.

Postman (1995) argues that while ICT may provide gains they also involve losses. Like Oppenheimer he draws on the recent history of technology implementation to support this view. He claims that in the past, when technology has had positive effects, it has also carried with it disadvantages. Often the disadvantages outweigh the advantages:

> After all, anyone who has studied the history of technology knows that technological change is always a Faustian bargain: Technology giveth and technology taketh away, and not always in equal measure. A new technology sometimes creates more than it destroys. Sometimes, it destroys more than it creates. But it is never one-sided.
>
> (Postman 1990: 2)

Postman's 'Faustian bargain' has resonances of McLuhan's 'extensions' and 'amputations' (2001). McLuhan argued that all technologies are 'extensions' of the body; for example the car is an 'extension' of our feet. But while we seek the car for the 'extension' we also receive an 'amputation' in the sense that the ability of our legs to walk diminishes. Postman sees cultures as classed into three types: tool-making, technocracies and technopolies. In tool-making societies tools are used to solve immediate and urgent problems of physical life or to serve the symbolic world of art, politics or religion. In Postman's view, making a spear to hunt or a watermill for power represent the former while building a cathedral or a castle represent the latter. These tools, he says, did not attack the dignity or integrity of the culture they were brought into; they contributed to it. In a technocratic culture, tools play a central role in the thought-world of the culture. So everything in the culture is subject to and must give way to their development. The technocratic tools attack the culture in an attempt to become the culture. In a technocracy the technocratic culture co-exists with the tool-making culture. However, in a technopoly the tool making culture has lost the battle, and the meanings of tradition, social mores, myth, politics, ritual, and religion are defined by the new 'totalitarian technopoly'. As a result of this analysis Postman comes to several conclusions, among them that computers have no place in classrooms. The basis for this argument is that in a traditional classroom

there is balance between individualised learning, competition, and personal autonomy on the one hand and group learning, cooperation, and a sense of social responsibility on the other (Postman 1995: 17). According to Postman, computers in the classroom threaten that balance and ensure that private learning and individual problem solving will dominate to the detriment of communal speech. This could be seen as the Faustian bargain. Private learning gains while communal speech suffers.

While Postman has provided a carefully argued position, Kaplan (1995: 34) has drawn attention to the fact that Tuman, another critic of 'electronic writing technologies', makes his criticism of computers in the classroom on precisely opposite grounds: claiming that they 'shift the primary focus of literacy away from the self-contained text and toward a new kind of interactive discourse akin to conversation...' (Tuman 1992: 90). It appears that Postman is opposed to computers because they eliminate communal speech while Tuman is opposed to computers because they promote interactive discourse. If technologies have inherent logics Kaplan questions how the underlying logic of computing could lead to two such radically different causes for the loss of print literacies. It appears that Postman and Tuman are making their case based not on the inherent logics of computing but on particular uses that computers have been put to. It would not be unreasonable to infer that Postman's and Tuman's work and Kaplan's analysis suggest that we need to look not at technological determinism but at human agency as a means of envisioning a desirable future and inventing ways of bringing it about (Schön 1991: 16).

The attempt to disentangle the logics underlying computing is not confined to Kaplan's analysis. In the brief account of the recent history of digital technologies presented above, it is clear that military involvement was a key feature in the early development of the modern computer and of the Internet. Military involvement has been a key feature since. Bromley (1998: 13) argues that the environment in which a technology is developed – especially the power relations there – instils in the technology traits that favour some uses rather than others. The relationship between computing and the military is longstanding. Bromley's claim is that this relationship contributes a propensity toward the imposition of a military worldview onto computing. The military world view is one of 'command and control'. The symbiotic relationship between the military and computing has ensured that while the military provided 'command and control' as a philosophy, computing has enabled 'command and control' as a practice. The combination of the two has enabled 'command

and control' to develop into 'command, control, communications and intelligence' (Bromley 1998: 16).

The 'command and control' approach to computing plays out in the approach that is taken to ICT in schools. I can see this in my experience in schools. Shortly after I started to teach in my current school, a number of teachers on different occasions asked me if I had a key to the computer room yet, and laughed uproariously when I naively said that I had not. At the time I could not understand the joke. I have since come to understand the 'joke' and in many respects the joke is not funny. Access to the computer room was strictly controlled. Few students or indeed teachers had access to the computer room. The approach seemed to stem from a belief that computers were important valuable objects that had to be protected. I have come to understand this approach as a demonstration of power; those who had access to the computers were the possessors of power. Power was only given to those who could be trusted to maintain the status quo. I have detailed elsewhere my efforts to have a computer placed in the staff room to improve teachers' access to ICT (O'Neill 2002b: 126-8). After I submitted a proposal to make a computer available for teacher use outside of the classroom the Principal agreed that it was a good idea. But where we differed was on the question of 'Where will we put the computer?' My view was that the computer should be placed in the staffroom where teachers would have easy access. The Principal's view was that it should be in the library.

This sounds like a simple question of location but I believe there are deeper questions here. The principal was operating out of a different form of logic to mine. I was operating on the basis that if you want to encourage people to do something then you must try to remove the obstacles. He was working on the basis that if teachers really wanted to use the computer they would get over the obstacles. I was working on the basis that everyone has a right to access. His view was that access is a privilege that must be earned. While I take issue with Jones *et al.*'s (1994) view of computing above, I share their view of the factors affecting equity of access. The four factors that are essential for access are connectivity, ubiquity, interconnectivity and equity. Providing a computer for teachers' access in the staff room was addressing these factors. Connectivity was provided by giving access to the school network and Internet. Placing the computer in the staff room was a small step toward ubiquity. Ubiquity suggests that the technology should be everywhere. It should be wherever you need it. So it does not become an aside to your work or an addition to your

work but a central part of your work, available for you to draw upon it when you need it or want it. I am suggesting that it should be a little like a pen. Sometimes you may have to go looking for one but generally when you need one there is one to hand. But I don't see the world as pen-determined. There are many useful and interesting things that you can do without a pen! While the pen is deterministic in that it is used mainly for writing, it does not determine what you write or where you write. Some students have discovered that using a pen as a pea-shooter is one of the oppositional uses for pens most frowned upon in schools! In Jones *et al.*'s (1994) terms, interconnectivity is the connectivity between people that underlies collaborative work. So while Jones *et al.* refer to collaborative work among teachers and students, I see this more as collaborative work among learners. Placing the computer in the staff room places it where it can support 'group learning, cooperation, and a sense of social responsibility among learners' (Jones *et al.* 1995: 17). Placing it in the library tends to support 'individualised learning, competition, and personal autonomy' (Postman 1995: 17). When Postman condemns the use of computers in schools I believe his vision is of the latter. He appears not to have conceived of the former approach. In my view if there is to be ubiquity then there should be a computer in the staff room and the library. At the time of my debate with the principal scarcity of resources gave the discussion a sharper edge. If only one computer was available in the short term where should it go? My position was that the objective should be to provide ubiquity and placing it in the staff room was our best attempt at ubiquity.

Deterministic approaches to technology tend to result in one of two approaches in the classroom. The sceptics' view leads to an approach that computers have no place in the classroom (Postman 1995). The evangelists' approach often indulges the cult of efficiency (Callahan 1962) and follows Skinner who suggested 'teaching machines and programmed instruction would enable students to learn twice as much with the same effort' (Skinner 1954: 94).

Skinner's approach can be seen in many school programmes that teach 'computer skills'. Programmes like the European Computer Driving Licence (ECDL) and Microsoft Office Skills (MOS) when presented in schools often take this approach. While behaviourist in stance, they are also technicist; focussing on providing students with decontextualised technical skills. The focus is on whether you have the technical skills to use a particular piece of software and/or hardware rather than what you might use it for. Computer

Assisted Learning (CAL) programmes take a similar approach. While the content is often based on curricular material the approach is distinctly behaviourist, focussing on efficiency. This type of computing contributes to a style of learning which is frequently limiting for teachers and learners.

The two sides of the technology argument, evangelism and scepticism, share a common base. Both are grounded in 'technological determinism', a term apparently coined by the economist and sociologist Thornstein Veblen (Chandler 1995; Ellul 1964: xviii; Jones 1990: 210). Technological determinism places technology as the prime mover in history, and sees society and culture as being totally determined by technology for good or ill. The position presented by Postman (1995) draws on the work of the media theorist Marshall McLuhan, who claimed that communications technologies such as television, radio, printing and writing profoundly transformed society. His claim that 'the medium is the message' illustrates his belief in the profound change wrought by technologies (McLuhan 2001: 7).

However, such a reified approach is not confined to media analysts and pop culture. Heidegger argued that the 'technological age can be defined by the structural loss of the autonomy of the subject and by the subordination of both subject and object to the demands of the network' (Heidegger 1977: 16–17). My understanding of what Heidegger is saying is that what appears in the technological age is no longer autonomous subjects over objects, but subjects and objects who become resources engaged in networks of optimization (Belu 2005: 577). Heidegger dismisses technology's putative neutrality and presents a 'dystopian' view of technology. In this new technological enframing, Heidegger sees 'meanings' destroyed and humankind's ability to recognize the potential of nature as a process of unfolding and revealing possibilities of living as gone and irretrievable. There are no criteria for the transformation of modern technology anywhere in Heidegger (Feenberg 2000: 226). Marcuse (1964: 158) recognised the capacity of technology for domination, claiming that, 'Today, domination perpetuates and extends itself not only through technology but *as* technology, and the latter provides the great legitimation of the expanding political power, which absorbs all spheres of culture.' He offers an account whereby humans' existence can be understood as 'ontology of action' (Farnum 2006). Once humans realize that our activities produce our current horizon of being, we can recognize that the 'chains' of our social structures are self-imposed. Marcuse was making a

significant departure from determinism, placing action at the centre of people's potential. He concluded that science and technology need to be reformed at the most fundamental level, the level of technological rationality itself. He wrote:

> Freedom indeed depends largely on technical progress, on the advancement of science. But this fact easily obscures the essential precondition: in order to become vehicles of freedom, science and technology would have to change their present direction and goals; they would have to be reconstructed in accord with a new sensibility to the demands of the life instincts. Then one could speak of a technology of liberation, product of a scientific imagination free to project and design the forms of a human universe without exploitation and toil.
>
> (Marcuse 1964: 19).

The use of the term 'technology' is part of the reification of technologies where 'technology' becomes a thing which has a life of its own independent of people, and people are frequently dominated by the reified 'technology'. Marcuse opened up the possibility of technologies of liberation sensitive to human imagination. Feenberg (1991; 1995; 1999; 2002; 2003; 2004; 2005) recognises the two opposing positions on technology which have so much in common.

> The Ruskins, the Heideggers deplored the dehumanizing advance of the machine while democrats and socialists cheered on the engineers, heroic conquerors of nature. However, all agreed that technology was an autonomous force separate from society, a kind of second nature impinging on social life from the alien realm of reason in which science too finds its source. For good or ill, technology's *essence* – rational control, efficiency – ruled modern life.
>
> (Feenberg 1999: 1)

He compares the deterministic view of technology with the deterministic view of economic markets where the economy has been treated as a quasi-natural system with laws as rigid as the movement of the planets. He points out that an ideological battle had to be fought to establish the social nature of exchange and says the time has come for an anti-essentialist philosophy of technology. The involvement of ordinary people with technologies is more complex than the efficiency-oriented approach in much critique. Ordinary people encounter technology as a dimension of their life world. They strive to appropriate the technologies with which they are involved and adapt them to the meanings that illuminate

their lives. Their relation to technology is thus far more complex than that of dominant actors.

In my view, the technology determinists, both evangelist and sceptics, focus too much on the technology itself and too little on what can be done or not done with it. They appear not to see that what can be achieved with technology depends on the context and the human purposes of those using it (Bromley 1998: 4-5). While challenging technological determinism, it is important not to fall into the trap of seeing computers as a neutral tool. All tools have propensities toward some uses rather than others. However a tool's propensities are not deterministic. It is possible to use tools in ways that were not originally intended. I have referred to Apple's position regarding the use of objects in 'oppositional ways' (Apple 2003: 14). The origin of the computer within the military with 'command and control' built in does not determine how it is going to be used in a classroom, provided we critically examine the context and the power relations that exist there. Postman's criticisms, O'Dwyer's analysis and Hawkridge's rationales all make a contribution to understanding technology, but they offer little recognition of the life-affirming potential of technologies, including ICT, and the possibilities provided by technologies to support original human agency. Each argument in its turn focuses on the potential for ICT to enable people to fit into structures which are defined externally rather than supporting people through their agency to act to improve their lives. This raises the question: apart from the evangelists' view and the sceptics' view, is there a way to reconceptualise technologies, in general, and ICT, in particular, which is life-affirming and supportive of original human agency, and moves away from technological determinism?

Reconceptualising ICT

While the support for educational ICT has been widespread (Hawkridge *et al*. 1990; O'Dwyer 1998; European Union 1996; Government of Ireland 1997) and there has always been some opposition to the introduction of new technologies into schools (Oppenheimer 1997; 2005; Postman 1995), recently a new perspective has been developing. This perspective takes the view that the answer to the question, 'Is this enormous investment in computing technology a good idea?' is without a simple 'yes' or 'no' (Bromley and Apple 1998: 1). Rather than looking for a simple 'yes' or 'no' we need to ask a more finely grained question. Bromley and Apple (*ibid*) suggest that suitable questions might include,

'Investment in what kind of educational computing?' 'A good idea for whom?' 'Under what conditions?' They criticise the belief that we can deal with the new technologies in a purely instrumental way and advocate the view that technology is a social practice (*ibid:* 2). This thesis describes uses of technologies in schools which I believe is a 'good idea'. It is a good idea because of its transformational quality and the contribution it can make to the formation of good societies through the exercise of individual and collective agency (McNiff and Whitehead 2005).

While using technologies within school and other organisations I am examining if ICT may have the potential to overcome the 'congealing' factors that are at play in my workplaces. Within these workplaces I can see and experience the same logics that underpin deterministic approaches to technologies. As noted earlier, discussions have taken place within my workplace where some colleagues felt there was no need for us to think about whether offering skills based courses like ECDL (European Computer Driving Licence) was a worthwhile thing to do. I believe these colleagues believed that there is no need to think about 'what is it' that we do in school. All we, as teachers, need to do is take whatever it is that is given and do it well. This appears to me to be a refusal to engage with theory and to regard teaching as an operational activity. McNiff and Whitehead (2005) pursue this idea; that teachers are regarded as implementers of policy and until teachers regard themselves as knowledge creators in their own right they will continue to be treated as implementers. Furlong (2000; 2004) claims that teachers are not prepared to equip themselves with a basic understanding of doing research and what is understood as generating knowledge. McNiff and Whitehead (2005) claim that teachers are encouraged to carry out research but not to generate their own theory.

If 'context and the balance of power in the specific situation do count' (Apple 2003: 14), can an engagement with theory provide an oppositional view of productivity tools which enable them to be used to support original human agency in contributing something unique to human experience? Can the most common office productivity tools like Word and Excel and PowerPoint be used in an oppositional way? While Computer Assisted Learning (CAL) systems tend to be deterministic and seek efficiency in learning, by contrast the underlying nature of the Internet is much more democratic. The structure of the Internet is under diffuse control – some would say it is not under anyone's control and access to the internet is widespread. The ability to contribute to the content of the Internet is

considerable. Once you can gain access to the Internet it gives access to information, it gives the capacity to communicate in ways that you do not have in a conventional classroom. Could the Internet provide me with the framework to explore ICT as political action? It seems to me the ideas underlying an emancipatory use of the Internet are congruent with living theories. Introducing the idea of ICT as political action provides a means toward reconceptualising educational theory.

As part of my process of reconceptualising ICT I have had to examine my scientific training and, in order to maintain my integrity, engage with ideas about the nature of science and technology and how this can accommodate the reconceptualisation of ICT. The deterministic approaches to technologies presented above are often presented as scientific approaches. If they are scientific approaches then it is the science of the seventeenth century grounded in Newtonian mechanics and Cartesian geometry. They are machine models where in order to understand the whole, you need to understand the parts, where fragmentation is the standard approach to understanding, where 'the process of division is a way of thinking about things' (Bohm 1995: 2); where knowledge is to be gained by standing outside as a neutral observer; and where systems operate by a process of cause and effect. But the sciences of the twentieth century are grounded in quantum theory, relativity, evolutionary processes, and ecology. The underlying currents are toward holism; understanding systems as living systems; where the relationship between the parts is more significant than the discrete parts; where unpredictability is the rule rather than the exception (Wheatley 1992: 9). Within this model of science, cause-and-effect evaporates, objectivity is elusive, and the myth of value free science is exposed. The work of twentieth century scientists has much to contribute to non-deterministic views of technology.

It seems that innovative scientists use leaps of imagination to make their discoveries and then verify (or validate) them by use of the scientific method. This idea is supported by Capra:

> These insights tend to come suddenly and, characteristically, not when sitting at a desk working out equations, but when relaxing, in the bath, during a walk in the woods, on the beach etc.
>
> (Capra 1992: 39).

An example of this can be found in the work of several creative scientists. The German chemist August Kekulé Von Stradonitz describes a dream where he saw carbon atoms dancing then holding hands to form a ring:

> …he related some years later that the vision of the benzene molecule came to him while he was riding on a bus and sunk into a reverie, half asleep. In his dream, chains of carbon atoms seemed to come alive and dance before his eyes, and then suddenly one coiled on itself like a snake. Kekulé awoke from the reverie with a start and could have cried "Eureka!" He had the solution: the benzene molecule is a ring.
>
> (Asimov 1987: 474).

He then (in 1865) formulated the resonating ring structure for Benzene that is the recognised structure accepted today.

But this type of account is not unique in scientific discovery. Similar accounts are related to the discovery of the double ring helical structure for DNA (de-oxyribonecleid acid) credited to Watson and Crick. While they undoubtedly carried out research it is not unreasonable to claim that Watson and Crick guessed the structure of DNA. Francis Crick, referring to the discovery, says*:*

> After many ups and downs, Jim and I guessed the correct structure…The key discovery was Jim's determination of the exact nature of the base pairs (A with T, G with C). He did this not by logic but by serendipity…In a sense Jim's discovery was luck.
>
> (Crick 1989: 64-65)

Asimov is less sympathetic. He suggests that their success was attributable to a photograph taken by Rosalind Franklin that they obtained by dubious means. Franklin was part of Maurice Wilkins' research team at King's College London.

> In 1953, the English physicist Francis Harry Compton Crick and his co-worker, the American biochemist (and one time Quiz Kid) James Dewey Watson, put all of the information together – making use of a key photograph taken by Franklin – without her permission – and came up with a revolutionary model of the nucleic-acid molecule.
>
> (Asimov 1987: 583)

While Franklin and Wilkins had carried out much patient research, this painstaking scientific work did not result in the actual discovery. Crick acknowledged Franklin's rigorous approach:

> Rosalind, in particular wanted to use her experimental data as fully as possible. I think she thought that to guess the structure by trying various models, using a minimum of experimental facts, was too flashy.
>
> (Crick 1989: 68)

The discoveries of Kekulé, Crick and Watson (Crick 1989) and others suggest that intuition and imagination have a significant part to play even in scientific innovation. I am addressing this matter at this point because I am looking for approaches to using, teaching and learning ICT that are not deterministic. By engaging with 20th century science rather than 17th century science, I find that science can offer approaches that are creative and innovative rather than restrictive and stultifying.

Heisenberg's early problem with electrons is an interesting one for us. He found the more he knew about the position of the electron, the less he knew about the speed because in order to measure the speed he had to change the position and the act of measuring in turn changed the speed.

> Heisenberg showed that there is no way of devising a method of pinpointing the position of a subatomic particle unless you are willing to be quite uncertain about its exact motion. And, in reverse, there is no way of pinpointing a particle's exact motion unless you are willing to be quite uncertain about its exact position. To calculate both exactly, at the same instant in time, is impossible.
>
> (Asimov 1987: 376)

This difficulty arises from the old scientific approach of breaking things into their component parts in order to learn more. However, the changing nature of quantum mechanics suggests we must see the whole in order to get the picture (Bohm 1992; Capra 1992; Wheatley 1992).

This discussion of the features of twentieth-century science is important. The theories of Relativity and Quantum Mechanics completely change the physicist's view of the world. All the certainty and predictability of physics began to disappear and many conclusions are based on probability. This fundamental change in physics was followed by similar changes in the other sciences. In chemistry, the Second Law of Thermodynamics indicated that the universe (and any other system left to its devices) was moving in a direction of increasing disorder but, fortunately for us, this process was moving slowly so we did not need to worry for the moment (Asimov 1987: 367). However, studies in ecology indicate that when systems are left to their own devices they become more complex, not less so. A wasteland left alone over a period of time will start growing plants and supporting animals, and eventually become woodland. This is a process called succession (Roberts 1977). The study of evolution indicates that systems, instead of becoming more disorderly, in fact

increase in orderliness and complexity over a long period of time (Darwin 1859; Kimball 1975).

Mathematics has been concerned mainly with linear equations. With small changes in inputs, these equations produce small changes in outputs. However during this century, interest has been increasing in complex equations where small inputs can produce large and unpredictable outputs. This has given rise to the odd notion of fractional dimensions or fractals (Gleick 1994: 98). These features of twentieth-century science are important because they indicate that we live in a world that is not simple or predictable and where there is order in apparent disorder (Bohm 1995: 111-156). These new paradigms in science have parallels in educational research (Benson and Hunter 1993; Blair 1993; Ennis 1992; Griffiths *et al*. 1991; Rasmussen and Mathiasen 2004; Wheatley 1999). McNiff uses the language of chaos theory when she says action in educational research may be seen as '…a dissipative structure, a bifurcation point which offers multiple possibilities of potential, each one of which could lead to the creation of a new universe' (McNiff 2000: 20).

The discussion of ideas arising from what some call the 'New Science' (Wheatley 1992) suggests an approach to the use of ICT that is participatory for all those involved. Such an approach moves away from the propositional logics of unambiguous lines and binary divides and from practices of imperialism and domination (Whitehead and McNiff 2006: 35-6). This suggests a need for new practices that move away from deterministic approaches to technologies and in particular ICT. They are practices which include blurring the division between teacher and students and recognising all who participate in an educational enterprise as learners and knowers. The practices move from closed modes of thinking to living logics. They are the kinds of logics that see the potentials in everything and see everything in relation with everything else (*ibid:* 39). They are not logics which abandon the past but which are inclusional in the sense that they include propositional and dialectical forms of thinking as a sub-set. '…one may expect the unending development of new forms of insight, which will, however, assimilate certain key features of the older forms as simplifications, in the way that relativity theory does with Newtonian theory' (Bohm 1995). The changing nature of quantum mechanics suggests we must see the whole in order to get the picture (Bohm 1992; Capra 1992; Wheatley 1992).

This account has been a theoretical analysis of how ICT is conceptualised and how it might be reconceptualised. As this work is based on building a living theory of practice I would

like to draw on my practice to give a short narrative of what this work might look like. As before, I draw on Arendt's conception of political action in terms of labour, work, and action (Arendt 1958), and Habermas's (1975) ideas of communicative action to underpin the theoretical basis of this work.

World Wrestling Entertainment and Communicative Action

When I read Habermas (1975; 1979; 1984; 1987), Gadamer (1979), Buber (1958) and others who speak of dialogue I see civil, civilised people who sit together and communicate with one another. I see that this could be relevant, say in higher education, where there are people who get involved in a certain level of discourse. When I speak of dialogue I am not talking about something as elevated as that. I am talking of people communicating in simple ways, sometimes not even communicating in words. Within the activities described in this thesis there are projects where students are working with technologies where an ideal speech situation is hard to identify. One of these activities involved students getting involved with ICT projects where they build web sites. As part of the process of allowing students to take control of their learning, the students choose what the subject matter of their web site will be. This can be a risky matter for the teacher as students may choose to design and develop their web sites around topics that are not elevating.

As I described earlier, one student decided to build a web site on 'World Wrestling Entertainment'. My internal reaction was, 'A web site of over-weight, half-naked men – that's just what I need!' However I curbed my tendency to take control and let him proceed with his choice. Keith developed the web site, maintained a reflective diary while he developed it and wrote a report at the end. In his report on the work of his project Keith wrote what he learned from doing the project. He wrote about different elements of his learning. He explained that he had learned about World Wrestling Entertainment: he learned the names of various wrestlers who won various championships; he learned who won most often, who was the heaviest weight and so on. Keith also explained about the ICT skills he had learned. He learned how to build a web site. He learned how to download images form the internet; he explained how he could insert those images, how he could add text and how he could insert hyperlinks. He also demonstrated his self-reflection. He reported how he learned things about himself; he learned that he was better at computers than he thought he was. In his report he said, 'I used to think I was no use at computers,

now I think I am quite good. I think computers might be useful to me in the future.' (Fallon 2002: 2)

My reflection on this is that we have come a long way from World Wrestling Entertainment to the point where Keith is writing these things. He is explaining articulately what he has learned and how he has learned as part of this project. He is analysing his learning at various levels. First, he is saying that he has acquired new information. These are the details of the wrestlers and their participation in competition. Second he has gained skills. That is how I would see the ability to download images from the internet. But he has gone further. He has articulated clearly that he has learned, at the level of information, at the level of technical skills and at the level of self-awareness. He has a sense of pride in what he has done. The key focus of the proponents and opponents of technology is on acquisition of information and sometimes on technical skills. This young person has used ICT to go much further. If we examine his project, it involves labour, work and action (Arendt 1958). Arendt refers to labour as 'routine behaviour required to meet basic needs'. Downloading the images of wrestlers could be seen as 'labour'. Work includes activity by artists and craftspeople to make lasting objects that comprise the human world. The creativity of designing and building the website was Keith's work. Action requires collective interaction to determine what is good and just. Keith's work on the website through interaction with fellow learners enabled him to take control of his learning, which is an aspect of taking control of his life. This can be seen as political action.

Reconceptualising ICT as political action is about devising ways of using ICT and other technologies that are not deterministic, colonising, dominating nor imperialistic but are life-affirming. Reconceptualising ICT involves living logics (Whitehead and McNiff 2006). The ideas of the inherent capacity of all living things to generate and transform is present in the new science and in the work of McNiff (1984; 2000; 2005; 2006) and others. Despite its origins, ICT can take a form that supports human agency, enables generative transformation and is life affirming. Such an approach will draw on the work of the 'New Science' (Bohm 1995; Capra 1992; Gleick 1994; Wheatley 1992) as a source of scientific thought which is not deterministic. It will draw on Bromley (1998) and Feenberg (1991; 1995; 1999; 2002; 2003; 2004; 2005) for an approach to technologies as a social practice. Whitehead (1989; 1993; 1998; 2003a; 2004; 2005) and McNiff (1984; 2000; 2005; 2006) provide a theoretical underpinning in their ideas of generative transformation and living

theories approach. Farren (2006) has started an approach to ICT as a social practice in Ireland, and this will add to the body of knowledge.

I now give an account of the actions I took to encourage a view of ICT as political action.

Chapter 5 – Taking political action: What I did

Introduction

I have described how my thinking in relation to my teaching and other aspects of my practice was leading me away from traditional approaches, which were often authoritarian and controlling in nature, toward practices that recognise that people are able to think for themselves and are able to offer explanations for their lives, provided constraints are removed. I have described the development of my thinking that leads me away from a fragmentary approach to understanding my world to one that actively seeks holistic approaches. Such approaches avoid technicist views and seek creative and innovative ways of doing things. These approaches will be apparent in the chapter as I describe and explain the work I have undertaken as part of my programme of research. In doing this I will draw on a range of projects undertaken within school and NCVA.

This chapter has five main sections. These sections focus on projects that are the vehicles that drive the action of my research. At the same time the projects show the development of my thinking. In the first section I give an account of my first faltering attempts to provide a learner-focussed approach to teaching ICT through the development of self-instructional notes. Second, I address a significant leap in my thinking around young people taking control of their learning through the North/South schools link. This work gave rise to the Setanta Project which forms a superstructure around the projects that followed, in that many of the key ideas underlying my living theory of practice were developed through the Setanta Project and its offshoots. In the fourth section I move my focus from my school-work to that undertaken in NCVA. NCVA provides a rather different environment to school but involves similar approaches based on recognising that people are valuable and have a contribution to make to their own and others' wellbeing. Introducing the NCVA work at this point is important because it is central to my ideas around holism. Although it is a different organisation, carrying out different work, it forms part of my web of connection that ties me into communities of practice that influence my work and my ideas wherever I am and whatever I am doing. In the fifth section I return to ongoing work in school. This final project which involves supporting a student-teacher from the nearby university forms another part of the web of connection. This offers a particularly complex web in that it involves supporting her in working with students who

are involved in what many would consider an alternative programme. The complexity of that web involves the interactions between student-teacher and teacher, between university and school, between pre-service training and in-service learning, between mainstream traditional school and innovative programmes.

The use of the five projects supports the idea of a 'web of connection' between various activities. While describing these projects I will draw on the ideas presented in the previous chapter in relation to reconceptualising ICT as political action. The focus of these projects is on moving away from didactic classroom practice and deterministic ideas of ICT, whether of the technicist or sceptical variety, and drawing on social constructionists' views of learning and ICT (Feenberg 1999; 2000; 2002; 2003; 2004; 2005) to move toward developing ICT as a social practice (Brown and Duguid 2000; 2002; Bromley 1998), by developing the ideas of communicative action (Habermas 1979; 1984) and political action (Arendt 1958) within ICT.

I will show how ICT can support a model of learning that departs from the traditional didactic model (Dewey 1997) toward a model that is collaborative in nature and life-affirming for those involved. Inherent in this reconceptualisation is movement from the dualism of teacher/student to a unifying view of collaborative learners. The research needs to be seen not at the level of individual participants but at the level of their joint collective interactions (Brown and Duguid 2002: 432). The model draws on Arendt's (1958) concept of plurality, recognising that while participants in the classroom or workplace may have different roles or responsibilities, each is a learner. My experience is that within the complex learning environment that is life, all learners are not learning the same things at the same time. One learner who is normatively referred to as 'the student' may be learning ICT skills while the learner who is normatively known as 'the teacher' may be learning how to support other learners in their learning of ICT skills. In the strange world that is the collaborative classroom it may be that the learner, known as the student, may be helping the learner, known as the teacher, how to learn ICT skills!

In addressing the use of ICT I will address issues of inequity in relation to ICT. These will be addressed not in a propositional way, but in a living process of attempting to provide access to ICT in an equitable way. In this analysis I will draw on the criteria suggested by Jones *et al*. (1995) for the equitable use of ICT and their indicators for engaged learning (Jones *et al.* 1994).

My thesis is informed by substantial research projects in two locations over a long time period. However, the research projects are not studied in isolation but in the context of a range of other projects and activities which form a web of connection. This broader examination is important in order to understand the 'patterns that connect' the various aspects of this work and indeed life in general (Bateson 2000). In school I have studied how I work with students and teachers and show how the use of ICT impacts on the quality of our educational experience. The Setanta Project, which I detail below, involved some eighteen teachers and close to one hundred students. The project proceeded by supporting the teachers and students in developing ICT skills. Teachers were supported to devise methodologies that allow them to use ICT in teaching their subjects. I gathered data from the participants through the form of interviews, conversations, journals and reports, from which I have generated evidence that they have benefited from using ICT to support their learning. A terminal report for the National Centre for Technology in Education provides evidence of the work of the group (O'Neill 2000b; 2002a). The evidence of the achievements of the project is of two main kinds. Some of the evidence is directly statistically measurable; for example, the reports show that the number of students using ICT has increased, the number of teachers using ICT has increased, and the range of subjects that ICT are used in has broadened. However there is also a qualitative change in the educational experience. Evidence of this has been gathered from the interviews, reports and comments of teachers and students. One group of students used an online programme which was devised to assist with personal reflection. In their reflections the students relate their achievements. In some cases these are directly attributed by the students to the use of ICT. However, in other cases the students used ICT to assist them in reflecting on other learning experiences, for example outdoor-pursuits activities or their mini-company trade fair. My thesis takes data from these students' reports and turns it into evidence of the achievements of the projects.

In NCVA I show how I initially aimed to improve the computerised systems for the return of examinations results, but this initiative rapidly developed into a self-study group of administrators who were keen to investigate how they might improve what they were doing. This became an in-house action research group. The group of ten people was a cross-section of the organisational personnel, including the chief executive, development officers and administrative staff. The group used an action research approach in attempting

to understand better the nature of the work that we do and in understanding how to retain our learning within the organisation. The achievements of the group were presented to all-staff training days on two occasions and to an action research practitioners' conference. Two members of the group submitted their action research projects in part fulfilment of the requirements of their masters' degrees (Cullen 1999; Deane 2000). Evidence of the quality of the learning of the participants will be drawn from these reports.

Throughout this work the emergent nature of my learning will become apparent. The development of my ideas about learning and my increasing realisation of the then authoritarianism and dominating nature of my thinking and activities will be explored as I explain how I strove to develop educative relationships and support activities that would enable participants to take part in political action through the medium of ICT.

Project 1: First faltering steps – Self-instructional notes and self-directed learning

The first project that I undertook in relation to the teaching of ICT has been described previously (O'Neill 1996). Giving an account of this work again might appear repetitive but examining the development of my thinking and my practice is a key element of this thesis. The following section shows my early dissatisfaction with my practice and my attempts to bring it into line with my values. I experienced disillusionment with trying to teach basic ICT skills to my students on a whole class basis. I set about trying to find a way of enabling greater autonomy for my students. The first stage in that work was developing a set of course materials for teaching basic skills. In my report of the work I wrote the following:

> At this point the content of computer courses taught included computer familiarisation, keyboard skills, programming, word processing, spreadsheets, databases, graphics, desktop publishing and CAD. An ongoing difficulty with teaching this material is the lack of a methodology, an approach to teaching the material. Frequently, in the typical computer class, there is a wide range of ability and an even wider range of experience. Some students have computers at home and are very capable, whereas some have never touched a computer and have no interest. In addition to this all students have their own individual difficulties. I found my classes were not progressing. As one student rushed ahead, another lagged behind. Trying to keep them together was impossible. The more computer literate students were getting bored and misbehaving. The others were getting frustrated. I was getting over

> stretched and annoyed. I decided that a text book was the answer. But no available textbook was specific enough to our computer system, and this approach did not work either. There were still too many questions and loose ends. I decided it was time to produce my own materials.
>
> (O'Neill 1996: 8)

Within this quotation the most telling sentence is 'Trying to keep them together was impossible.' At that point I was treating the students as a class rather than a group of individuals. In terms of pedagogy my approach was on 'herding a group' rather than meeting the needs of individuals. In terms of ICT my focus was rather technicist, focusing on ICT skills rather than education for freedom. Since writing my initial comments on this work I have encountered a metaphor gaining currency in management literature – the idea of 'herding cats' (Bennis 1998; Crocke *et al*. 1999; Dawson and Jones n.d.; George and Krajewski 2001; Lott 2006; Stuart 2006). The idea is rooted in an advertising video produced by software services company, EDS, for the 2000 Super Bowl. The advertisement suggested that trying to organize companies is like herding cats – one moment they are sitting still, next they have darted away; if you chase them one way, they run the other. While presented attractively and amusingly by EDS the underlying theme is of uncertainty and unpredictability within organisations. However, it seems to me that implementing the 'right' technologies and streamlining business processes are essential ingredients to produce organisational change; but it is not organisations that change, it is people. While the technical components of change are well understood, mechanised and standardised it is the human element that is critical to success and is least understood (Dawson and Jones n.d). Interestingly, the advertisement suggests that EDS believe that they have the solutions. EDS's advertisement reflects the dominant themes in management literature which are that management is about organising people.

My classroom experience suggests that in practical terms attempts at herding cats are doomed to failure. From my practice I have come to see the futility of trying to organise people, and find that when people are removed from controlling influences they are capable of organising themselves. My insight is that, contrary to conventional wisdom, people resist change only when it makes them feel out of control. They will resist if change is foisted on them without their consent (Dawson and Jones n.d). But learning is a process of change. It is likely that the factors that influence sustainable change are some of the factors underlying learning. Dealing effectively with learning or change involves valuing the people involved,

and, while many organisations claim that their most important assets are their people, few behave as if this were true. I am conscious of times in school when the principal told the staff as a group that we were the 'best staff in Ireland' but I would have thought that the 'best staff' might have had ideas that would be listened to, approaches that would be adopted and insights that were valuable. This did not appear to be the case. In hindsight I see this in terms of Arnstein's ladder of participation as the lowest rung on the ladder (Arnstein 1969: 216). Arnstein attempted to clarify issues around citizen participation in planning matters by developing an eight rung ladder of participation. From the first to the eighth, the levels represent ascending levels of participation. She further subdivides the eight rungs into three sets. The lowest two rungs represent non-participation; the middle rungs represent tokenism and the top three, varying levels of citizen power. The first rung represents manipulation. I see the 'best staff in Ireland' comment as manipulation. I realise that at times I have indulged in such manipulation with students when I have said 'Sure, you are great lads' and not meant a word of it!

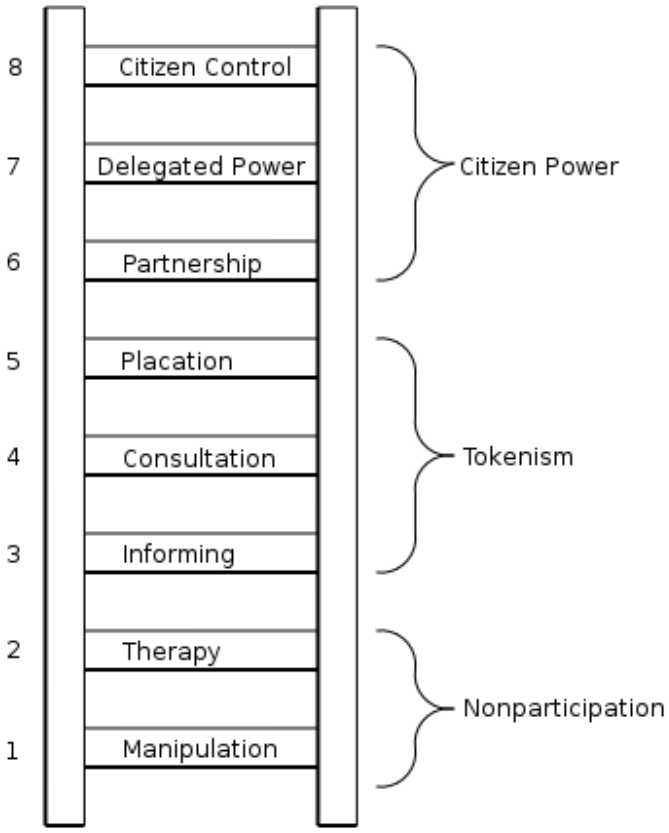


Fig 5.1 – Eight rungs on the ladder of citizen participation (Arnstein 1969: 220)

Despite not having reached these insights into my practice and into dominant practices at the time, the quotation above shows my early frustration with a teacher-centric approach and my first attempts to move toward a more learner-centred approach. While the self-instructional guides were prescriptive I see this as my first tentative steps toward moving away from an authoritarian approach in my classroom and allowing my students to exercise some autonomy over their learning. In my reflections on this work I indicated that I was having difficulties with the conflict between my values and my practice. I would like to take this thinking a step further at this time and by that means show how my learning has developed.

My frustration with trying to teach ICT didactically led me to produce my self-instructional notes. On the face of it you could say that the self-instructional notes are restrictive in that they lead students though pre-determined exercises where the 'successful' outcome for all students will be the same. But it is possible also to see them as enabling. If I were to use the same whole-class approach in teaching the computer class as I tended to follow in my science classes, I might require that all students do the same thing at the same time so we can all proceed together as a group. Using the self-instructional guides promoted a different approach because they allowed different students to proceed at different rates. This is an attempt at person-centred work. It is still prescriptive but it is allowing the learner to move along at his own pace. I am facilitating the students' learning by providing resources and materials that they can use as they wish. This is moving away from a classroom situation where one half is bored and irritated because the class is moving too slowly for them and the other half of the class is frustrated because things are moving too quickly for them. Providing the self-instructional guides is helping me to overcome inequity by allowing all students to work at their own pace and leaves the teacher free to support whichever students needs support. In this way students are not being treated equally but equitably. I appreciate that allowing students to work at their own pace can allow the advantaged to become more advantaged. But this practice allows the teacher to support most those who need most support and this promotes equity rather than equality (Secada 1989: 68-88). In Arendtian terms I think that the self-instructional guides could be called 'work'. Their development and use indicates that I have begun to develop my practice by moving away from labour but I have not managed to support activity that might be termed action.

Throughout the development of resource materials there is a process of moving me, as teacher, from looking after mundane activities, what Arendt (1958) might call labour, and focussing instead on more life-affirming processes which could be considered action. The development of a body of materials is part of an ongoing process of refining my ability to resource students' learning and to remove the constraints that are obstacles to students' learning. This is a step toward the web of enablement where wide ranging influences act in concert to remove obstacles to learning.

In Chapter 3 I referred to strategies within the Junior Technology class where a student became equipment manager and fellow students organised their tools, rather than having their teacher controlling access to them. This freed me up from activities like counting out screwdrivers and pliers and allowed me to focus on supporting students. At the same time students received the added responsibility of looking after equipment. It allowed them to exercise ownership. At that point it is their technology room; it is their pliers, their screwdrivers. In the ICT class and the Technology class, although the content of the class is prescriptive, students are exercising greater autonomy than previously. The activities represent my first attempts to support students' autonomy. The activities could be seen in Arnstein's terms as 'delegated power' which is close to the top of the ladder of participation (Arnstein 1969). As I engaged in changing the role of students and my role as teacher I was reconceptualising teaching within a co-operative model. At the same time I was reconceptualising my identity not as an authoritarian figure but as a co-worker with my students and colleagues. Interestingly the shift from authoritarianism did not reduce my authority within the classroom but in many respects enhanced it. In the case of the equipment manager, instead of coming to me for punishments, he was coming to me for advice and with ideas on how better to organise equipment.

Project 2: North/South schools link

The account of producing self-instructional materials is an example of my process of seeking opportunities to provide an experience of education that was life-affirming for students and teachers on an ongoing basis within my work. As I continued to develop this work an opportunity arose to take this idea further. The opportunity opened up the possibility of using video-conferencing as a means of supporting learning within the school and with others far beyond the confines of the school. Before accounting for the

North/South schools link I need to divert your attention to a brief history lesson which provided the context to this work!

On 31 August 1994 the Provisional IRA announced ‘a complete cessation of military operations’. The statement was greeted by widespread celebrations in nationalist areas of Northern Ireland. But unionists and the UK government pointed out that there was no explicit promise that the truce was permanent. The ceasefire lasted 17 months. But with no developments on the political front on 9 February 1996 the IRA planted a huge bomb in London's Docklands. It killed two and injured more than 100. Following the election of the new Labour government under Tony Blair, a new ceasefire came into place on 20 July, 1997. Following this in April 1998 the Good Friday agreement was made. It was supported by Ulster Unionists, Sinn Fein, the SDLP and the governments of the United Kingdom and the Republic of Ireland. Just four months later in August a bomb was detonated in the town of Omagh, County Tyrone by dissident republicans. Twenty-eight people were killed, a twenty-ninth person died subsequently. The bombing in Omagh indicated that the Northern Ireland Peace Process was fragile and required a series of confidence measures to bolster support (Dixon 2002: 725-727). It could be argued that the North/South Schools Link was one small element in a plan to increase communications across Ireland’s traditional divisions and create a sense of normal life carrying on.

Into this context in November 1998 the Department of the Taoiseach (Irish Prime Minister’s Office) invited my school, St Aidan’s, to host a video conference involving Prime Minister Tony Blair, Taoiseach Bertie Ahern and students from three other schools, Loreto Grammar School, Omagh; Limavady Grammar School, Co Derry and Carrigaline Community School, Co Cork. The schools represent the various traditions within Irish education: unionist, nationalist, catholic, protestant, north, south, girls and boys. The focus of the occasion was on the prime ministers and students in all four schools engaging in a questions and answers session using video-conferencing technology.

Shortly before this in January 1998 St Aidan’s teachers and students undertook a European Union sponsored ‘Socrates-Comenius’ project fostering dialogue and communications between young people across Europe. I initiated and supported the use of ICT within this project. As a result teachers and students from three countries, Slovakia, Spain and Ireland, were enabled to engage in dialogic processes through the medium of ICT. The project was entitled ‘Our Lives: A comparison of School Life and Leisure Activities: The Ideal

European School and Lifestyle' (St Aidan's Comenius Report 1999). The North/South Schools Link came into an environment which was already focussing on students taking control of their lives though dialogue and communication through the medium of ICT (www.ictaspoliticalaction.com/comenius).

In the weeks prior to the video conference I engaged students in a project where they composed questions they might ask various 'important people' if they were to meet them. Included among the people they might meet were Mr Blair and Mr Ahern. Over a period of time, along with their teachers, they asked and answered a wide range of questions. The questions were polished and honed in a dialogical process where students composed questions and discussed them with each other, sometimes in small groups and sometimes as a class. The process produced questions which reflected the interests of the students: some were political, not surprisingly in the heady days of the peace process and only months after the Omagh bombings; other questions reflected the day to day – 'are you well informed on computers or do you leave that to other people?'

Fig 5.2 – Students and teachers engaging in a dialogical process of preparing questions to ask the two prime ministers.

The method I devised for arriving at questions to put to the two prime ministers was through the medium of group discussion and dialogue. The development of the questions from students' handwritten questions to those finally asked is documented as part of the accompanying multimedia thesis which is available at http://www.ictaspoliticalaction.com /pdf/northsouth/AhernBlair_questions.pdf. Devising questions and practising them with others were aspects of small group discussion and dialogue which are fundamental to

education. It is, of course, possible to learn without discussion, but the need to support deep learning through peer-group discussion is important. In our increasingly market-driven model of education it is small group work and particularly discussion that is being squeezed out of the education process (Coventry 1998). This is precisely the type of work required to develop good citizens. Civic education and multicultural education can be supported and extended by developing schools' capacity to deepen social and political democracy (Parker 2006: 11). The emphasis here is, after Allen (2004), not on civic 'oneness' but 'wholeness', with an emphasis on talking, listening and political trust among strangers. In the video conference, young people who had been participating in a democratic process with their peers in several countries took part in a democratic process on the world stage with world leaders. Young people were demonstrating their citizenship, not in terms of legal status, but in terms of participation in a self-determining political community (Parker 2006: 11).

As part of the participatory process, a few days before the video-conference, I told the students that the two Prime Ministers would be involved and they were given the opportunity to take part or not as they wished. Some chose to take part and others not. Although a demonstration of their political participation, the work of the students was carried out through the medium of ICT. In the course of the project the students had been supported to develop considerable ICT skills but not ICT skills alone; they improved their communications skills and interpersonal skills as they engaged with students whom they had been divided from by centuries of tradition.

Questions posed by the young people to the leaders ranged from difficult questions about the political situation: 'Mr Ahern, how can Ulster Unionists trust you when you make a statement hoping for a United Ireland in your lifetime?' to crucial football questions about the transfer of Duncan Ferguson to the Prime Minister's favourite club Newcastle United. Media coverage of the event suggested that 'dialogue and communication were literally and metaphorically urged by the two leaders to change the old ways of the past and encourage understanding and toleration for different points of view' (Danaher 1998).

If this event had been a single day event it would have passed as an historic event but unlikely to have an impact on the day-to-day work of the school. However the democratic underpinning of the North/South schools link was to provide the direction for a range of school projects over the following years. These included the Dissolving Boundaries

project, European Schools Project, Comenius, and Setanta project, which significantly influenced mainstream school programmes through the Transition Year Programme and Leaving Certificate Applied programme.

The event could be dismissed easily as political theatre supporting an attempt by political elites to communicate appropriate messages to various audiences in an attempt to bring them into an accommodation (Dixon 2002). Whatever the motives of the high profile players the students on the ground had a political agenda and that agenda was one of engagement with leaders in our society.

Project 3: The Setanta Project

So far I have discussed the development of self instructional guides and the North South Schools Link I have addressed above. I now address the third major project, the Setanta Project. The Setanta Project forms a backbone to other projects within this research as it was the source of many of the ideas, activities and the infrastructure that underlie the projects. The Setanta Project forms an important part of the development of my understanding about learning and teaching, and provides the structure for a web of enablement that supports learning and teaching. In this section I provide the background and account for the activities of the Setanta Project and how it influenced the development of my thinking and how my thinking influenced the development of the project in a reciprocal way. This is a good example of theory and practice working indivisibly.

In November 1997 the Department of Education and Science (DES) launched the programme 'Schools IT2000'. This was as a result of an undertaking by the Government of Ireland in its 'Action Plan for the New Millennium' to achieve computer literacy throughout the school system. Schools IT 2000 was intended to provide 'a comprehensive and innovative programme to achieve this objective' (Government of Ireland 1997). As announced, the programme 'Schools IT2000' was composed of three major strands. These were the Teaching Skills Initiative (TSI), Technology Integration Initiative (TTI) and the Schools Integration Project (SIP).

Following the government initiative in cooperation with colleagues I undertook to form a Policy Group in our school to respond to the government initiative. The initial response was to formulate an IT plan for the school (O'Neill 1998c). This plan formed the basis for St Aidan's ICT policy (O'Neill 1998d) and underpinned St Aidan's application to the

National Centre for Technology in Education (NCTE) for support for ICT initiatives. To the extent that I was a key player in the development of the policy this document shows a transitional stage in my thinking about ICT. The list of rationales for ICT given in this document was as follows:

> To meet the requirements of various subjects e.g. Business Studies, Technical Graphics.
>
> To integrate information technology into the various subjects.
>
> To prepare students for the world of work.
>
> To enable the use of ICT as a teaching tool.
>
> To support extra-curricular projects like the Comenius Project and other project-work like the First Year Science Project.
>
> (O'Neill 1998d: 1)

Some of these rationales are traditional including the vocational rationale (Hawkridge 1990) – 'to prepare students for the world of work' and 'to meet the requirements of various subjects'. However there were indications of the development of different ideas around ICT. 'To enable the use of ICT as a teaching tool' held out the possibility of uses of ICT that were more liberating.

While identifying the uses that ICT might be put to, the development of my own and of colleagues' thinking was more obvious:

> To what use will ICT be put?
>
> - To teach computer skills.
> - To assist teachers in the preparation of class materials.
> - As a demonstration aid in class.
> - To encourage independent learning on the part of students.
> - To enable students to research.
> - To enable students to present their work better.
> - As a communications tool in the form of email and Internet.
>
> (O'Neill 1998d: 1)

Within this list the fundamental idea of teaching ICT skills was at the top; despite this, the list included other uses which focused more on enabling students and teachers to develop independent learning and autonomy.

The thinking which can be seen in the ICT policy document led me to make a proposal to the NCTE that would involve a significant commitment to ICT and its transformational potential in St Aidan's. The project which became known as the Setanta Project was developed as St Aidan's response to the government initiative 'Schools IT2000' (O'Neill 1998a).

The proposal to NCTE was for 'The Development of a School Subject-Based Intranet'. In terms of support from NCTE the proposal sought the provision of two data projectors, a digital video camera and a laptop computer. These were seen as requisites to support the development of content on the Intranet. But the scale of the proposal to NCTE shows that my vision of the project at this point was limited. However, at this point there was an implicit understanding of the importance of collaborative work. This can be seen in the steps taken to seek the support of the School of Computer Applications at Dublin City University (DCU) and from the Education Trust in DCU (O'Neill *et al.* 1998). Two faculty members of the School of Computer Applications, Margaret Farren and Ray Walshe, joined the team immediately and others followed. Research elsewhere indicates that a key characteristic of innovation is its tendency to cluster (Brown and Duguid 2002: 430). It is argued that innovation clusters because innovative people tend to cluster, staying close to those who share their vision, understand their insights and advance their ideas. The innovative collaboration between school and university was part of a process of supporting innovation by surrounding oneself by innovative people. Within the Setanta project support for innovative practice was found locally, with innovative colleagues in school, in the university and in NCTE.

The Setanta Project was developed with the belief that the provision of hardware and software was a necessary but not sufficient condition for the integration of information and communications technologies into the life of the school. The project set out to examine the question, 'How can we provide equitable and effective access to information and communications technologies within our school?' Project planning identified clear issues in relation to using ICT in schools:

> To date computers have been used in schools to teach computers. However, the primary occupation of schools is teaching subjects and ICT is not one of these subjects. It appears that ICT are peripheral to most teachers.
>
> Commercially available software (courseware) is generally not adapted to the Irish market and as a result is not particularly useful.
>
> (O'Neill 1998e: 2)

The project proposal indicated the potential suggested by the Internet but identified that it had its limitations:

> Appropriate content is often difficult to find, so we are dependent on what others make available on the Internet.
>
> Access speed is a problem, and this will continue to be the case until broadband technologies are rolled out.
>
> (O'Neill 1998e: 3)

When I identified my concerns in the report I expressed them in terms of my belief that a knowledge of ICT is important for all students and that many teachers were missing out on the advantages that ICT can offer (O'Neill 2000b: 7). At this point I was not showing the deeper insight of the emancipatory potential of ICT although I think that these ideas were implicit in my work.

Although I was not aware of the work of Jones *et al.* (1994; 1995) at the time their framework for engaged learning and indicators that denote effective and equitable access to technology can be seen in the project. In the next section I will indicate where I see these indicators within the work of the Setanta Project and how these form the basis of enabling equity within the provision and use of ICT.

Setanta and effective and equitable access to technology

The underlying theme of equality of access was present in the design of this project. In the event equity became not a goal to be achieved but a problematic practice of coming to know through struggle (McNiff 2002: 3). Jones *et al.*'s (1995) criteria for equity can be seen in the complex range of activities undertaken within the project. What other writers refer to as collaborative work Jones *et al.* (1995) refer to as interconnectivity. The collaborative nature of the project can be seen in the desire to be inclusive. Rather than taking a closed view of the work that was to be done, the early plans for the project took an

open ended view. As part of the design of the project I moved outside of the initiating school and sought collaboration between institutions, St Aidan's and the School of Computer Applications. However this was not a project connected at a single level but the interconnectivity spread throughout the institutions. Members of management, staff and students were active at all levels of the project from planning to implementation. I accomplished this by obtaining the support of faculty and students from the university along with teachers and students from the school. Two faculty members of the School of Computer Applications joined the steering committee for the project and joined in the day-to-day running of the project, working with their students and with school staff and students. They placed an Intranet based project, which had the potential to support Setanta, on the list of third year projects for Computer Applications students. Two students selected this project and undertook to work with their university supervisors and with teachers and students from St Aidan's in producing a Virtual Art Gallery (VAM) for the school Intranet (Farren 2001). Deirdre Pentony and Marie Mooney worked on the implementation of the Virtual Art Gallery (VAM) throughout the school year 1999-2000. They worked in co-operation with Sonya Kinch, art teacher in St Aidan's, myself, Ray O'Neill, ICT teacher; and St Aidan's students. By joining in common activities and by 'what they have learned through their mutual engagement in these activities' (Wenger 1998: 45), this group became a community of practice. They were involved in joint enterprises which were continually renegotiated by members. They functioned by mutual engagement, which bound members into a social entity and it developed a shared repertoire of communal resources which included routines, sensibilities, artefacts and styles. These are defining characteristics of a community of practice (Wenger 1999: 73-84). A community of practice involves much more than the technical knowledge or skill associated with undertaking some task. Members are involved in a set of relationships over time (Lave and Wenger 1991: 98) and communities develop around things that matter to people (Wenger 1998). The fact that they are organizing around some particular area of knowledge and activity gives members a sense of joint enterprise and identity.

Fig 5.3 – Sonya Kinch (Art teacher, St Aidan's), Deirdre Pentony and Marie Mooney (Computer Applications students, Dublin City University) collaborating on the development of VAM (Virtual Art Museum)

At the same time in St Aidan's, a group of students undertook to develop their version of the art gallery. This work was undertaken in co-operation with their art teacher and me, their ICT teacher. As part of this project the students identified their lack of web development skills. A training course in web design skills was set up to meet their identified needs. While the focus of this course was teaching ICT skills, interconnectivity was a key theme. The course was taught by a member of the School of Computer faculty. The class group was made up of fourteen students and four teachers, including the principal, learning within a classroom as equals on a collaborative venture.

The project sought collaboration between students and teachers in St Aidan's and teachers and students were supported to develop content for the Intranet. It sought collaboration between faculty and students in the School of Computer Applications. This was accomplished through the work of faculty and students in the development of the Virtual Art Gallery (VAM). A key element of the collaborative nature of the project was the recognition that no one knew where the project would lead but all participants played their part in taking the project forward. The uncertainty of the future was not a barrier to progress but in many respects uncertainty was embraced (Clampitt and DeKoch 2001; Clampitt, DeKoch and Williams 2001; Jeffers, 2003).

The initial project proposal to NCTE set modest ambitions in relation to access to equipment; within a short time this brief widened into establishing a school wide infrastructure to provide ubiquity of technology (Jones *et al.* 1995). The improvements involved redeveloping the computer room infrastructure, developing a second computer

room, providing computers in a wide range of classrooms, the Careers Room, the staffroom, and the library. The objective was to make technology available wherever it was required. The infrastructure of the network, both physical and configuration, had to be addressed to provide a satisfactory level of access for all users. However, true ubiquity cannot be achieved by restricting access to technology to a small number of locations. The challenge of ubiquity was addressed by the provision of laptops and data projectors which allowed the technology to be brought into every classroom. The inclusion of the digital camera extended that ubiquity to the football field, work experience and field trips. The role played by the digital camera can be seen at many locations throughout this thesis. However providing isolated computers does not meet Jones *et al.*'s (1995) requirement for connectivity. Connectivity was addressed by providing a school wide network that involved my cabling every room in the school and making Internet access available across that network. The speed of the Internet connection was a problem initially as the early stages of the project predated broadband access. The specific question of equal access to more disadvantaged groups was addressed by providing access to computer facilities across the school population but specific steps were taken to provide access to groups of students who were often marginalised within the school.

The schedule of work completed within the first six months of activity shows that the idea of connectedness was implicit in the work of the project. The idea of connectedness can be seen in the range of activities undertaken and the range of sponsors funding the work. The diversity of activities shows the not yet explicit thinking that change has to be addressed on a wide range of fronts simultaneously. Change is like a wave which affects everything in its path. The activities undertaken affected the work of the Careers department by providing computer access to the careers teacher and students. At the same time teachers were supported by the provision of computers in the staff room. The far reaching effects of providing computers were enhanced by the provision of email and internet access. However, the users' experience with these would be short-lived if the underlying network was not robust enough to support their use.

While the account above addresses indicators for equitable access it also shows systems thinking (Senge 1994: 87-189) in that the approach is multifaceted, recognising that within complex systems addressing one element of the system is not enough to effect change. The approach shows a focus on the interrelationships between various aspects of the school

community, both physical and human. Figure 5.4 below looks like a traditional table of static information. It is common practice in traditional theses to include items like the table in an appendix. I would like to take an oppositional view (Apple 2003: 14) of the table and speak of it in multifaceted and relational terms.

Infrastructure Development – Phase 1			*Cost*	*Sponsor*
Re-cable existing network	Oct 1999	Complete	£13000	St Aidan's
Upgrade network server	Oct1999	Complete		
Reconfigure network to provide robust, secure access	Oct 1999	Complete		
Provide email/internet access to computer room, staff room and main office	Oct 1999	Complete		
Two computers for the staff room	Sep 1999	Complete	£3200	Eircom and St Aidan's
Data projectors (2)	Jan 2000	Complete	£6400	SIP
Laptop (to use with data projectors)	Jan 2000	Complete	£1803	SIP
Digital video camera	Jan 2000	Complete	£1600	SIP
Digital still camera	Sept1999	Complete	£1100	LCA grant
Computer for Careers office	Sep 1999	Complete	£1400	TESCO
Computer for careers room	Mar 2000	complete	£1500	NCTE-Careers

Fig 5.4 – First stage of infrastructural development

The left-most column lists the activities and items purchased as part of the first stage of the Setanta project. The range of activities reflects the multifaceted nature of the project. The sponsors are wide ranging, including the school's resources but also drawing on bodies such as the National Centre for Technology in Education (NCTE) and at the same time availing of the support of commercial bodies like the telecommunications company, Eircom, and supermarket chain, Tesco. The table does not represent an object – it represents a process (Capra 1999). The process is part of envisioning a desirable future and

inventing ways of bringing it about (Schön 1991: 16). To see this table in isolation is to miss the point; it is only relational when viewed in the context of what follows.

The thrust of the Setanta project was not primarily about technology. The technology played a part because of its transformational quality which supported individual human agency. An element in the process of supporting the capacity for human agency was providing the tools to support agency. I sought training in the use of technology as a central part of this. The web of connection is central here. Training did not take place in isolation. Training took place at the same time as the infrastructure was put in place. Training was provided to both staff and students and was provided in those areas that supported human agency. The training courses in the use of technology were not provided for their own sake but in those areas which would enable teachers and students to express their individuality and achieve their aims.

Figure 5.5 below shows the training schedule over the years 1999-2000. As before I do not see this as a table of static information but as an aspect of the web of enablement. This table refers to training that could be seen as being concerned with skills, primarily, but the focus of the training was on learners choosing the context of their learning and on aspects that could help them with their learning or teaching.

Course	*Date*	*Participants*
Basic computer skills	May 1999	12 teachers
Presentations - PowerPoint	January 2000	5 teachers
Setup and using data projector and laptop	January 2000	10 teachers
Computer Applications	February 2000	21 teachers
Web design using FrontPage	April 2000	14 students, 4 teachers
Setup and using data projector and laptop	October 2000	7 teachers
PowerPoint and FrontPage	Nov 2000 to Jan 2001	16 teachers
Web design using FrontPage	November 2000	48 students

Fig 5.5 – Schedule of training

The account above could be construed as operating out of a technicist perspective by focussing on technology and training. However the focus on technology and training was

contemporaneous with the principal focus of the Setanta project – the development of a school-based Intranet. The choice of content for this Intranet was important. The decision was taken to avoid technicist approaches and start the work by developing an Art History intranet.

While developing the Art History website students worked closely with their Art teacher and their computer teacher. The nature of the working relationship was collaborative. Each member made their contribution to the group. Sonya, the Art teacher, offered her knowledge of art history, Ray his knowledge of web development. The students, Niall, David, Stephen, John and Aiser brought their personal creativity and enthusiasm to the work.

Weekly meetings took place between the members of the group. Within these meetings the key decisions were made on the design and content of the web site. In traditional schools teachers tend to work alone (Lortie 1975). In learning enriched schools (Rosenholtz 1989) teachers work more together and by having colleagues who show support and communicate more, teachers gain confidence around what they are trying to achieve. 'Joint work' – which includes activities like team-teaching, planning and action research – creates stronger interdependence, shared responsibility, collective commitment and improvement (Little 1990: 22). The shared learning gives students an opportunity to engage in discussion, take responsibility for their learning, and thus become critical thinkers (Totten, Sills, Digby, and Russ 1991). There is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than learners who work quietly as individuals (Johnson and Johnson 1986: 31-2). The collaborative nature of the work appears to promote meaningful engaged learning (Jones *et al.* 1994).

Conversely engaged learning involves being collaborative – that is, valuing and having the skills to work with others. Successful, engaged learners are responsible for their own learning – they select the content and skills that they wish to learn. Such learners tend to be self-organising and self-regulated and are able to define their learning goals and evaluate their achievement. Within the Setanta project, the University students selected the development of the Virtual Art Museum (VAM) from a list of projects. The choice of project was their own and they selected the underlying technologies they wished to learn and use for the project. The university students undertook to develop the virtual art museum using Java (JDK 1.2) and Virtual Reality Modelling Language (VRML) (Farren 2001).

They worked collaboratively with the Art teacher to choose the Art History content for their VAM.

This is an example of teacher and students working together to envision their desirable future (Schön 1991: 16) and they found ways of bringing it about. They chose tasks which were challenging, authentic, and multidisciplinary. These are the types of task that support engaged learning (Jones *et al.* 1994). Such tasks are typically complex and involve sustained efforts by learners over large amounts of time. Rather than being the artificial tasks frequently set in school they are authentic in that they are similar to tasks that the learner might undertake at home or in workplaces. Computer Applications students could expect to face such tasks in the near future in the workplace. The same is true for St Aidan's students. Within the project the participants built knowledge of technical matters, of curricular matters and interpersonal matters. As engaged and collaborative learners they were constructing a knowledge-building learning community which developed shared understandings collaboratively.

Within the Setanta project the learners produced an Intranet to support the teaching and learning of Art History. But the outcome of the project was not the Intranet. The Intranet was an artefact that was produced. The outcome was the collaborative learning that took place through the educative relationships of the participants. In many respects this was education *through* relationship. The relationships were a fundamental source of learning. The quality of the relationships influenced the hopefulness required to remain curious and open to new experiences, and the capacity to see connections and discover meanings (Salzberger-Wittenberg *et al.* 1983: ix). Within this project relationships were not just things people had but things people did (Duck 1999: 21). These relationships were relationships of trust, dialogue and change. The perspectives of students were authorised (Cook-Sather 2002: 3) by the openness to all participants having the ability to take their place in the discourse that was essential to action and having the right to have their part matter (Heilbrun 1988: 18). An element of 'having one's part matter' is ensuring that there are legitimate and valued spaces within which students can speak and be heard (Cook-Sather 2002: 4). For spaces to be 'legitimate' and 'valued' they must go beyond the confines of a student's classroom into the public arena. Learners should be supported to make their learning public.

Having deployed their Art gallery to the school Intranet. two students undertook teaching a topic in Art history to an Art class. To do this they set up the technology – computer, data projector, intranet access – in the Art room. They prepared a class on the subject of Renaissance Art and taught it to a senior Art class. They supported other students in their learning by providing them with information on how to access the web site that they had created. This was a step in making their work public. The students were seen by their peers in a position of authority not usually seen within school. The teachers involved were using their power in an attempt to help others exercise power (Ellsworth 1992: 107). Students and teachers were in the 'being' mode of relatedness to the world. Instead of being passive receptacles of words and ideas, they listen, they hear, and most importantly they respond in an active and productive way (Fromm 1979: 38). The public presentation by the school and university students of their learning was taken a step further when they presented the artefacts to the school and the wider community.

Fig 5.6 – David Hesnan (Setanta Art intranet developer) teaches Art History to a senior class in collaboration with Sonya Kinch (Art teacher), May 2000.

In May 2000 the work of the Setanta project was presented to the school community, the university community, the local community and a range of dignitaries including the Taoiseach (Prime Minister), officials from the Department of Education and Science, representatives of the National Centre for Technology in Education (NCTE), and many others. At the event, students demonstrated and explained the work that they had achieved and the learning that they had undertaken. The event gave learners – students and teachers – an opportunity to celebrate their achievements and to gain public recognition for their learning. Within this event the voices of children, which have been missing from the discussion (Kozol 1991), were found and celebrated. The students had been active with

their teachers in educational reform. The teachers in this project had sought to make a difference for good with, not for, students (Corbett and Wilson 1995).

At the Setanta launch the Principal expressed the hope that the project would continue. His wish can be seen in the infrastructural development that took place over the following year. The pattern of continuing the development can be seen in the first column of the table. The activities undertaken are wide-ranging and diverse. The final column, listing sponsors of the developments, shows that the development was based on gaining the support of a wide range of parties. The table does not show the range of activities undertaken by staff and students to secure the sponsorship and to implement their plans.

Infrastructure Development – Phase II				
Install courseware, videoconferencing software and hardware for use across internet	Feb 2000	Complete	£2500	St Aidan's
Cable every classroom in the school to provide access to the school network, Intranet, Internet and email	April 2000	Complete	£8500	St Aidan's
Computer for Music room	Sept 2000	Complete	£1200	Tesco
Computers to two science rooms	October 2000	Complete	£2700	DES science grant
Provide second computer room	December 2000	Complete	£14000	St Aidan's
Computer in third science room	May 2001	Complete	£ 1200	St Aidan's
Computers in three additional classrooms	May 2001	Complete		Anonymous sponsor

Fig 5.7 – Second phase of infrastructure development

The web of connection can be seen in the development of the ICT infrastructure, in the provision of training and the co-operation between a school and a university. I have a concern that these activities may be seen as technical exercises. The development of an infrastructure is often seen in technical terms. The personal emancipatory aspects of the web of connection were evident in the development of web sites to support the teaching of a range of subjects. The first two major projects were devised to support the teaching of art in St Aidan's. However over the following year content was added to the Setanta Intranet to support the teaching of Science, Geography, Religious Studies and History. In all cases

this development took place in a collaborative way with students and teachers working together to develop and publish the Intranet content.

Setanta Intranet		
Development of Virtual Art Museum	2 university students	complete
Development of Art web site by school students	Art teacher and 25 students	complete
Science site	1 teacher, 3 students	First phase complete
Geography site	1 teacher, 3 students	First phase complete
Religion site	1 teacher, 12 students	First phase complete
History site	2 teachers, 24 students	First phase complete
School of Computer Applications, DCU		
Development of virtual art gallery	2 faculty, 2 students	Complete

Fig 5.8 – Development of intranet

The Setanta Project was a project of discovery. It started with a picture of a number of issues in relation to using ICT in learning but did not have a clear picture of an outcome. The use of ICT in this case can be justified on the basis that the students were interested in learning when it involved ICT. Introducing ICT into the classroom provided a different classroom environment from the traditional environment of the school. The student-centric nature of ICT work frees the teachers to work with individuals or groups of students. The use of ICT gave the students the opportunity to show that they were 'knowers' in their own right. This was particularly noticeable when the students were showing the teachers how to achieve particular effects with the computer. They were exhibiting their practical knowledge of working with the computer. This was knowledge gained through experience (Reason 1988: 229).

Through the North/South schools link and the Setanta project I provided opportunities for learners – students and teachers – to take control of their lives and build a new way of learning together that was life-affirming and allowed us to move from the traditional didactic classroom toward a model of learning that did not necessarily require the staples of traditional school – classrooms, timetables, rules, routines, teachers, students. Learners were supported to free themselves from 'bolt down seats and lock–step curricula' and

teachers escaped from the role of skilled engineer (Cook-Sather 2002: 3) and became instead collaborative teachers working with colleagues and students on a more equal basis, forming a community of practice. While reflecting on the achievements of the North/South schools link and the Setanta project it seemed to me that while steps had been taken in the direction of building a dialogical community there was room to go further. In my journal of 2 February 1999 I noted that:

> Although the work undertaken as part of North/South schools link and Setanta have provided some opportunities for dialogue and moves some of the way toward a model of ICT as political action I think this needs to go further. Apart from the evidence from the work undertaken as part of the projects and the video and audio clips of some of the events I have not really challenged the participants to be reflective or to comment on their own learning. I think I should try this through some of the projects. The LCA group could provide opportunities….

The recognition that some progress had been made, but that there were opportunities available that would provide the basis for attempting to move toward a more dialogical situation, particularly in formal classes, was a new step in the process of attempting to address my experience of myself as a 'living contradiction' (Whitehead 1993). The following section provides an account and the rationale underlying this work. This was also the point when I developed a greater awareness of systems thinking. In the account of the Setanta project I have referred to the need for networking, the fact that trying to make one single change is difficult. Change can be understood as successful when undertaken on a wide range of fronts at the same time (Senge 1994: 87-189). The reality is that schools, in common with many other organisations, increasingly work in a world of separations and clear boundaries: boxes describe jobs, lines chart relationships and accountabilities, roles and policies describe the limits of what each individual does and who we wanted them to be. We are skilled at describing the world with strange unnatural separations (Wheatley 1999). But the world is a natural entity. All life organizes into networks, not neat boxes or hierarchies. Wherever you look in the natural world you find networks which are always incredibly messy, dense, tangled, and extraordinarily effective at creating greater sustainability for all who participate in them. The organisation chart is often seen as the structure of an organisation or in some cases people have moved beyond the chart to see the structure of an organisation as workflow and processes. An alternative systems view of organisation is that it is the pattern of relationships within the key elements of the

organisation (Senge 1994: 90). One of the insights of systems thinking is that 'you won't be able to divide your elephant in half' (*ibid*). Understanding the elephant, which is your system, cannot be achieved by the well worn 'scientific approach' of fragmentation (Bohm 1995: 2). Achieving results in complex systems requires bringing in as many perspectives as possible. Interdependency and collaboration are touchstones. By examining my research outside of school, in my administrative work with NCVA and further work in school I will show some of the independencies and how different aspects of my work systems were brought together in life-affirming practice in pursuit of political action.

Project 4: Action Learning and interconnecting branching networks

In NCVA I work with administrative staff in handling data, designing computer programmes to process data and designing forms and other documentation. My first enquiries in relation to certification focused on understanding the nature of the programmes being certified, understanding the special administrative difficulties posed by these programmes and devising means of certifying the programmes speedily without compromising their integrity (O'Neill 1997).

Reflecting on this work and its improvements, it seemed to me that a focus on problem solving was not enough. The approach which I had been using involved single loop learning (Argyris 1982: xii, 159). In engineering cultures, where single loop learning is common, change is treated as an aberration, a discrete event that temporarily disturbs an organization in a generally stable business environment. But it is evident in today's competitive environment that change is the norm, while steady-state is often an illusion (Dawson and Jones n.d.).

At this time NCVA was on the brink of considerable change. Under the terms of the Qualifications Act (Government of Ireland 1999) the existing Council would cease to hold office and be replaced by a new Council, the Further Education and Training Awards Council. Staff of NCVA had no guarantee of jobs with the new body. The new council would have new functions, new relationships with course providers and an emphasis on quality assurance. All these factors implied that NCVA was not in a steady state but in a state of considerable uncertainty and unpredictability. The model we had been using was not able to accommodate the rate of change we were experiencing and the problems we faced were not individuals' problems but problems for the entire organisation. It was in

this context that it became apparent that a process to support organisational learning and organisational change was required. It seemed to me that establishing a process of organisational learning within NCVA required the same sort of philosophy of learning that informed the work in school. I was aware of the management literature that indicated that about 75% of all organizational change programmes fail (Dawson and Jones n.d.). For the most part change programmes do not fail for technical reasons but because people feel left out of the process and end up lacking the motivation, skills and knowledge to adapt to new systems and procedures. Organizations don't adapt to change; their people do. Any attempt that was to be made to improve how we work must be focussed on people. This insight is an important crossover from my school work. While there was a strong focus in school on technology in building relationships, in NCVA the focus was on building relationships to change processes and build a learning organisation.

My proposal for the formation of an action learning group suggested that the model for the group would be innovative but would draw on work on reflective practice, particularly critical reflective practice, and of learning organisations as developed by Argyris (1982), Schein (1996); Schön (1987; 1991; 1995) and Senge (1990; 1997), and on the action research of Lomax (1994; 1996; 1998), McNiff (1988; 1992; 1993; 1994; 1995) and Whitehead (1989; 1993; 1998; 2003a; 2004). My proposal described the group that would be formed as self-directed and participatory with the members of the group deciding on their areas of learning or research and on the content of their study. While certification of the work of the group would be desirable, the group itself would decide whether it was required and what form it would take. I proposed that the purpose of the group would be focussed on professional development in the context of building a learning organisation.

> The primary purpose of the group is to enable the group to develop its own model of professional development that is suitable for the members of the group. It is anticipated that through this process the work of the members of the group will contribute to the work of the organisation. While individuals will be working, in most cases, on individual projects the nature of their study will contribute to the development of a learning organisation.
>
> (O'Neill 1998b: 1)

The main goal was identified as the formation of a group of people who were interested in critically examining their work with a view to improving practice. At this early point I raised the possibility of the participants receiving formal certification for their learning

(O'Neill 1998b: 1). My thinking was that a body centrally concerned with certification and making awards should support its staff in achieving awards. This in itself was an attempt to bring practice into line with values (Whitehead 1989; 1993).

The proposal was welcomed enthusiastically by the Chief Executive. She sent an email to all staff outlining the idea and suggesting an opportunity to meet to discuss setting up the group. At the initial meeting a plan was drawn up to enable the group to meet once a fortnight for about 2.5 hours between October and April. Twelve members of staff undertook to take part and carry out their Action Learning projects. My action research project focussed on supporting the group. The materials used can be viewed at http://www.ictaspoliticalaction.com/pages/actionlearning.htm.

One of the first activities I undertook was devising a schedule for the fortnightly meeting of the group and organising the meetings in a structured fashion. Each session had a theme intended to support the development of spirals of research as described by McNiff (1988; 1996). Within the first meeting each member of the group identified a concern within their practice. With the support of the group they developed plans of action to address the concern. They undertook action according to the plan. They then evaluated the quality of the action and made adjustments as necessary.

The fortnightly meeting was divided into three main components. Each session started with an input from an experienced action researcher. These inputs addressed specific aspects of carrying out action research e.g. principles and practice of action research, action and observation, evaluating the outcomes of action. The second component involved a workshop applying aspects of the input to the individual's research project and finally, the third component was concerned with planning the next stage by critically reflecting on their action.

The concerns selected by members of the group included:

> How can I improve the quality of data returned by new centres?
> Improving the approval process for locally devised assessment.
> How can I support an Action Learning Group in their activities?
> Learning to change: the Chief Executive of a small state agency uses learning to prepare the organisation for change.
> Supporting certification for work based learning centres.
> Improving the process for ordering stock.

At the end of the programme six members of the group presented their work at an action research conference. Two members presented publicly for the first time. This was an important achievement. The work of the group was presented to a staff training day. In an evaluation of the project carried out at the staff day it was decided that the next step in the action was to develop an action learning module to enable certification of the work of the learners and to continue the work of the group into the following year.

Action Research Module

Within the NCVA framework, a module is a statement of the standards to be achieved by a learner for the award of a credit. Module credits can be accumulated towards a certificate. NCVA publishes module descriptors detailing the standards to be achieved by learners for the award of a credit. These descriptors are used by learners and tutors in planning learning programmes. The elements of a module descriptor include statements of the purpose and general aims of the module, details of the specific learning outcomes to be achieved and the assessment techniques and criteria to be applied. On completion of a module, candidates are assessed to establish whether they have achieved the required standard.

Module development took over a year to complete. The consultative group was drawn from all five NCVA boards of studies, and people were nominated to the group by the boards because of interest or experience in the area of work-based learning. The consultative group members included a wide range of professional practitioners: occupational psychologist, teachers, guidance counsellor, trade union officials, human resources specialist, rehabilitation expert, training consultant, owner/manager of a small or medium enterprise (SME), community/adult education organiser, chief executive (Deane 2000). It was originally intended that the module would be called Action Learning as that was the name of the programme followed in NCVA. It was felt by the consultative group that 'Action Learning' described a general learning approach in organisations and did not reflect a set of learning outcomes. Later drafts of the module were entitled 'Learning through Practice', 'Evaluating Workplace Practice' and 'Learning in Action'. The final draft adopted by the consultative group and approved by the Board of Studies is called Action Research.

The focus in the module is on planning, implementing and evaluating a research project in a context which has relevance for the learner. This will typically be the workplace, but the

module is written in such a way that it could also apply to other settings, such as a community or educational environment. In this way, the module is accessible to a greater range of learners (Deane 2000).

The learning outcomes described within the module emphasise the collaborative and dialogical nature of the learning that could take place.

> - be able to investigate and evaluate practice in specific settings
> - recognise the importance of reflective enquiry
> - work collaboratively with others
> - appreciate the importance of ethical issues in relation to self and others
> - understand the contribution made to personal and public knowledge
> - appreciate the importance of research methodologies.
>
> (NCVA 2000)

As described in the module descriptor the learner's achievements are assessed using two techniques: a learner record and a project. It was agreed that the two techniques should receive equal weighting in this module, chiefly because of the high level of importance attached to the learning process in it (Deane 2000). The NCVA Action Research module was made available to learners in autumn 2000. The opportunity for recognition of learning through action research is available publicly and was last used by learners in 2007. This group of learners was unconnected with the original NCVA action learning project.

As a result of the work of the Action Leaning group changes were made to a range of processes underlying certification in NCVA. These supported NCVA to accommodate the range of changes it was encountering as an organisation. However the administrative changes were not the most important achievement of the group. One member of the group wrote:

> The level of personal learning that took place as part of the study was very high. On reflection I feel that the 'action' taken was less significant than the process of collaboration involved in the 'research'.
>
> (Cullen 1999)

The participants' knowledge has been acknowledged insofar as they have resulted in changes to various processes. The changes have been made because of a dialogical

process. The process was dialogical because of the willingness to listen to other points of view and incorporate those points of view into the decision making process.

> However, the process of collaboration led not only to an Approval Form which will be readily acceptable to the other Development Officers because of their involvement, but an identification of a range of wider issues relevant to the future role of NCVA in quality assurance and an insight into team approach across the roles of Development Officer, Support Officer and External Assessor.
>
> (Cullen 1999)

Senge (1990: 10), drawing on the work of Bohm (1992: 203-210), makes an important distinction between dialogue and discussion. 'Dialogue differs from the more common 'discussion,' which has its roots with percussion and concussion, literally a heaving back and forth in a winner takes all competition.' Dialogue can only occur when a group of people see each other as colleagues in mutual quest for deeper insight and clarity (Senge 1990: 245). As Cullen (1999) has described, the process did not result in 'heaving back and forth' but collaboration and 'buy-in' from the participants and those around them. Cullen shows an approach that is in contrast to 'herding cats' (Bennis 1998; Crocke *et al*. 1999; Dawson and Jones n.d.; George and Krajewski 2001; Lott 2006; Stuart 2006). The work of the organisation became a more educational process as the claims to knowledge of each of the partners – teachers, curriculum developers, administrators and students – were recognised and a collaborative system of certification was developed.

Deane (2000) carried out a study into the impact of the NCVA Action Learning Group. She wrote that it is 'clear that the participants viewed the group as a positive learning experience' (Deane 2000: 132). She further indicated that much of the learning has occurred because of a willingness to see fellow workers as colleagues and collaborators in the process of devising better, more educational systems (*ibid:* 128). My colleagues can learn and are learning better ways of working. They must be given the conditions and the support necessary to do this. An essential element of the recognition of fellow workers as colleagues is a willingness to enter into dialogue (Senge 1990: 245). The participants voiced this in terms of 'sharing learning with others, and gaining insights into their concerns' (Deane 2000: 133).

One of the reasons for including the NCVA project in this work is that it shows the diversity of the research. My thesis is not about a single project – it is about a web of connection and of enablement. The thesis accounts for a web of interconnected, distributed

communities of practice. The interconnecting branching networks show how the interconnectedness of the networks of practice contributes to global learning networks. The significance of the research based in school and NCVA is that in some respects they are different but the underpinning assumptions are the same. The research shows the transferability of knowledge and more than that of the interconnected nature of human activity. The research has enquired into the inter-human condition, the ontological underpinning of communicative action (Habermas 1975).

Within NCVA I used my improved understanding of the certification processes to help others to see that they could improve their understanding and thereby devise means of carrying out the certification of programmes promptly and reliably. Superficially this may appear like problem-solving or improvements to practice but while there are problem solving elements and there were improvements to practice, the participants within the NCVA action learning projects went further than this and developed their living theories of practice (for example, Cullen 1999; Deane 2000).

In the Setanta project and the NCVA action learning project the groups of people formed communities of practice. They were involved in a learning process which was socialised and collaborative and situated in a particular context (Brown and Duguid 2000; 2002; Lave and Wenger 1991; Wenger 1998).

Project 5: Supporting teacher education through LCA and political action

My learning from the various projects that form my research indicated to me the centrality of including as many perspectives as possible when trying to change the way we work and the way we are. The account of the action learning group shows how the ideas I had been developing around collaborative work have applicability outside of school. At the same time the action learning group had developed aspects of participants' personal reflection and participants reporting on learning which I had not set out to develop in my school work. At this point I will return to my research in school but using my learning from the NCVA action learning project. The focus in this section is on my practice as a co-operating teacher with student-teachers at university during teaching practice in school. The student teacher is working with students who are undertaking a programme of learning which is not the dominant academic programme in the school. In this section I will show how ICT can

be used to support both the student-teacher and the students to reflect on their activities and take control of their lives.

Within the complex system that forms the school many things apart from teaching take place. I wish to focus on a few of them and on their interconnections and I am going to examine how their interconnections can work to form webs of relations that are spun into existence, as individuals realise that it is of greater benefit to them if they nurture relationships than stay locked in narrow boundaries of self-interest (Wheatley 1999). The particular interconnections that I will focus on are those formed when systems to support pre-service teacher education meet with a programme to retain within education students who have been failed by the traditional model of second level education. I will approach this section from different perspectives and later these perspectives will merge to from a living system (Wheatley 1999).

Let me tell you a story. A student teacher arrives in my school. She has spent three years in college. She is now facing a career as a teacher. What are the factors that will influence her practice as a teacher? Zeichner and Tabachnick (1981) tell us that the effects of university teacher education will be 'washed out' by school experiences. Research at Konstanz University in Germany 'showed that teachers passed through a distinct attitude shift during their first year of teaching, in general creating an adjustment to current practices in the schools, and not to scientific insights into learning and teaching' (cited in Korthagen and Kessels 1999). The two sets of research suggest that the first year of teaching has a larger effect on the attitudes and practice of young teachers than the several years in preservice training. This places a considerable responsibility on co-operating teachers in schools in their role of support. The types of practice that the novice student teacher experiences during her first year may be the dominant influence throughout her career.

Alice is a student of the new BSc course in Science Education at a nearby university. In the third year of her course Alice will take part in a school placement for fourteen weeks. During this time it is anticipated that she will gain experience of teaching within the school and will gain the opportunity of using what she has learned in college. While the principal focus of placement is in relation to teaching science, Milo, who acts as liaison teacher with the university, suggests to me that Alice might find it useful to teach IT classes. Milo thinks this is a good idea despite the fact that Alice's teaching practice is intended to be

mainly in the science area as that is what she is being trained for. Milo articulates his reasons. ICT experience is useful for any young teacher – 'one more string to your bow', he jokes. In addition Alice will gain experience of working within a different type of programme by working with LCA students. "It will all look good on your C.V.," says Milo.

Previously at a staff meeting in 1997 Richard Keane, the School Counsellor, had drawn attention to the fact that a significant minority of sixth year students do not achieve what is commonly regarded as a 'Pass' in the Leaving Certificate – a 'D' grade in each of five subjects. He suggests that these students might be served better by a less academic programme and there might be some advantage to the students in offering the option of the Leaving Certificate Applied programme in the school. From a complexity perspective, the lack of 'success' in formal examinations of a group of students produced the 'far-from-equilibrium' position that was enough to challenge the dominant traditional view within the school (Tsoukas 2002: 423). Consequently resistance to the new type of programme was limited and I was among a group of teachers, including Richard, Milo, Kevin Slattery and Anne O'Driscoll, who were able to break out of traditional roles and volunteered to form a team to investigate the possibilities within the Leaving Certificate Applied programme and report back to the staff.

The Leaving Certificate Applied (LCA) programme is a distinct, self-contained two-year programme aimed at preparing students for adult and working life. The programme puts an emphasis on forms of achievement and excellence, which the established Leaving Certificate has not recognised in the past. Its primary objective is to meet the needs of students who are not catered for by the two other Leaving Certificate programmes, the established Leaving Certificate and the Leaving Certificate Vocational Programme, and who might otherwise leave full-time education (Department of Education and Science 2000). While the view expressed in this official report is positive, researching the programmes in other schools indicated that the LCA is frequently seen as a 'lesser' programme. Undaunted by these perceptions, the group of teachers undertook to establish the LCA programme in the school. At an organisational level the approach taken to set up the LCA programme was unusual in that it was organised with the teachers involved taking a collegial approach, in contrast to the authoritarian approach common in the school. The LCA team assumed that learning was an essentially social phenomenon and that a

successful programme depended on the relationships within the team and with the students. The tacit view of the group was that learning is part of our lived experience of participation in the world (Wenger 1998: 3). The team took the view that learning is part of human nature, that we cannot not learn in processes of social evolution (Habermas 1975), and further that we are all good at it (Wenger 1998). I undertook teaching ICT and Technology to the LCA class.

This was the context within which Alice undertook to teach ICT to the LCA group. Alice entered the LCA computer class without any particular preconceptions of how this class would be, but she found working with the class difficult. Some of the students were not particularly interested in the work. While the assigned work on Excel was progressing slowly Alice noticed some students were downloading photographs of their classmates and teachers and modifying them. The Social Education teacher looked particularly well with the eastern headdress and beard that they added! Alice was surprised. She had no idea that photographs could be manipulated like this on a computer. It seemed while she was good on spreadsheets these students had a range of other IT skills that she had never even thought of.

After class student-teacher and teacher discussed how the class went and planned further classes. Alice spoke to Ray about her experiences in class. She explained that some students would do the prescribed work but then set off searching the Internet for ring tones for their mobile phones or manipulating pictures or playing pool online with someone in France. Here are excerpts from a conversation:

> Ray: Well, what are we supposed to be doing in these classes?
>
> Alice: Helping the students gain IT skills.
>
> Ray: Are they gaining IT skills?
>
> Alice: Well, yes, but not always the ones that they are supposed to be gaining.
>
> Ray: What ones are they supposed to be gaining?
>
> Alice: Well, we are doing spreadsheets at present.
>
> Ray: Are they gaining any spreadsheet skills?
>
> Alice: Yes, but a lot of their time is spent on other things.
>
> Ray: Another one of their modules is an Internet module. Are they gaining any Internet skills?
>
> Alice: Yes, but not necessarily the ones they should be gaining.

> Ray: Do they learn anything about the Internet by playing pool with someone in France?
>
> Alice: Well, I suppose so.
>
> Ray: Like what?...think it through step by step …how do they get to the stage that they are playing pool with someone in France?
>
> Alice: Well they have to log onto the computer. Start up Internet Explorer. They need to get an URL, the address of the website. Sometimes they do a search for the site; sometimes they get an address from their friends. I saw John recently… Paul was on a site with a weird long address…John asked him for it but he could not type it correctly…John says "Will you copy the address into a Word document and put it on 'common-write'? I can get it from there."
>
> Ray: Hold on there, can we go through that much again … logged on…started Explorer…could not get to where he wanted to go… asked another student for help…gave his classmate explicit instructions on how to help...copies the address from the word doc on 'common-write'… pasted it into address bar on Explorer … accessed the web site he wanted to play the game. Do you think these guys have gained IT skills? Can they work collaboratively?
>
> Alice: I had not thought of it like that. But they are not necessarily learning what I am teaching.
>
> Ray: Maybe… but maybe it is not necessarily about teaching…maybe it is more about learning… if they are learning… and in the midst of them learning things this way they can achieve the necessary grades then...
>
> Alice: They know a lot of things about computers that I do not know. Jason showed me how to download photographs from the digital camera yesterday. Before taking this class I had not even used a digital camera. Sometimes I am not sure who is teaching who here!
>
> (Reflective diary 15 March 2002)

Perhaps what is most interesting about the vignette is the range of learning that is taking place. The students were learning – with each other and with their student-teacher. Alice, the student teacher, was learning – with the students and with her teacher supporter. Ray, the student-teacher supporter was learning – with the student-teacher and with the students. But not only was each learning but the learning formed an intricate web that linked students to each other, that linked the student-teacher to the students and to her support teacher; that linked the support teacher and his student teacher and through her his students. In the midst of all this perhaps the least successful intervention was the overt teaching of Excel. Most of the learning taking place was apparently informal and due largely to an openness in the relationships between the various parties. Within Alice's classroom the content had been largely abandoned in a process where the students were supporting each other in deciding

on their learning. This makes it an essentially social process. By their engagement with their teacher and their work they were showing their competence. This competence in relation to valued enterprises is a feature of knowing (Wenger 1998: 4). Their learning was by experience rather than taught. Their knowing was not an abstraction but a matter of active engagement in the world. In my experience of ICT a key aspect of young people's success with ICT is their willingness to engage. This experience has been articulated by others:

> In our generation we reach for the manuals – if we don't know how to do something, we ask. We don't engage directly with the unknown and then do sense-making afterwards. Kids today engage and synthesize.
>
> (Brown 2000)

Brown develops this idea indicating that many colleges are populated by 'analogue professors' attempting to teach 'digital students'. In many cases the students are digitally literate – he calls them 'digeratti'– while their teachers are effectively digitally illiterate being far more comfortable with older technologies, like print technology (Brown 2002).

The outcome of the students' engagement with ICT was a willingness to engage in other ways and to achieve meaningful learning. These students were preparing for the world of uncertainty (Claxton 1999). Alice was similarly preparing for her world of uncertainty. By entering into a dialogue on her teaching she, like her students, was learning by experience. But that dialogue was also supporting Ray in his understanding of the role of student-teacher supporter. Alice did not need to be told how to teach. Alice needed dialogue; conversation that sparked ideas that she could work with in order to improve her classroom practice.

While working with Alice and the LCA group I was conscious that our work was improving in the sense that the conflictual contact that I had had with the students was disappearing and they were making improvements in terms of ICT skills that were impressive. The World Wide Web was acting as a transformative technology honouring multiple forms of intelligence and the vernacular of today's student (Brown 2002). At the same time I was conscious of the fact that reflection on experience in the classroom seemed to be helpful for Alice and for me. Drawing on the dialogical nature of the action learning work in NCVA I was conscious of the lack of dialogue within my classroom. I wondered if I could find a way through ICT that would support reflection and perhaps lead to dialogue

in the classroom. The LCA programme includes a task called the Personal Reflection task, but this had not been carried out through the medium of ICT previously. At the same time I was conscious in my research that I had been making claims that other people were learning, I could not provide evidence from the learners that they were learning. Focussing on self evaluation and personal reflection might support both of these purposes.

At the time another colleague, Luana Macanany, was undertaking further studies and told me that she had an ICT assignment to carry out. In conversation the idea of developing a 'WebQuest' to support personal reflection was born and Luana set about developing the WebQuest. The personal reflection WebQuest can be found at http://www.ictaspoliticalaction.com/LCA/wq/default.html. Alice and I looked at how we would implement this in class. While the LCA team and students could be considered a community of practice (Lave and Wenger 1991; Wenger 1998) the community was widening as people with diverse aims saw possibilities of achieving those aims by collaborating. This was a community without a name and its activities were mainly informal.

Let me pause briefly at this point because I appreciate that the underlying web of activities might confuse the issue. The linking webs involve me as teacher supporting my students in a non-traditional although mainstream programme in a secondary school. With this group I am specifically trying to use ICT as a transformational medium to encourage students, who might otherwise be reluctant, to engage in learning. It is my belief that choosing the content and method of their learning can make a significant contribution to engagement. From my experience in other projects, particularly the NCVA Action Learning project, I believe that personal reflection could have a significant impact on learning. The second element in this web involves supporting a student teacher in her teaching practice. The third element involves supporting a friend from outside school as she undertakes her Masters studies. The fourth element involves the LCA team of teachers who do not confine themselves to their subjects but see themselves as a collaborative team.

Now let me describe what a WebQuest is and how it could contribute to personal reflection.

A WebQuest is an inquiry-oriented activity in which most or all of the information used by learners is online. By providing links to the Internet to the information necessary to complete the quest, the student is able to focus on the material rather than spend time

looking for it. WebQuests are usually organised into five parts: introduction, task, process, evaluation and conclusion. It is claimed that undertaking an assignment using these steps promotes critical thinking at the levels of analysis, synthesis and evaluation (Dodge 1995).

The Personal Reflection WebQuest consisted of three 'processes' to be carried out online which, it was hoped, would support students' reflection skills. The first task was

> Using the given headings (this is called a template) write a story reflecting on a recent learning activity. It can be about any subject area (IT for example) or any particular class lesson or activity. You then change the headings to make them more suited to what **YOU** wanted to write about ... but you must explain why you made the changes.
>
> (www.ictaspoliticalaction.com\webs\wq\webquest\webreflectask.html)

The task was supported by a document which provided headings to get the learners started. However, we were conscious that this approach was rather directed. To counteract this, learners were given the opportunity to change three of the questions to their choice of question. Students wrote about outdoor pursuits, ICT classes, First Aid class, Construction Studies and many others. In his reflection, one student, Mark commented, 'The best bit for me was the feeling that I was learning something that could help me to save the life of somebody close to me or to save the life of a stranger. This is a really satisfying feeling' (O'Byrne 2004: 3). In the section relating to changing the questions Mark wanted to change most of the questions. One of his changes was

> **What were you disappointed about?** I would have changed this to: What were you happy about? Because there was nothing I was disappointed about and I would have preferred to write about what I was happy about. I would have written: I was happy about doing C.P.R. because I know that I could one day use this new skill that I have learned to help somebody or maybe even save the life of somebody.
>
> (O'Byrne 2004: 4)

Within this account it is clear that Mark knows that he has learned CPR and learning has empowered him. He can see the potential within his learning and interestingly Mark does not see his learning selfishly but rather sees that his learning can be put at the service of others. This is an example of the collaborative nature of the work being interlinked with collaborative outcomes. I suggest that this implies that how you come to know affects what you come to know and how you put your knowledge to use. Beyond being collaborative these are outcomes of care for others and Mark gains satisfaction from this reflection.

Mark clearly meets the criteria for an engaged learner in that he is responsible for his learning; he is self-regulated and able to evaluate his own achievement (Jones *et al.* 1994).

The second WebQuest 'process' involves writing a reflective letter to yourself using a recent learning activity. Personal reflection was supported using an online checklist of 'reflective statements' which the students could use interactively. The second part of the process asked students to organise themselves into groups and discuss whether each person's letter contained 'good or not so good' reflective statements (www.ictaspoliticalaction.com \webs\wq\webquest\webreflectask.html)

Through this assignment learners produced evidence that they had gained competence and that they could find their place in the outside world. For example: 'During the two years in LCA I have found it to be a wonderful experience because part of the course contains work experience… working in different warehouses I have found that I am able to deal with the different freight and understand the different hazard labels so I know where to put them' (Kearns 2004: 8).

The third reflection process involved visiting one of seven websites and reading an article there. The learner had to summarise the article and write out the three things he considered most important. The learners then had to form groups and see if the group could agree on the three most important things. One of the seven articles was an account of the 'Saipan incident'. For readers who are not Irish the Saipan incident requires some explanation:

It has been argued that the population of Ireland can be divided into two roughly equal parts: those who support Roy Keane and those who support Mick McCarthy regarding the Saipan incident. The Saipan incident refers to a situation that developed during Ireland's preparations for the 2002 World Cup. Following a dispute between team captain Roy Keane and manager Mick McCarthy about conditions at the Pacific island training camp in Saipan, Keane left the team in Saipan and returned home. This caused controversy at home where the merits of both sides were argued strenuously (O'Callaghan 2004).

Such was the impact of the Saipan incident that two years later it was the favourite of the seven articles for this assignment. In his account one student wrote:

> We went over the three points as a group and agreed that **the damage has been done** is a good point because he can't change what has already happened. The most he can do is say sorry for what he has done.

> I learned that we can work as a group and agree on three points without any arguments among the group. You can use this in the workplace if you are working with a group to make the job a lot easier for us. It can also be used in school for setting up an event in a group.
>
> (Gibney 2004: 2)

In contrast to Keane and McCarthy, Christopher and his fellow learners were able to enter into discussion within a small group and discuss different points of view and come to a conclusion. This is a dialogic community participating in a system of intersubjective learning (Arnett 1986, 1992; Freire 1972; Gadamer 1979). Dialogic learning involves the engagement of learners and teachers, it takes as its subject matter content which is relevant to the learning, and produces learning which is relevant to the learner. In Christopher's case we can see these elements. While the prompt for the formation of the discussion group came from the teacher, through the WebQuest, the action to form the group came from Christopher. The formation of the group and the work undertaken helps develop democratic values in the educative process, supports the building of character, and assists the establishment of a community for the educative enterprise (Dewey 1981; Friere 1972). Beyond this, Christopher is able to reflect on his tacit learning from experience and make that learning explicit (Varela *et al.* 1993) to members of his learning community. By writing his account of his learning and making it available for publication he is making his learning explicit. He is contributing to the knowledge base of education (Snow 2001). Further he can apply his learning to similar situations and anticipate where this learning might be useful later. It seems to me that Christopher has developed a personal theory of learning grounded in his practice. Facilitation or leading discussions is one of the 'great difficult things' of classroom teaching (Greene 1954). Christopher has taken it in his stride! Perhaps the main insight for the teacher from this experience is that some matters that are difficult to teach can easily be learned within communities of practice (Wenger 1998).

Christopher's work is highlighting the development of an educational community which is intersubjective. All the parties within Christopher's discussion were relating to one another as having a sense of agency and a unique perspective (Guilar 2006). In traditional teaching there is a knowing subject, e.g. a teacher, and known objects, e.g. students and content. In Christopher's dialogic community there is no knowing subject or known objects. Instead, all three elements relate in an intersubjective community. In this community, roles such as teacher and student are still significant. However, the nature of the dialogical conversation

changes power relations. In contrast to conventional pedagogy the class community was participating in 'I-thou' relationships rather than 'I-it' objective relationships (Buber 1958). Students' roles changed from being passive learners to becoming co-creators. In expressing their perspectives, learners – teachers and students – co-create a shared world in which difference is expressed and respected.

It has been argued that many journals of educational research devote too many pages to 'how' we know rather than 'what' we know and that 'reflection is not for the beginner' (Snow 2001: 4). Christopher's work suggests that 'how' we know is crucial to 'what' we know. Christopher's learning was dependent on 'how he came to know' – participation in a dialogic community and reflection on his practice. A different way of coming to know might have taught different lessons. Methodological discussions are important. On the matter of 'how' we come to know I lean towards Rorty:

> Theories and perspectives draw our attention to certain issues, they invite us to punctuate the world in particular ways, they are tools for doing things, rather than mere representations of the world as it allegedly is.
>
> (Rorty 1991: 81)

The dialogical community that Christopher was part of was one of his tools for doing things. It was the nature of his dialogical participation that provided him with the means to take action to achieve his aims. While 'how' he came to know was important for Christopher, 'what' he came to know was a crucial part of his programme. As his teacher I was making an attempt to bring my practice into line with my values by taking an approach grounded in my value of justice in supporting a dialogical process. Nonetheless students were intended to achieve the skills and knowledge of a body of content. In collaboration with the student teacher, Alice, my responsibility was in relation to ICT skills. A key question for me is: are ICT skills and knowledge something that must be taught by a knowing subject to a known object or can this work be carried out in participatory ways?

After working with the LCA group for a little time it became clear to me that this group was not formed on the basis of ability so much as on the basis of learning style (Gardner 1993; Gardner and Hatch 1989). A key challenge facing the teacher is the diversity of students' learning styles (Mamcher 1996). Students vary in terms of intellect, motivation and perception. Different learners have different learning styles. Some want to work with ideas by speaking about them while others want time to think about ideas alone before

speaking about them. Some people want concrete facts and deadlines while others want freedom to work on projects (Guilar 2006). But even these dichotomies, while useful for illustration, are too simplistic. Learners cross back and forward across these boundaries. Any approach undertaken repetitively tends to become boring whether it suits your learning style or not.

My previous learning with self-paced student notes had taught me that I needed to go further in allowing students control over their learning. But I had to reconcile this with a body of content and skills to be learned. This represents aspects of the paradoxical nature of the role of the teacher in dialogically-constituted education (Buber 1947: 118). The teacher in the classroom, even the dialogically-oriented teacher, cannot function without authority. This is not the same as authoritarianism. Dialogical authority is the expression of expertise inviting a response that may be different. The teacher, as authority, still needs to be scholarly in relation to the content but also needs tentativeness about that knowledge. The teacher works by inviting other views, acknowledging them, and responding to them in an open dialogue (Guilar 2006). The challenge for me was to work collaboratively with the students to devise projects which included the skills to be learned and which met the criteria of the curriculum while making them relevant.

Theorising my practice in the light of the five projects

At this point I would like to place some of what I have described above within my chosen theoretical frameworks. Arendt's ideas on human activity and in particular her distinction between three types of activity, namely labour, work and action is a key framework (Arendt 1958).

When the LCA students were carrying out their assignments through the medium of ICT they were involved in labour, work and action (Arendt 1958). In Arendt's terms labour is routine behaviour required to meet basic needs. '… it leaves nothing behind, the result of the effort is almost as quickly consumed as the effort is spent' (Arendt 1958: 87). The labour for the students was the basic ICT skills like logging-on to the network, saving files and printing documents. When they produced multimedia artefacts like websites and PowerPoint presentations they were involved in work. Work includes activity by artists and craftspeople to make lasting objects that comprise the human world. '[Work]… fabricates the sheer unending variety of things whose sum total constitutes the human

artifice' (*ibid*: 136). However, as they took control of their lives through these activities they were taking action. To act is 'to begin' or 'to lead' to 'set something in motion' (*ibid*: 177). Action requires collective interaction to determine what is good and just (Sutherland 2001: 1). The students were involved in action in that they got to know themselves better, they got to understand their capacities better, and they were able to articulate those capacities better. This was achieved through the medium of technology on the one hand as well as the provision of an environment which supported collaborative work. That environment was not created on its own. The work of the LCA programme was the work of a team of teachers working together with their students; some of them using ICT but some of them using other methods to arrive at the same type of outcome. 'ICT as political action' was not operating in a vacuum but within the context of a group of people who were working collaboratively to support non-traditional forms of learning.

Within this thesis I am showing how I have engaged with the relations of power, worked with others to create an alternative power base that is grounded in a capacity to create certain kinds of educational relationship with those that one is working with and, through this, transformed obstruction into opportunity. By doing this I have engaged with Joan Whitehead's challenge to 'make the possible probable' (Joan Whitehead 2003) and I am answering that as a professional I want to take and create opportunities in order to influence the future.

I referred earlier to Fullan and Hargreaves' (1992) claim that a collaborative school is dependent on the head. Despite this claim, I contend that substantial enclaves of collaboration can be formed within schools without the support of the head; that collaborative work can be supported through the agency of individuals despite the cited research. In some environments, previously marginalized people have been empowered to take responsibility for themselves and for others and in doing this have changed their life situations. It is possible to resist the temptation of giving in, and remaining silent, and to struggle to overcome the obstacles in the interests of the children. In this chapter I have detailed how I, in collaboration with others, undertook this work through various activities involving students and teachers. Many of these activities were in the form of specific projects. These projects gave the students and teachers the opportunity, while using ICT, to transform their knowledge creating capacity and to contribute something unique to human

experience (Arendt 1958). They did this while demonstrating their personal knowledge by taking voice and making their work public.

The accounts I provided within my thesis are based within my personal theory of practice. To conclude this chapter I will give some indication of how this relates to traditional forms of theory.

Theorising my Practice

Propositional logic grounded in traditional Aristotelian logic, includes the law of the excluded middle; it is not possible to have contradictory elements. Propositional forms of practice tend to take didactic forms of delivery in teaching. Propositional forms of thinking which see the self and the rest of creation as separate can give rise to the idea of a logic of domination (Marcuse 1964). The accounts I have given illustrate how my practice is not grounded in propositional logic but in living forms which are inclusional and so accept and welcome contradiction and give rise to living forms of practice which value the other. Unpredictability can be a feature of learning. My classroom is a place where the unexpected occurs. In the case of the equipment manager a form of containment was turned into a form of emancipation. The processes of learning are not linear. When you set out to do one thing it may have an entirely different consequence than expected, so the notion of cause and effect disappears. Rather than pursuing the traditional elements of positivist thinking which move towards closure, these processes move toward opening out. Within such processes I move from being an authoritarian figure to being a collaborative worker with the ability to deal with ambiguity and the humility to listen to others' points of view. So I, as teacher, work co-operatively with the students rather than impositionally. There's a fundamental change in the relationship between teacher and students. The community of practice (Wenger 1998) works in a number of different ways and possibly differently to Wenger's idea. Wenger's idea is that people who have a similar practice, perhaps in different locations, have commonalities in their practice which, if they share, open up the possibilities for them all. Troubleshooting our practice through dialogue can be a case of co-producing a story. Story-telling can be the basis of learning. This has resonances of Habermas's (1975) theory of communicative action.

Brown and Duguid (2000: 91-110) talk about the photocopier maintenance engineer who is fixing the photocopier and finds the particular problem he is facing is not in the manual.

The engineers eventually solve the problem by ringing each other and talking about various photocopiers that they have fixed. Their troubleshooting is co-producing a story and the story provides a solution to the problem. While I accept the idea of people from similar backgrounds forming communities of practice I think that there is a more general version of the community of practice that enables people from diverse backgrounds to co-produce a story and learn from the process. You do not need to be a photocopier engineer talking about photocopiers to come up with a solution to a photocopier problem. This idea arises from the web of connection that suggests that things which are apparently unrelated nonetheless inform each other. Things that happen in school between 9am and 4pm are not isolated and are not separated from what goes on elsewhere. You may discover things from digging the garden that relate back to school. All forms of practice can inform other forms of practice. This is a significant argument for including research in school and research in the NCVA in the one thesis. Fundamental difficulties that occur in both locations are influenced by the same practices. What I have learned from working in NCVA transferred to school and what I learned in school transferred to NCVA. The web of connection is more complex than this but relating the two locations provide a flavour of the interconnection.

Part of the interconnection is the interconnection between theory and practice. In the thesis I am showing my theory as practice and practice as theory. My practice is not just the activity that takes place in my classroom. My practice is an extremely complex phenomenon that I can explain in terms of my living theory. Within this account I am showing you how I theorise my practice in terms of what I am doing, what I am thinking, the literatures and important concepts. I agree with Wheatley when she says:

> All living systems are webs of relations spun into existence as individuals realize that there is more benefit available to them if they create relationships than if they stay locked in narrow boundaries of self-interest. Unending processes of collaboration and symbiosis characterize life. These relationships of mutual benefit lead to the creation of systems that are more supportive and protective of individuals than if they had tried to live alone. It's important to remember that nothing living lives alone. Life always and only organizes as systems of interdependency.
>
> (Wheatley 1999)

I now explain how I test the validity of my claims to educational responsibility and influence, as I encourage people and myself to show how we hold ourselves accountable for what we are doing.

Chapter 6 – Issues of validity and exercising my educational influence

This account is based on a self-study of my practice as I attempt to reduce the dissonance that I experience as a result of the gap between my values and my practice as I work as a teacher of ICT and as an ICT consultant. Because I see this self-study as research, in common with other researchers, I am attempting to develop new understandings about ideas and practices. In the first section of this chapter I show that any conclusions I come to are reasonably fair and accurate and can form the basis for claims to knowledge. As the theory I am developing is a living theory of practice I will outline new practices that have developed as a result of the projects that underlie this work. I will produce evidence of the quality of these new practices and show how they relate to my ontological values. In this way I will show how I am reducing the dissonance that I experience when my values are denied in my practice. I will explain how my thinking has shifted and that I am now aware of how I have come to develop my living theory of practice. I will produce evidence of the development of my living theory of practice and I will relate this development to my ontological values. Finally I will account for my educational influence, in relation to my learning, my colleagues' learning, and the education of social formations. I will address the need to justify practice in the light of the morality of exercising educational influence.

Issues of validity

In his examination of the difficulties faced by a journal editor in deciding what type of work merits publication, Donmoyer indicated that within the field of educational research there is little consensus about what research and scholarship are and what research reporting and scholarly discourse look like (Donmoyer 1996: 19).

> Today there is as much variation among qualitative researchers as there is between qualitatively and quantitatively orientated scholars. Anyone doubting this claim need only compare Miles and Huberman's (1994) relatively traditional conception of validity ("The meanings emerging from the data have to be tested for their plausibility, their sturdiness, their confirmability – that is, their validity" (p.11)) with Lather's discussion of ironic validity: Contrary to dominant validity practices where the rhetorical nature of scientific claims is masked with methodology assurances, a strategy of ironic validity proliferates forms, recognizing that they are rhetorical and without foundation, postepistemic, lacking in

> epistemological support. The text is resituated as a representation of its "failure to represent what it points toward but can never reach....." (Lather, 1994, p.40-41). Given their profoundly different views of validity, it seems unlikely that either Miles and Huberman or Lather would apply "appropriate" criteria in assessing each other's work.
>
> (Donmoyer 1996: 21)

Disagreement around the theme of quality and validity in qualitative research has continued and various views have been expressed (Bullough and Pinnegar 2001; Feldman 2003; Feldman 2007; Heikkinen, Huttunen and Syrjälä 2007; Lincoln and Guba 1985; Saunders 2007 *inter alios*). The uncertainty regarding the matter of quality has had the effect that practitioner research is not recognised as having strong validity because the practitioner research community, itself, has not worked out ways of establishing validity (Furlong 2000; 2004). However, attempts to suggest methods of establishing validity continue apace. New concepts to replace those of reliability and validity include credibility, persuasiveness, interactivity, vulnerability, therapeutic value, verisimilitude, compellingness, explanatory power, moral persuasiveness (Ellis and Bochner 2000: 752-760; Hatch and Wisniewski 1995: 129). Heikkinen, Huttunen and Syrjälä (2007) have drawn on Winter's (2000) earlier suggestion of two principles – the dialectical principle and the reflexive principle – to propose five principles that can be used to evaluate the quality of action research. These are historical continuity, reflexivity, dialectics, workability and evocativeness. Feldman has criticised principles of this sort because they tend to focus on the quality of the report rather than the quality of the research (Feldman 2003). Reports can be credible, persuasive, life-like and so on, independent of the quality of the research that was done (Feldman 2007: 22). Feldman suggests a widening of the definition of validity beyond the use of metrics and measurement as a means of providing us with a way to talk about qualitative studies having validity.

Whitehead (1997) responded to Donmoyer's difficulty around the 'Balkanisation of educational research' by suggesting that a way forward could be found by relating to each other within a spirit of educational enquiry which is aimed at creating educational theories which have the capacity to produce valid explanations for our educational development and for our educational influence on those we teach. Whitehead goes on to suggest that such educational knowledge will include values as explanatory principles and will integrate insights from traditional propositional theories in the creation of explanations for the

educational development of individuals and the educational influence of a teacher with a student. He suggests that we may learn how to test the validity of such claims to educational knowledge through using multimedia presentations of evidence (Whitehead 1997). In subsequent work Whitehead's position has been developed more fully (Whitehead 2004).

The Whitehead-Lomax-McNiff action research community consider a researcher's claim to have generated their 'living theory' as valid if it shows how it is grounded in a robust evidence base, and can be tested against values-constituted living standards of judgement. The validity of the claim can further be tested by subjecting it to specific social criteria (Habermas 1987), that demonstrate that the claim is comprehensible, faithful to the situation, expresses truthful intentions, and can be reciprocally and mutually justified within the research community. A living theory is justified when it suggests a course of intellectual and imaginative action that improves a person's understanding of practice or situation, supports healthier relationships, and engaged learning (Rearick 1999). Whitehead and McNiff's (2006) more recent work on validity suggests that validation can be gained by grounding your claim in personal validation and social validation. Personal validation can be based on aesthetic, ontological and moral values: the sense that it feels right or being satisfied, in myself, that my claim is justified. Personal validation is dependent on relying on your internal processes of critical reflection to validate your beliefs (Whitehead and McNiff 2006: 103). Personal validation is supported by Polanyi's point that we can take a decision to understand the world from our own point of view as individuals claiming originality and exercising our judgement with universal intent (Polanyi 1966: 327). Social validation is based on the researcher's responsibility to others to act according to democratically negotiated rules. Social validation for my work has been sought through a series of mechanisms throughout the research. In the early stages of my research I met with a group of fellow researchers who gave accounts of our practice and critiqued each other's practice. The LCA team provided critique in relation to the work with the LCA group. The Setanta steering group at regular meetings critiqued the work in relation to the Setanta project. The NCVA Action Learning group critiqued each other's practice as part of the process of improving practice.

Transforming my values into living critical standards of judgement

While attempting to establish that my conclusions are 'reasonably fair and accurate' I draw on ideas from Whitehead and McNiff (2006: 97-111) about social and ethical validity and on the underpinning criteria taken from Habermas (1987). I am going to explain to you how I have taken care methodologically to ensure that you know how I am going to make judgements about my work. I am going to articulate my standards of judgement. The standards of judgments that I use are grounded in my values. I am going to show how I transfer my abstract values into living standards of judgement and how I will use these standards of judgements to assess the quality of my practice, the quality of my research and the validity of my claim that I know my practice. In this sense there are two sets of standards of judgement. There are standards of judgement in relation to practice and standards of judgement in relation to research.

I have explicated my values in relation to my work and my research. The values which I have identified – justice, natality, plurality – are abstract linguistic values. But these abstract linguistic terms can transfer into living standards of judgement for assessing the quality of my research and of my text. In this way I am offering new living standards of judgement. My claim to knowledge is that I have achieved these values in my practice. My values have transformed into my own living standards of judgement by which I assess the validity of my claim to knowledge. These are standards which are different to traditional standards of generalisability and replicability. I don't believe that the conclusions that I draw can be generalised or the work I have done can be replicated. I believe that others can gain insights from my work and develop new ways of working from the ideas contained within this thesis just as I have gained insights from other people's research. I have applied these insights to the circumstances of my research. I will show the validity of my claim to know by showing the living standards of judgement used in realising that claim. I ground my claim to know in personal validity, my sense that what I am doing seems right. My personal validity will be supported by processes of social validation. I assess the validity of my claim to knowledge through the realisation of my values in my practice. In this chapter I will show what I believe is the achievement of my values of justice, natality and plurality in my practice and I will make this claim open to public critique.

You may wonder how I can transform justice or natality or plurality into a standard of judgement. I do this by judging my practice in relation to natality or one of the other abstract criteria. I judge my practice in relation to how I have supported people to achieve their natality. The evidence of supporting people to achieve their natality is evidence to support my claim to knowledge which in turn informs my living theory of practice. My living theory of practice is about how I have encouraged myself and others to work in solidarity to exercise our agency through communicative action. I am showing how communicative action can happen through web based relationships and offer a type of virtual communicative action. I am showing the potential of ICT for forming webs of connection for real time and virtual communicative action.

However, while my standards of judgement are grounded in my values this does not exclude the potential to show measurable changes in my practice. Above, I have referred to equitable and effective access to information and communications technologies (ICT). As noted earlier, Jones *et al*. (1995) have established criteria for equitable and effective access to ICT. In their study they describe four indicators – connectivity, ubiquity, interconnectivity (other writers refer to this as collaborative work), and equity – that denote equitable and effective access to technology. These linguistic criteria could be transformed into living standards of judgement in the form of the following questions:

> Is there access to a school wide network as a result of the project?
>
> Is there access to the Internet from all schoolrooms as a result of the project?
>
> Has the number of computers, printers, digital cameras, data projectors increased as a result of the project?
>
> Can this level of access to technology be considered ubiquitous?
>
> Does the evidence of the Setanta Project and of the LCA IT class indicate that there has been movement away from forms of teacher centred learning to forms of collaborative learning?
>
> Does the evidence of the NCVA action learning project show the development of collaborative learning in work based groups?
>
> Does this amount to interconnectivity? (in Jones *et al.*'s (1995) terms)
>
> Is there evidence of a wider range of students and teachers having access to technology?
>
> To the extent that the above have been achieved does this amount to equitable and effective access to technology?

In relation to the Setanta project I can show, in measurable terms, that substantial progress has been made toward meeting these criteria. In the previous chapter I have given some indication of this. Connectivity was provided by the provision of a school wide network with access points in all classrooms and access to the Internet from all rooms throughout the school. Progress toward ubiquity has been provided by the large increase in the number of computers, printers, data projectors, and digital cameras made available to students and teachers throughout the school. Equity can be shown through the increase in the numbers of teachers and students who had access to the technology. Interconnectivity, in the sense of collaborative work, is a less measurable criterion but nonetheless I believe that the evidence of the Setanta project and NCVA Action Learning Project indicate that collaborative work was taking place.

I see measurable evidence as a subset of a more extensive evidence base which is not directly measurable but is valid nonetheless. In terms of standards of judgement for the assessment of this work which are not necessarily measurable I ask the examiners to give attention to the following questions as they examine the thesis:

> Is there evidence of my commitment to values of justice, natality and plurality in my practice?
>
> Is there evidence of life-affirming action in my practice?
>
> Do students' reports of their website projects show evidence of them thinking for themselves?
>
> Have I shown a commitment to dialogical processes in my practice?
>
> Have I demonstrated an approach that supports the reconceptualisation of ICT as a form of political action?
>
> Have I shown a continuous commitment to improvement in my practice?
>
> Is the account comprehensible, truthful, sincere and appropriate?

Within several of the projects accounted for within the thesis I have taken the approach of 'exercising a preferential option for the most disadvantaged' (Finnegan 2000). In a school where streaming was the dominant approach to organising class groups, opting to work with those who were not in mainstream programmes was responding to the natality of individuals. This is a recognition that people do not need to be 'academic' or 'well-

behaved' to be worthy of our care and attention. Normative standards for ways of being are not what matter. People's natality, as a result of their birth, requires me as teacher to be the best that I can be to support them in being the best that they can be (Arendt 1958). I believe the evidence, provided here and in the accompanying multimedia thesis, demonstrates that I have honoured the natality of colleagues and students.

The concept of plurality (Arendt 1958), in common with theories of multiple intelligences (Gardner 1993; Gardner and Hatch 1989), values uniqueness rather than uniformity among people. Pursuing web technologies with their emphasis on multimedia approaches is an aspect of seeking forms of representation that go beyond mathematical-linguistic approaches. Web technologies provide learning opportunities for those with intelligences and inclinations that are not limited to the mathematical and linguistic. This approach does not deny the value of mathematical and linguistic abilities but rather sees these particular aspects of intelligence as subsets of the wide range of intelligences exhibited by people. In my account of the development of web sites I have shown how the website projects were devised to support students in pursuing their interests, thereby valuing their plurality or diversity. At times this placed me in an unsettling position as in the case of the wrestling web site. In the event my unease was not justified and this was a particular learning opportunity for me as well as the students. The approach taken within the work honours the plurality among people.

In the case of the North/South video conference with two prime ministers, students worked collaboratively to devise questions to put to the two prime ministers. These questions reflected the range of interests of the students. Questions ranged from political to sporting questions. The range and diversity of the questions reflect the range and diversity of the students' interests – an aspect of their plurality. But beyond the nature of the questions, the approach to devising the questions draws on the differing capacity of students to spark each other's creative processes. The documentary evidence of the dialogical development of students' questions can be found in the multimedia version of the thesis (http://www.ictaspoliticalaction.com/pdf/northsouth/AhernBlair_questions.pdf; Appendix C).

The multimedia version of the thesis, as well as this written version, serves to make my story and my students' and colleagues' stories public. By making my story public and by my students making their stories public we are making a contribution to the knowledge base and at the same time offering the work to public critique. This offers the potential for

social validation which is an aspect of establishing the validity of the work. In the multimedia thesis and in this linguistic form I am claiming that there is evidence of the authenticity of our collaborative work. The positive responses of the students to the activities they have undertaken and the willingness of their teachers to offer ongoing commitment to developing collaborative practices around the use of ICT is evidence of the worthwhileness of the work. These support the validity of my claim to know my practice.

Offering my practice to public scrutiny

Within this work I am developing a living theory of practice. As a teacher-practitioner and consultant-practitioner I am devising and validating my living theory of practice in, by and throughout my practice. I am creating epistemological standards of judgement in and of teaching, education, educational administration and educational research. In this way, I, as a practitioner, have been transformed into and have become a theoretician and the theoretician has also been a real-life practitioner in the real-world (Serper 2004). I am showing practice and research as one and the same. I am therefore linking standards of practice and standards of judgement. Similarly, issues of validity which refer to the validity of my claim to knowledge are grounded in my evidence base. Consequently the validity of my claim to know my practice can be tested by showing that I did what I set out to do. I am supporting my claims to validity by offering the evidence of my practice to public scrutiny. In the following sections I will show how the evidence of my practice can withstand public scrutiny and satisfy living standards of judgment. In the accounts in the following sections the reader may consider if the evidence from practice suggests that I have achieved the living standards of judgement set out above.

By presenting my research publicly I can demonstrate the exercise of my educational influence. At the same time, by presenting the evidence base of this research publicly and offering it to public critique in a variety of fora I am hoping to have gained social validation. This has been accomplished by presentations at the Schools Integration Project (SIP) Symposium (Galvin: 2002; O'Neill 2000c), British Educational Research Association Annual Conference 2006 (O'Neill 2006), the Setanta Project launch (see www.ictaspoliticalaction.com/pages/setanta/setantalaunch.htm) and to several gatherings of educators and educational administrators under the umbrella of Arion Study visits (www.ictaspoliticalaction.com/pages/chapters/influence/index.html). Arion is a European

Community initiative which enables education specialists and decision makers to access up-to-date information about educational developments (see www.arion-visits.net)

Social validation for the research has, I hope, been gained because in many respects the research has been a public practice – practice carried out in public. Not alone has the evidence of my work, that of my colleagues and my students been offered to public scrutiny but in many cases the practice was undertaken in public. The interaction of students with two Prime Ministers was a public practice. The involvement of the Prime Ministers was a public validation of the work. The research has been presented to several international study groups invited to the school by the Department of Education and Science. According to an official of the Department the visits enabled the members of the study groups to gain 'an invaluable understanding into Irish post-primary level education in general and ICT in particular' (McHugh 2002). The recognition by educationalists from fourteen counties of the 'interesting and informative' (*ibid*.) nature of the work undertaken by teachers and students of St Aidan's and their collaborators is a validation of the work.

You may consider: does the evidence above validate my claim to know my practice and to have changed that practice for good? Does the evidence above provide some evidence of the innovative practice which gave rise to a living theory of practice?

A study of St Aidan's carried out by the Dutch Inspectorate of Education examined the use of ICT in teaching and learning. The study drew attention to the changing practice of both teaching and learning within St Aidan's.

> …slowly but surely the Setanta project is bringing about changes in education, both on the teaching and learning sides. The project has encouraged teachers looking for ways of bringing ICT into their classrooms to review their own teaching practices. Within the statutory curriculum and the traditional manner of teaching, more and more small projects and large projects are emerging in which ICT has been integrated in education. During our visit to the school, for example, we sat in a history lesson in which an exciting story about the Irish famine in the 19th century was brought to life with the help of an excellent PowerPoint presentation.
>
> (Inspectie van het Onderwuis 2001: 27)

The Inspectorate drew attention to the changes for students noting that the new ways of working allowed students 'to gain experience in organising numerous different types and especially different embodiments of information'. But perhaps more importantly, 'the tasks

allowed scope for pupils' initiatives that tie in with their personal interests … [producing] …the school's richly filled intranet' (*ibid*: 28). My understanding of this is that my recognition of the plurality of students has produced uses of ICT that are life-affirming for students and teachers and result in students taking control of their lives in ways that could be seen as political action (Arendt 1958).

The Inspectorate drew attention to the approach of persuading rather than forcing teachers to use computers in the classroom: 'the basic idea is to remove barriers and provide encouragement' (Inspectie van het Onderwuis 2001: 29). The outcome of this practice was that teachers noticed that students derived greater pleasure from lessons and this motivates teachers and students alike. I take this comment to be recognition of the web of enablement which I have nurtured in the school which has enabled young people and their teachers to work in collaboration to achieve their values.

The Inspectors' study went on to describe changes in engagement with the community and emphasised how the Setanta project's 'extremely effective co-operation takes place with partners in the community'. The positive effects of this approach were emphasised with the report pointing to the 'synergy of effects that have been created through co-operation between teachers at St Aidan's with their specific educational requirements on the one hand and specialised ICT people at Dublin City University on the other' (Inspectie van het Onderwuis 2001: 29). The inspectorate is recognising the importance of the community of practice that underpinned the work that took place.

Does the account of the Dutch inspectorate indicate that innovative practice had taken place in the school? Was the emphasis of that practice toward collaborative work? Did that collaborative work emphasise students' particular interests and therefore support their natality? Does the Inspectorate's comment about removing barriers suggest that a more democratic rather than authoritarian approach was evident in the work of the project? Does this constitute new practices? Do you agree with the Inspectors? Do you agree that the changes achieved indicate that I know my practice? Does the evidence from my evidence base show that my claim to know is valid?

While examining 'What counts as evidence in self-studies of teacher education practice', Whitehead (2004), reflecting on the limitations of a chapter of a book in terms of providing evidence for educational influence, suggests that such constraints can be overcome by using

web technologies. 'Using an address of a web site you can directly access the evidence and judge its validity for yourself' (Whitehead 2004). Evidence from the Arion meetings in the form of video and photographs is available within the multimedia version of the thesis. The video evidence shows teachers and students presenting their work. However some of the photographic evidence is more compelling. Fletcher and Whitehead (2000) refer to 'the look of the teacher' in arguing for the use of digital video to improve the practice of teachers. '…it is rather like Galileo (Sobel 2000 cited in Fletcher and Whitehead 2000); with the telescope he looked at the world in a totally different way – by turning the video-camera on oneself it is transforming a world view about what is possible to communicate'. In the photographs below we can see the look of collaborative learners – teachers and students – transforming world views. In some cases we see world-leaders and students together as collaborative learners. After one such meeting Proinsias de Rossa, M.E.P mentioned, "I have never taken part in a video-conference before!"

I am making a claim that I know my practice. The claim to know my practice is grounded in my evidence base. The multimedia artefacts, here and in the multimedia thesis, provide evidence of my educative influence in people's lives. Do the photographs below show the look of the teacher on young people's faces?

In assessing the validity of my claim to know my practice I ask you:

> In these photographs who is the teacher and who is the learner?
>
> Do you see new ways of teaching and learning?
>
> Does this evidence appear authentic to you?
>
> Does the content of these photographs suggest that students' natality and plurality is being valued?
>
> Do these photographs indicate life-affirming practice?
>
> Do you agree that in order to bring about the changes in practice that enabled these activities to take place that I must know my practice?

Students explain their ICT project to a member of the Arion study group

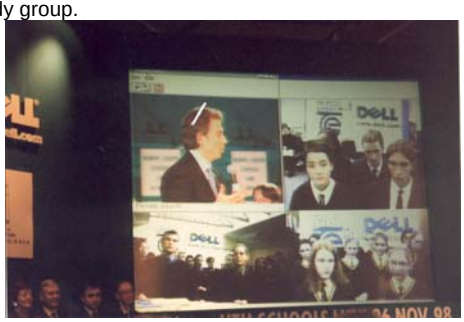
Stephen explains his ICT project to a member of the Arion study group.

An Taoiseach, Bertie Ahern and St Aidan's and Loreto Grammar school, Omagh students.

Members of the Arion Study Group.

Presentation by a Transition Year student to the Arion Study group.

Students engage two Prime Ministers in dialogue.



Prime Minister Tony Blair in conference with students from St Aidan's, Loreto Grammar School, Limavady Grammar School and Carrigaline Community School.

Fig 6.1 – A series of photographs showing young learners engaging community leaders and accounting for their practice

It was our practice following engagement in activities like those shown above for students and teachers to record their thoughts about the activities on the school website (for example see http://www.ictaspoliticalaction.com/webs/staidansweb/nov26/index.htm). Following the North/South schools link one student wrote:

It was really weird to be sitting there and to hear that the Prime Minister and Taoiseach were to arrive in five minutes. It was then I realised how important this actually was - it was history in the making - and I was involved!!! The media attention was unbelievable. Greg and I were surrounded by the press and radio, it was an unbelievable experience.

When the leaders arrived the atmosphere in the hall was electric. Both of them acted informally which helped to put the students at ease. They answered every question clearly and fully, something politicians are not always good at.

When the time came for Greg and me to ask our questions we moved off the stage and we began. As I asked the question Mr Blair kept eye contact with me and seemed genuinely interested in what I was saying. Mr Blair answered the question completely and really got his point across. When they both left and I had a chance to think about what I had been involved in, it really sank in - I had been involved in a part of history! What a day!!!

(Sherlock 1999)

To begin with I wasn't nervous at all, and because of this I began to worry. But it wasn't until the Taoiseach and the Prime Minister walked into the hall that the event's importance hit me. It was then that I realised the amount of media coverage that was present. I almost panicked but after the huge applause the two guests of honour received I calmed down. After all, the only important job I had to do was stand up in front of everybody!

(Farrell 1999)

My name is Greg Fitzpatrick. I am in 2A class. On 26th November 1998 Tony Blair and Bertie Ahern came to our school to launch the "North/South Schools Link". I was one of the people to put questions to the Prime Minister and Taoiseach. They were really sound and "down-to-earth". I will remember that day for a long time to come.

(Fitzpatrick 1999)

Our students regularly communicate with schools in Slovakia and Spain. Communications technology is bringing students closer together.

(Cashel 1999)

Students and teachers taking part in the Comenius project commented:

The worst thing of this project was the time because for example the school in Dublin ends in May. The best thing was that we have found new friends and have tried out new ways of communication.

> I have never thought it would be so exciting. The project let us know many interesting things and made us think about the differences between the countries.
>
> The first year of our European Education Project has been a tremendous success. Teachers and students alike, in each of the four participating schools have been enriched by this cultural interchange.
>
> This project gave me a lot of new knowledge about Ireland and Spain. I know a lot about their habits, a style of living and of course I've improved my English. I have a lot of new friends and it will be good, if it continues.
>
> We have worked in groups with our classmates and have increased our friendship and mutual understanding.
>
> Comenius has helped me to bond with my classmates. I love feeling part of a group and that I'm helping to achieve something.
>
> The tasks and activities have also helped me to take a greater look at myself, my culture and my country.
>
> One of the most important features of this project is the fact that except the "official" or planned part, that is, the work on the individual project topics, there also existed the informal, non-planned part. I mean the correspondence among the students involved in the project concerning out- of-project themes and communication. A similar feature occurred in the work of the co-ordinators.
>
> (St Aidans 1999)

These comments from the participants in these projects are evidence of changing practices and, as a result of those changing practices, changes can be understood to be taking place in the in understanding of others and in their self perceptions. One student came to see himself as being a part of history; another had increased his capacity for friendship and understanding. I suggest to you that all of these aspects show that the improvements in my own understandings and practice have had an educational influence in the learning of others. The changes in my practice have enabled my students and colleagues to work in collaboration to achieve their purposes. This is evidence of the validity of my claim to know my practice. The changes in my practice have led to collaborative practices which are dialogic in nature, function on the basis of intersubjectivity, and support the development of individual human agency. In this sense they are life affirming. I claim that in the evidence above and in the overarching multimedia version of this thesis I am showing within my

practice significant progress in bringing my practice into line with my values. The values are values of justice and freedom underpinned by ideas of natality and plurality. These are values that necessitate moving beyond a life of labour and work into one of political action. The evidence shows that ICT can be reconceptualised in a way that promotes human agency in undertaking political action to achieve one's aims in life.

I am showing the generative transformational potential of each and every person to influence the wider social order. The young people who are exercising their natality through ICT are, through ICT, entering interconnecting branching networks. They have the potential to influence thinking at a global level.

Evidence of my educational influence in my learning

I have shown above how practice has changed within school and within NCVA. But this thesis is not just about changing practice; it is also about producing new knowledge. The new knowledge that I have gained is, in the first place, knowledge of my learning. A key aspect of this thesis is that I am learning how to support others in their learning. In this section I will outline my learning within the work of this thesis.

In my early work on the thesis I was using a propositional form of theory to talk about organisational change. I was drawing on Schön (1987; 1991; 1995) and Senge (1990; 1997), and other theorists (Argyris 1982; Schein 1996). I was drawing on them propositionally and attempting to apply their ideas to my work. For the most part this was not successful for me. Through a process of envisioning approaches to my practice, applying them and reflecting on the outcomes I began to find new ways of working. What I learned was to start with my practice, draw insights from the experiences and theories of others and devise ways of working to overcome the dissonance that I experience between my values and my practice.

By using this approach I have learned how to improve my practice for myself and for others. But the work that I am involved in goes beyond mere problem solving. I have learned that by providing descriptions and explanations of my changing practice that I can contribute to educational theory. Let me give some examples of this in practice:

As noted, many educational theorists, Fullan and Hargreaves (1992), for example, argue strongly that change within schools is down to the Head. '…teachers and heads must make it happen' (p. 2). At one level I agree with Fullan and Hargreaves: if you have the support

of the Head then it is easier to make things happen. But at another level I disagree. I disagree on the basis that you can have a dominant culture within a school driven by the Head which is an oppressive culture. Individuals within the same institution can develop an alternative culture and work through that alternative culture that would not be the dominant culture, but that culture can have a major impact. We could think about terms to refer to that culture: an alternative culture, a subversive culture, an emancipatory culture; perhaps all of these. A culture has operated in my school, which was never the dominant culture, but continued to operate effectively without being the dominant culture. Let me use a metaphor to help explain the process.

A colleague has drawn my attention to the phenomenon in geology referred to as 'Braided Rivers' (Best and Ahworth 1997). Braided Rivers do not follow a single channel. They have a channel that consists of a network of small channels separated by small and often temporary islands called braid bars.

Fig 6.2 Resurrection River, Southern Alaska. Photo by Marli Millar. © www.earthscienceworld.org

The analogy of braided rivers for school culture is useful. Schools may have a single dominant culture – a single channel river. A school could have a dominant culture and at the same time have other cultures that meet and connect at times but diverge and run their own course at others.

Over a period of time the culture of my school has been like a braided river. There has been a dominant culture but there have been other cultures and they have run a common course at times but have diverged widely at others. With braided rivers a general reduction in energy, that is a reduction in the river flow, results in many of the smaller channels disappearing. This also appears to be the case in braided cultures. The dominant culture seems to have a capacity to perpetuate itself (Bourdieu and Passeron 1990) while the non-dominant culture needs constant input or constant work or constant effort in order to keep it going. There is a real risk that if you lose key influential people the alternative culture can disappear very quickly and the dominant culture is able to take over again. The dominant form is usually legitimised by those who have institutional power. Within my work I see programmes that operated in a particular way over a period of time. When the transformational individual moves on the programme may continue looking the same on paper but it is different. The dominant model takes over. However, the positive side of this is that many of the effects of these programmes cannot be seen because the effects are elsewhere. The effects are in the people who worked through the programme and whose lives have been influenced by them. For an individual teacher with a vision the braided river analogy provides an insight into how it may be possible to devise ways of realising the vision from within the problematic situation.

Justifying practice in the light of the morality of exercising influence.

My research programmes over the years have drawn my attention to autonomy at the micro level. By that I do not mean some master discourse of autonomy but how autonomy operates on a day to day basis. I have previously referred to my difficulty with allowing students take control of their own activities:

> It is not easy to stand back and let the student find his way. It is not easy to maintain the patience to talk the student through, to walk the student through. Often, it would be easier to do it for him. Even after implementing this practice for some time it is still difficult, at times. When the bell is about to ring and the student needs to save a file it would be easier to do it for him or even show him how than it is to say 'Click on *File,* click *Save*...., in place of *DOC1* type *John's Letter* and Click the *Save* button. And it is not enough to just list the instructions, it is necessary to walk him through them. At the same time chairs are being scattered around the room, pieces of paper are on the floor, a new class group is waiting at the door. But if I can get him to do it once, he now knows how, he gains confidence, then the process is educational and it is

> liberating. He does not need me the next time, he can rely on himself and he has the confidence to rely on himself.
>
> (O'Neill 1996: 3)

Taking the time to stand behind a student and support him through saving a file is recognition of the autonomy of the learner. I do not interfere in his work. My right to interfere in a student's work, even for example, if he opts out, is limited. In terms of my work with other colleagues I intervene in other people's lives on the basis of a request for an intervention. In the absence of a request for intervention I have to be careful that my offer is an offer and not pressure. In this way I respect the right of other people to run their lives. I believe this is what the Dutch Inspectorate were referring to when they said ' …the strategy…is to persuade rather than force teachers…the basic idea is to remove barriers and provide encouragement' (Inspectie van het Onderwijs 2001: 29). My experience is that students who are allowed to take control of their computer and their work also take control of their lives.

In the early stages of my work I drew on the work of the Frankfurt School and the idea that in order to emancipate ourselves we must understand what is going on at a deep level of analysis. I have moved from critical theory to theories of action and as a consequence I must move from the deep levels of analysis to taking action to subvert attempts at control. I take action in support of teachers using different methods of working with their students and I support students to use new ways of working with each other. When people have been exposed to ICT the main barrier to a change in their practice is lack of access to equipment. Obtaining the necessary equipment is a means of using ICT with emancipatory intent. This is allowing the teacher to express her or his natality and in turn the teacher supports the students to express their natality. Providing access to ICT is enabling what happens in that class to be different.

I have come to a new understanding of theory. Social transformation does not occur through propositional theory. Social transformation occurs through emancipatory forms of theory. In order to act as a change agent it is necessary to understand what is going on – it is necessary to understand my practice – I have to offer my living theory of practice. So I have moved away from talking about organisational learning in a propositional way; I am now engaging in it and showing the process through my thesis. Individuals, recognising that they have the capacity for learning and for change, are a prerequisite for effective

organisational change. It seems to me that recognising one's own capacity to achieve is often a consequence of achieving. It seems people learn by doing; and by doing a greater depth of understanding is achieved and a greater capacity to transform is gained. This thesis argues that the propositional form has a place in producing living theories of practice but transformation is achieved through involvement in action.

While examining 'patterns that connect' (Bateson 2000) I find my work resonating with others in the literature – I agree strongly with Senge (1990: 23) when he suggests, 'We learn best from experience'. In learning better from experience we are better placed to make better changes. During the NCVA project an outside consultancy company provided advice on the collection of data for the organisation. This advice was taken and subsequently, the process was found to be less accurate, more expensive and more time consuming. However, the changes which were based on the experiences of those working the system were much more effective than those proposed by outside 'professionals'. This is an important point. By bringing in the 'professionals' we were assuming they had objective 'knowledge' which would enable them to provide solutions for us. The reality was that the administrative workers who would not normally be seen as professionals and not seen as 'knowers' provided effective solutions. We are all knowers, learners, doers. It seems that transformation can result from active participation in devising a better world rather than through objective knowledge.

Within my research programme the real learning for me has been that worthwhile learning is not only embodied in a systematic programme of work but also in a complex web of personal relationships which are underpinned by values respecting the dignity of all involved. It can however be complicated by power relations, by teaching methods, by social factors, by funding, by parent pressure, by the examinations system, by the curriculum… All of these factors and many more form the web of patterns that connect. It can also be complicated by issues such as the divide between classroom research and academic research (Zeichner 1995: 154; Korthagen and Kessels 1996; 1999; Richardson 1994). My work is academic research which examines my practice as a teacher, as an educational administrator and as a person. My work is also workplace-based research, but I am bringing my claims to knowledge into the Academy.

In examining my practice my intention is to understand better how I learn and in doing so could help others to learn. By studying my learning I believe I am a better teacher,

administrator and person. I see knowledge, of my learning or otherwise, as a process that is based in relationship rather than as an object to be acquired. So I am, already, a better teacher, learner, doer by engaging in the process of examining my work in collaboration with others. My research is the work of an actor rather than that of a spectator (Coulter and Wiens 2002: 15-25). I am not an expert looking at my classroom or administrator's office as a spectator and transmitting knowledge to those I find there. I am an actor, experiencing the achievements and failures in my classroom or office in participation with others and finding ways of improving our learning and our lives through our relationships.

My learning from this project and others indicated to me that ICT embodies the capacity for forms of expression that enable people to come to know in ways that are commensurate with their ways of knowing, and to communicate their knowledge in non-linear, experiential ways.

In this chapter I have presented new practices that have developed as a result of the projects that underlie this work. I have produced evidence of the educational potentials of these new practices and have shown how they relate to my ontological values. I have explained how my thinking has shifted and that I am now aware of how I have come to develop my living theory of practice. I have produced evidence of the development of my living theory of practice and I related this development to my ontological values. I have accounted for my educational influence, in relation to my learning, my colleagues' learning, and the education of social formations. As the living theory that I am developing is a theory of practice the evidence from my practice forms the basis of the evidence for my claim to know my practice.

Chapter 7 – The significance of the research

When I undertook my research I was experiencing dissonance between my values and my practice (Whitehead 1975). My hope for my research was that it would enable me to achieve a transformative influence in my practice in order to provide new life-affirming opportunities for my students, my colleagues and me. Through undertaking the research I hoped to develop a living theory of my practice. Having carried out the research programme, my living theory of practice, which I have developed, offers a reconceptualisation of ICT distinct from the usual technicist discourses of ICT, so offering a life-affirming conceptualisation framed within Arendt's (1958) ideas of political action and Habermas's (1975) ideas of communicative action. The development of my living theory of practice which arose from the combination of insights gained from engaging with the literature and learning from the experience of my practice has significance for practitioner-educators and educational researchers in terms of new forms of theory and practice. The context of this research within educational ICT has significance for policy and practice within ICT.

In the following sections I will explicate the significance of my research for policy in relation to teaching in general and ICT in particular. I will explain how it can have significance in relation to theory about teaching and learning and can play a part in the education of social formations. I show how the research and the two forms of the thesis can offer answers to some of Eisner's (1997) questions in relation to the validity of forms of representation of data. Further, this research has the capacity to challenge the current linguistic form of thesis writing and offer an alternative multimedia model. I indicate how the multimedia model makes a significant contribution to debates around a new dynamic form of knowledge base of education and, in fact, provides a model for such a knowledge base and builds a contribution to that knowledge base.

The significance of my research for the two main project institutions

In her study into learning interventions in NCVA Deane (2000: 132) identified the Action Learning group as a very successful element of the organisation's learning programme, from the perspective of participants as well as from her own. From interviews conducted with the staff she identified important factors as

- the relaxed and safe atmosphere in group sessions;
- having an opportunity to engage in "self-evaluation" in a reflective way;
- the mix of participants from different sections and grades within the organisation;
- the input from guest speakers
- the skill of the project leader in facilitating the group
- sharing learning with others, and gaining insights into their "concerns"
- being encouraged to "do something", "take action", "make changes happen";
- having control of the research, from choosing the topic and methodology to implementing and evaluating action;
- developing "good habits" of data collection and analysis, which can be applied to other work projects.

She goes on to attribute the success of the project to the fact that '… members had sufficient control over their own learning process to enable them to feel a sense of ownership and "expertise". They were treated as "knowers" as well as "learners"' (Deane 2000: 134). She adds that the '…focus on examining an aspect of one's own practice with a view to improvement was a way of encouraging helpful evaluation and producing **real** change' (emphasis in original).

The success of the first action learning project was such that the Chief Executive encouraged me to form a second group to continue the process of organisational learning. The ideas of action research and living theory enquiry became part of NCVA's own organisational programme. 'It is accepted and recognised by all staff as an important part of "the way we work"' (Deane 2000: 146). Prior to the development of the action learning programme staff development in NCVA was seen primarily in terms of 'training'. Following the project NCVA shifted its professional development focus toward learning. Training was identified as something '…that is done to people' whereas 'learning is something that people choose, based on what **they** want to know' (*ibid*. 150, emphasis in original). The development of the action learning project within NCVA as a work based learning project contributed to NCVA extending its learning remit to include certification of learning in the workplace (*ibid*. 166). The development of the Action Research module contributed to this process and learners have continued to be certified for learning undertaken as part of this module up to 2007.

Within St Aidan's the development of dialogue through ICT has continued with new groups of learners, both teachers and students, through the LCA programme. Rather than being a single project instance, dialogue through ICT has been part of the LCA programme over seven years. During this time, as new teachers and students have become involved in the LCA programme, they have become involved in a dialogue through ICT.

The inter-institutional links built between St Aidan's and Dublin City University during the course of the Setanta project have continued through a range of other projects including supporting pre-service teacher training. Over a period of five years, science education students serving their internship in St Aidan's have taken part in developing virtual communities of practice through their work with LCA students and a variety of science classes. This has become a standard part of the internship.

A number of other projects have been initiated with DCU including projects that enable St Aidan's students use DCU facilities to develop their ICT skills. St Aidan's students have supported DCU research programmes by taking part in research into the use of various media including mobile phones.

These activities are in marked contrast to the isolating nature of school activities that I described above as part of my experience of entering St Aidan's as a young teacher. Co-operative work has become a feature of working life, with students and teachers frequently seeing each other as co-learners.

The significance of my research for policy in ICT

Let me start with the current context of ICT policy. In its official study of the impact of Schools IT2000 the National Policy Advisory and Development Committee deemed the project 'a success' (NPADC 2001). In their report the Committee wrote:

> The survey findings show that there has been a significant increase in the number of multimedia computers in schools; that all schools and the majority of students have access to the Internet; that the use of ICT and software by teachers and principals has increased dramatically; that the number of teacher training places initially proposed has been surpassed; that many ICT support mechanisms have been established; and that the public/private partnerships have worked for the benefit of schools.
>
> (NPADC 2001)

The committee's conclusions were based on a technical analysis of the numbers of computers in school, numbers of students having access to the Internet, and the numbers of teachers receiving training. The report indicated a demonstrable increase in the use of ICT by teachers and principals across a number of school-based tasks. There was however little analysis of the nature of the use of ICT or what constituted worthwhile use. The report took a narrow statistical approach to a complex task. The subsequent progress report published in 2004 (Mulkeen 2004) took a similar approach focussing on numbers rather than uses or quality of experience.

Narrow survey type analyses of ICT provision in schools can be limited, and in some cases have led to some surprising results. One study showed the use of email by principals as 'significantly associated with higher ICT scores' (Mulkeen 2003). While this may be true does it contribute to an understanding of the value of using ICT in schools?

A different approach has been taken by others. Seamus Knox, the national co-ordinator of School Integration Projects (SIP) which used the by-line 'supporting innovative practice', focussed not on the technical but on finding innovative uses for ICT:

> Although SIP investigates and exploits the innovative use of ICT in teaching and learning, it is not technology driven; rather it depends on the quality of the people involved for its success.
>
> (cited in Galvin 2002: v)

Knox's view is supported by Galvin: The SIP projects 'illustrate what is possible when teachers apply imagination and professional know-how to the challenges of integrating ICT into the teaching and learning day' (Galvin 2002: vii). Mulkeen drew the conclusion that an emphasis on courses that build a vision for the use ICT is more likely to bear fruit than a focus on short and purely technical courses. He also suggests that interventions aimed at developing school thinking in relation to ICT may be of value (Mulkeen 2003: 291).

An examination of the various reports suggests that official publications tend to focus on statistics, surveys and technicist approaches to technology. In contrast there are non-institutional sources that focus on the work of transformational individuals, the contribution they make and the risks of losing them. This point has been made in relation to the Setanta project. One report indicated that in the event of the loss of the co-ordinator the project would be at risk (Doyle 2000). Another evaluation suggested that '…it has been the initiative, inventiveness and motivation of just a few people that has driven the growing use

of the computer at the school and in lessons. At the same time this highlights the fragility of the situation, because replacement of such pioneers frequently poses problems' (Inspectie van het Onderwijs 2001: 30).

My thesis is significant for the contribution it makes to a non-technicist view of ICT in schools. It captures a picture of ICT in educational settings that is far removed from the narrow technical analyses of official publications. The approach is not to provide a model that is replicable elsewhere. But it provides an approach that may give inspiration to others elsewhere. The approach is based on collaborative ideals: recognising the uniqueness and diversity among people and building on the uniqueness and diversity to provide educational experiences that are life affirming. This work has the potential to influence policy in relation to ICT in schools and other organisations and has made inroads in this direction through the presentation of the work and research to political and educational leaders in Ireland and Europe.

The significance of this work, for me personally, is that my practice has changed and continues to change. The significance for others could be that there is a potential to change. In contrast to the traditional view of teaching as a didactic practice, my research offers a living theory approach to teaching and learning based in relation and respect for all participants. As such the research could have a significant impact on how we teach and on how we run schools. In offering my living theory of practice to public critique I have the potential to influence others' learning and their thinking about how they teach. This has the potential to influence public perceptions in relation to learning and teaching.

The significance of my research for forms of representation

The thesis shows how ICT can offer the potential for a wide range of forms of representation and therefore offers the potential to provide answers to Eisner's (1997) concerns around the perils of alternative forms of representation. But the thesis shows that ICT goes beyond offering a range of forms of representation to offering a range of forms of participation and may therefore address Gardner's (1989) concerns around modes of working that support multiple intelligences. The multimedia based approaches to work reported throughout this thesis provide evidence of the provision of opportunities to those with bodily-kinaesthetic intelligence, spatial intelligence, and musical intelligence**,** interpersonal, intrapersonal as well as linguistic and logical-mathematical intelligence

(Gardner 1989: 44). In many of the projects ICT has offered students the opportunity to express their creativity and hence their natality. Video conferences have enabled students to work with their linguistic and interpersonal intelligences. When the video conference offered opportunities to participate by playing instruments and singing, it involved musical intelligence. The creation of websites supported linguistic intelligence along with logical-mathematical intelligences. If the website had a sporting theme it appealed to those with bodily-kinaesthetic intelligence. The personal reflections on tasks appealed to intrapersonal intelligences. But the multimedia nature assisted students in developing intelligences that did not automatically appeal to them.

While the websites developed by students provided them with alternative methods of representing their ideas the multimedia thesis provides me with an alternative way of representing the thesis. This is a response to Eisner's concerns about perils (Eisner 1997). The development of the virtual art gallery involved a new way of representing that work. The website projects undertaken by many of my students provided them with opportunities to experiment with new forms of representation. These forms of representation gave voice to students in ways that were often absent from traditional modes of teaching and learning. The new mode of representation changed the way the subject was taught. In the same way the multimedia presentation of this thesis offers modes of representation that hold out the promise of offering new ways of presenting data and indeed of presenting non-propositional ideas in non-linguistic ways.

The significance of my research for new forms of theory

The goal of my research was an improvement in the quality of my practice as a teacher and as an ICT consultant to a national awarding body. My thesis offers descriptions of what I did and explanations for doing it. Together these become my living theory of practice (McNiff 2006: 149). Within the thesis I am offering my living theory of practice based in my practice. The theory is located within and generated from within practice and influences the development of new practices. I have indicated how Deane (2000) has shown that the formation of the Action Learning Group in NCVA led to new practices. The work of the Action Learning Group supported the members of the group in changing their practices. Some of the group presented our changing practice publicly at an action research conference. By telling our stories and providing explanations for those stories we

were generating theory. By making this work public, professional educators and educational administrators were reclaiming their professions as their own (McNiff 2006: 120).

I started my teaching life believing that theory was something generated by professional researchers, mainly in the universities. As I carried out a self-study of my practice I came to understand that I could generate theory too. As I worked with my students on their WebQuests I came to realise that my students were generating their own living theories of practice. This thought first occurred to me when I heard a group of students argue animatedly about the earlier mentioned 'Saipan Incident'. I realised that everyone had their theory about it. I came to understand that students were capable of giving descriptions of the incident, analysing those descriptions and explaining why they happened. Further, they were able to relate their theories about the incident to their lives. With this insight I began looking for evidence of theory generation in my students' work and I found it. In their website reports, and elsewhere, my students were providing accounts of their learning and explanations for learning. These were not presented in academic language but were theoretical accounts nonetheless.

I have moved from normative conceptions of ICT and learners to develop my living theory of working with ICT based on reconceptualising ICT within Arendt's framework of political action. My students have developed living theories about how they learn best. In many cases this occurs when they are developing their narratives of learning rather than through tasks set by the teacher. Showing the capacity of people to develop their living theories of learning and of life is important in the context of debates which argue that teaching is an operational activity which can be best accomplished within a particularly narrow conception of evidence-based practice, using centrally devised national curricula based on research carried out by non-practitioners.

The significance of my research for the education of social formations

In undertaking a self-study of my practice I am studying my educational influence in the self-studies of colleagues and students. These self-studies form a part of the education of social formations (Whitehead 2003b; 2003d) by the influence that they have had in changing the forms of practice within institutions. For example, the introduction of alternative programmes that appeal to different intelligences represent the education of

social formations in that they meet Gustavson's (2003) requirement for a social movement: they are not single change events but they form 'series of events that are linked to each other and where the meaning and construction of each event is part of a broader stream of events and not a self-sufficient element in an aggregate' (Gustavsen 2003 cited in Whitehead 2003b: 5).

The idea of a social formation is of a group of people coming together within a shared social context, and the way that groups of people behave are premised on certain normative rules (Bourdieu 1977). Bourdieu claims that each social formation has its own set of rules. They are unspoken and unquestioned normative assumptions. The rules are unrecognised and unchallenged. Metz (1978: 98) argued that '…routines, confidently established, take on an air of inevitability [as] students come to see them as an inherent part of school'. She sees this as part of the social control which teachers can impose without appearing to be impositional. Such controls are internalised by the students who impose them on themselves. Teachers within schools may be as likely to internalise control as students. These ideas are similar to Foucault's ideas of the panopticon (1977; 1979; 1980). It can lead to the idea that 'culture is the way things are around here' (this phase has become so commonplace that it is difficult to find the originator. It has been used by Jones and George 1998; Holtz 2004; Reichers and Schneider 1990; and others.) Bourdieu (1990) speaks of internalised compliance as an aspect of the 'habitus', which I understand as referring to the normative culture. The habitus relates not only to practices but epistemological assumptions – norms and conventions are tacitly agreed.

When Whitehead (2003b; 2003d; 2004) speaks of the education of social formations he is talking about influencing people to think critically about the normative assumptions that underpin the practices of social formations, to surface taken-for-granted assumptions, to make them explicit, to challenge to see if they are appropriate, and where necessary to change them. In Chapter 2 I have referred to the importance of keys in my school. Keys play an important part within the habitus of a normative institution. They are an unspoken means of establishing the authority and position of some parties relative to others. Controlling access to computers is another aspect of such a habitus. The work of the LCA, the Setanta project and others challenged the habitus by challenging some of the assumptions about 'the way things are done around here'. When I write and speak of the transformational nature of ICT some people respond that surely the transformational nature

of ICT is to be taken for granted. Sometimes they give examples from their workplaces. For example, when a meeting takes place the minutes which used to have a limited circulation can now be distributed much more widely by email. This is presented as the transformational quality of ICT. But I have concerns that perhaps this is not a transformation but simply a matter of efficiency (Callahan 1962). I wonder if this is actually changing the practice of the workplace. Some of the work that takes place in school, however, is transformational because it allows students to take control of their lives. The conception of 'transformational' that is used in my living theory of practice is not based on a distribution model but on a model that is based in the practices of people. My dynamic living theory sees the transformational nature of ICT as based on transformation from within to a fuller realisation of values and potentials and achievement of autonomy and freedom. This makes a contribution to the development of new social formations.

Contribution to the knowledge base of education

In 2001 Catherine Snow in her presidential address to the American Educational Research Association called for the development of a knowledge base that would collect and systematise the personal knowledge of teachers (Snow 2001: 9). This would provide 'a wealth of knowledge about teaching that cannot currently be drawn upon in the preparation of novice teachers and debates about practice'. Snow was addressing issues within the educational research community about the relationship between research and practice. There is already a large knowledge base supporting traditional forms of theory, but this is not the case for newer forms of living theory. The discussion of a new knowledge base focuses on new forms of theory and new forms of knowledge, in particular the knowledge of skilled practitioners. Hiebert *et al.* (2002) have extended the discussion by proposing in a detailed fashion what they believe the knowledge base should be. The contribution that my thesis can make to debates about a knowledge base could be part of the significance of this work in terms of encouraging forms of learning which are grounded in each person's capacity to exercise their creative and critical capacities.

Hiebert *et al.*'s (2002) question, 'A knowledge base for the teaching profession: what would it look like and how do we get one?' largely ignores the presence of an existing knowledge base for practitioner researchers. I refer to the knowledge bases housed at www.actionresearch.net and www.jeanmcniff.com and others. These knowledge bases

provide the evidence of the work of teacher-researchers who have created and tested the validity of their living educational theories through their self-studies of their teacher-education practices (Whitehead 1993) and offered them to public critique through publication on the World Wide Web. Substantially, these knowledge bases have been textual knowledge bases but recently have been supported by other media like photography and video. The discourses around the potentials of multimedia are still linguistic discourses. The multimedia version of this thesis moves the discourse to another dimension by developing a living knowledge base, by showing the creation and existence of a knowledge base through ICT. I am claiming that I am making a contribution to the knowledge base that Catherine Snow (2001) has called for. I have developed it in relation to ICT. I am showing the knowledge base not only in relation to substantive issues of ICT in schools but in terms of how ICT can be a form of creative experience with potentials for developing an interconnected community of practice (Brown and Duguid 2000; 2002; Lave and Wenger 1991; Wenger 1998).

Much recent work around ICT and multimedia and its potentials in educational research are taking a minimalist approach. When Hiebert *et al.* (2002) write about multimedia they are referring mainly to videotaping classes and making them available on the Internet. I have little video of a class being taught as such. I am increasingly of the view that teaching is about removing obstructions to learning. In contrast it seems to me that other people are speaking of using ICT to support teaching in a didactic way. I see video within this thesis in the same context as word processors, websites, databases, digital cameras, and digital video. They are all different aspects of the ICT tool. To me the use of ICT and multimedia is about students using these to achieve their purposes. So where I have video clips they are of students. For example, one video is of a student who is using the video recorder to record other students who are interviewing a third student about something he is doing in technology. I am not using the video as an objective observer. The purpose in making a video recording is not specifically to record what is happening. Instead it is being used by a student as part of his learning. But while he is taking control of his learning he is recording various things which are happening. He may be recording a student who is interviewing other students. In turn the student who is interviewing is taking control of his learning by interviewing. He may be learning interviewing skills or he may be learning from the student he is interviewing. The student whom he is interviewing may be talking about

some project he has carried out in technology. In all these things the technology is being used as part of a process of learning. It is not simply to record as an alternative to taking minutes or as an easier way to remember what took place; it is being used as part of a learning process. This is a 'thick' use of technology (Geertz 1983).

One of the issues that Snow (2001) raises about personal knowledge, and this applies to local knowledge, is in relation to its generalisability and applicability to other situations. She is, of course, speaking out of traditional paradigms. My position is that my research is not generalisable or replicable. I draw inspiration from many sources, including traditional research, from things that people say and do, things that have a resonance for me in the work that I am doing. I expect that the work I am doing, my descriptions and my explanations, may have similar resonances for other people so that they can learn from my experiences and explanations. I am not suggesting that others should get their students to build wrestling websites, but others listening to my account of the WWE project may find a resonance for them in something which has nothing to do with websites or WWE or perhaps even ICT. The work will not provide a formula to follow, a recipe for success or a textbook for research, but what it may provide are ideas, possibilities and approaches that other people may want to take a look at and, perhaps, incorporate into their ideas and practices.

There are fundamentally two separate questions to be addressed here. One is in relation to knowledge acquisition and the second is in relation to the knowledge base. Throughout this thesis I have outlined ideas about the acquisition of knowledge. These ideas centre on learning through communities of practice, that is, through relationship. I am suggesting a contribution to the knowledge base grounded in a virtual community of practice, where the claims made within the thesis will be open to public scrutiny and public critique. It has been claimed that for an activity to be designated as scholarship three characteristics are needed: It should be public, susceptible to critical review and evaluation, and accessible for exchange and use by other members of one's community (Hutchings 1998). The multimedia thesis, which I conceive of as the main thesis, this linguistic version being a subset of the multimedia version, is available on a public website. The website includes descriptions and explanations of my practice along with the evidence that supports my claims to know. The website provides multimedia tools that allow others to critique the thesis. In this way the thesis will be subject to the same dialogue and criticism that my

practice was open to. This is a living thesis. In this way it will respond to Snow's and Hiebert's calls for a knowledge base for the teaching profession and meet Hutching's criteria for scholarship.

In this section I have outlined the significance of my thesis in a variety of spheres. Because of its grounding as a living theory of practice drawing together insights gained from critical engagement with the literature and careful reflection on experience of practice it has particular significance for theory, for forms of representation and for the knowledge base of the teaching profession. Because of the reconceptualisation of ICT as a social practice and its potential for supporting political action it has significance for policy in relation to ICT and for contributing to the education of social formations within schools and other institutions.

Conclusion

In this account of a programme of research extending over some ten years I am showing my educative influence on myself, my students and colleagues (Dewey 1981). Through the process of this research I have generated my living theory of practice (Whitehead 1993). By generating my living theory of practice and offering it to critique in the public domain I am contributing to the knowledge base of educational research as advocated by Snow (2001) and Hiebert *et al.* (2002) *inter alios*. In this conclusion I will briefly outline how this has been accomplished, what its significance is and how it can contribute to the knowledge base of educational research.

At the outset I set out my reasons for carrying out my research and writing this thesis. I indicated that I was motivated by the dissonance that I was experiencing when my practice was in conflict with my values (Whitehead 1993). That conflict arose between the authoritarian nature of my institutional settings and my values of justice, inclusionsality and respect for people and for their unique contribution to life. While I held values around the capacity of people to think and learn for themselves, I was working within contexts that are highly prejudicial to my ideas. I was working in two contexts: one an autocratic system, where people's life world experiences were diminished and the values base of practice is systematically factored out, the other a more participatory organisation but where people's life world experiences were diminished from the sheer volume of work. Within these environments people can be regarded as objects to be manipulated. The messages communicated through the cultures of many schools and other educational institutions can reinforce the ideas of autocracy.

My work centres on finding ways of combating these cultural factors – eventually perhaps to change the culture – and I am doing this in a systematic way. First I produced descriptions and explanations of my practice to show how I was trying to live in the direction of my values and later how I was influencing colleagues to change their perceptions of practice. I hold deep values around people, their capacity to learn and think for themselves, and for transforming their life circumstances. As my intention in examining my practice was not only to interpret my world but to change it (Marx and Engels 1978: 145) I took an approach of educational action research in an attempt to address the dissonance and bring my practice into line with my values (Whitehead 1993). The action

research approach to my research allowed me to turn my tacit knowledge (Polanyi 1966) into explicit knowledge (Varela *et al*. 1993) and in getting to know what I already knew, and learn more about how I learn, it enabled me to improve what I do (Lohr 2006: x). I came to understand the comment that you must be the changes you wish to see in the world (an idea attributed to Gandhi). In order to change the situation in my classroom I needed to change my practice and that necessitated changing my worldview. I came to understand educational practices as emergent processes, all interlinked, and having a common root in a values base of justice and democratic agreement.

As I researched my practice I came to see that traditional forms of theorising did not provide the impetus for change that my practice required and I realised that there was a need for new dynamic, generative transformational forms of theorising (McNiff 2000; 2002 *inter alios*). As my work was based within Information and Communications Technologies (ICT) I set out to reconceptualise ICT as a form of political action (Arendt 1958). Reconceptualising ICT involved moving away from technicist interpretations of ICT toward an understanding of ICT as a means of achieving justice through communicative action (Habermas 1975). The practical meaning of ICT as political action may be through finding ways that ICT can support people in learning to think for themselves. In thinking for themselves people can learn to be free thinkers, indeed, critical thinkers and to ask awkward questions to achieve an open society (Russell 1988). They can support Said's (1994) call for intellectuals to challenge normative assumptions. In challenging normative assumptions they can challenge normative systems, particularly attitudinal systems (Habermas 1975).

This research provides evidence of people taking action to challenge the normative systems in which they are located. I undertook this research programme because of my commitment to emancipatory forms of learning; the recognition of people's rights to opportunity. The research was carried out in the context of ICT because of ICT's capacity as a medium for supporting opportunity and for my professional learning. My research shows a persistent pursuit of ICT as political action (Arendt 1958). In this way ICT can be seen as a feature of communicative action (Habermas 1975), providing an emancipatory context for practice at the same time as providing a more appropriate means of representation (Eisner 1997). However, reconceptualising ICT does not occur in isolation. In reconceptualising ICT I found myself reconceptualising what it means to be a teacher,

moving from an authority figure to co-worker and co-creator of knowledge, locating my understanding within practice.

I have come to understand that dominant forms of theorising are theories 'about' things. They are propositional theories. Traditional forms of research concentrate on linguistic analysis (Bourdieu *et al*. 1994). Propositional theory and traditional research are usually located within words and our language tends to be metaphorical. Consequently linguistic representations of theories are usually metaphors. They give a picture – they are not reality. One of my important learning moments occurred when a colleague drew my attention to Magritte's painting entitled *Ceci n'est pas une pipe* (this is not a pipe). The painting is of a pipe as one might see in a sign over a tobacconist's shop. The painting has been analysed endlessly but a simple interpretation is that it is an image of a pipe, not a 'real' pipe. An image of a pipe and a 'real' pipe are not the same thing. If this idea is applied to propositional theory it could be argued that traditional research paints a picture although it claims to present the 'real' thing (Lather 1994). I am conscious that the same analysis can be applied to this thesis. The research and the research report of the thesis are not the same thing. What you are reading now is the research report, which is a real artefact representing a real-life practice.

Action research as a methodology deals with reasons, purposes, intentions, and values. There is an immanent dialectic – it is understood in action – meanings are not expressed in a form of words. By engaging in action research I am going beyond metaphor – I am undertaking action and developing a personal theory. Action research is a form of systematic enquiry which involves the generation of a personal theory (Polanyi 1966). This thesis shows how I have developed my living educational theory (Whitehead 1993) from a combination of established action research methods and educational practice (Lohr 2006). One aspect of the development of my living educational theory is supporting others to theorise their practices. The account of students' personal reflective tasks using the 'Saipan incident' in Chapter 5 shows students using their everyday theories as a means of developing their living theories of learning. This activity encouraged them to create living theories and to test the validity of those theories. Supporting students in developing their living theories of learning was part of supporting them to move from being silenced (Giroux 1992: 158) toward gaining their voice.

My claim to know

Within this body of work I ground my claim to knowledge. The claim is that I have generated my living theory of learning grounded in my practice and in my values. The development of my living theory involves the reconceptualisation of information and communications technologies as a form of political action. I understand political action in terms expressed by Arendt (1958) and in the context of Habermas' theory of communicative action (1984).

My living theory is a theory developed through practice and of practice and as such is a living theory of practice. In researching my practice I have come to know my practice and have over time changed that practice from being a traditional, authoritarian and didactic practice to a more democratic practice which focuses on teachers, students and administrators as co-learners and co-authors of their educational journeys. I have come to understand that the transformative potential of ICT can be used as a means of supporting a transformation in practice enabling the recognition of the natality and plurality of people (Arendt 1958) and in doing this I have reconceptualised ICT. I have come to see that Arendt's (*ibid*) conception of labour, work and action can be used as a means of analysing the activities that we undertake and of privileging those which support human agency. In developing my living theory of practice I have come to understand the limitations of traditional forms of theory in effecting change although they still provide insights that are valuable in practice. Nonetheless I recognise that new forms of living theory lack complete credibility in the academy because of the issue of quality and what kinds of standards of judgement can be used in assessing quality (Furlong and Oancea 2005) and that there is a need to develop a knowledge base of practitioner research (Hiebert *et al.* 2002; Snow 2001) that would provide a base from which teachers could learn and develop their practice in the light of others' experiences. Such a validated and legitimated knowledge base would have implications for new policies and practices (Whitehead and McNiff 2006: 119).

In developing my practice I have enabled students to become autonomous learners. The means of enablement were wide ranging and diverse and in many respects formed a web of enablement. In the evidence base within this linguistic thesis and in the supporting multimedia thesis, through photos, videos and written reports of their work my students are showing how they have been enabled to learn, and they show their knowledge. In their

written accounts there is evidence of peaceful productive learning. Reports and videos of meetings with national leaders show evidence of the realisation of an ideal speech situation (Habermas 1975). There is evidence of developing lively creative minds operating as autonomous thinkers. It is clear that the young people have developed the capacity to think for themselves (A.N. Whitehead 1929; Dewey 1916).

Arising from the research I set out to support Boyer's concept of the New Scholarship (Boyer 1990) by developing a theory grounded in my practice and the practice of colleagues and by contributing to an epistemology which is relational and inclusive in nature and therefore challenges the norms of technical rationality (Schön 1995: 27). I have practised Boyer's scholarship of integration by drawing on work from different contexts, my school context and administrative context, and bringing them together in a single integrated theory of practice. The research demonstrates the transferability of knowledge from one context to another to support more learning. This practice allied with collaborative work between school and university demonstrates the unity of being recognised in the development of communities of practice (Wenger 1998).

Forms of theory and forms of representation

My research was undertaken more from the point of view of a participant than an observer (Coulter and Wiens 2002). The approach was non-linear and in fact emphasised interconnectedness describing my worldview in terms of a web of connection (Bateson 2000). The nature of the research is that it is local, time bound, particular, oral and concrete (Toulmin 1990). Such research lends itself to narrative forms and seeks more appropriate forms of representation than linguistic forms. I have produced the thesis in two forms, linguistic and multimedia. Multimedia forms can communicate the ideas of dynamic generative transformational forms (Whitehead 2002), and multimedia can show processes of political action in action. I am aware of the need to show the validity of these new forms, and show how the forms have validity in relation to how they enable you to live your values in your practices.

I have shown how I have transformed my values into living critical standards of judgement. I offer these living critical standards of judgement as criteria that can be used to assess the quality of my research.

This thesis is based on a dialectical relationship between theory and practice which resists the idea that knowledge exists independently of the practices that created it. I have referred earlier to Capra's (1992) commentary on the work of Heisenberg claiming that '…the patterns scientists observe in nature are intimately connected with the patterns of their minds; with their concepts, thoughts and values…' In Chapter 5 I have challenged the view that '…educational research devote(s) too many pages to 'how' we know rather than 'what' we know…' (Snow 2001: 4) and presented evidence from my students' work that suggests that 'how' we know is crucial to 'what' we know. These ideas are supported by Lave and Wenger's (1991) ideas of 'situated learning', and Wenger's (1998) notion of 'communities of practice', Polanyi's (1966) idea of personal knowledge and tacit knowing and Schön's (1991) 'knowing-in-practice'. For example the personal reflection task undertaken by LCA students could be seen as an example of socially constructed knowledge.

Lather's comments on traditional validity practices raise a challenge not alone to establishing the validity of my knowledge claims but to the form of the thesis itself:

> Contrary to dominant validity practices where the rhetorical nature of scientific claims is masked with methodological assurances, a strategy of ironic validity proliferates forms, recognizing that they are rhetorical and without foundation, postepistemic, lacking in epistemological support. The text is resituated as a representation of its "failure to represent what it points toward but can never reach..."
>
> (Lather 1994: 40-41)

Lather's (1993) idea of 'rhizomatic validity' requires the thesis to be read as if it has multiple inter-connecting centres and to represent an inter-related network of ideas, emotions, impressions, and accounts. A multimedia representation of the thesis may have a contribution to make in attempting to meet the challenges to the traditional thesis described by Lather. Eisner (1997) argued for the use of alternative forms of data representation. This thesis has made the claim that technology has a transformational quality within classrooms and in other places of work. This claim can be extended to using technology to transform the doctoral thesis from a purely linguistic form to a living form which enfolds (Bohm 1992) the linguistic within it. The multimedia version of this thesis is available at www.ictaspoliticalaction.com (see also Appendix C).

This thesis is contributing to a knowledge base around teaching ICT in schools. This is changing the form of theory so that ICT becomes both the subject matter and the medium.

While multimedia forms are becoming more common the discourse around multimedia is still in a linguistic form. This thesis is moving toward a living theoretical basis for the inclusion of ICT within practice. In this sense I have created the knowledge base that Snow (2001) and Hiebert *et al.* (2002) call for. Through the thesis I am creating a conceptual framework around political action. In the form of the multimedia thesis I have shown how I am doing it. My research and the multimedia thesis are contributing to the idea of teachers and other practitioners as theorists and shows the need for teachers to equip themselves around knowledge of theory. I have reconceptualised ICT as political action.

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Appendix A

Below is the text of the ethics statement and agreement that I have made with research participants. As this research has been carried out over a long period of time there have been minor adjustments to this statement.

Ethics Statement

Research into My Practice as a Teacher of ICT and ICT Consultant

I am conducting a research project into aspects of my work as a teacher and information technology consultant.

This project will be carried out in a completely open way; there will be no attempt to collect data without the participant's knowledge or to mislead the participants in any way.

Participants have the right to withdraw at any time.

If participants withdraw they may do so retrospectively and their own data will be destroyed.

Subject to the Data Protection Act, information obtained about a participant is confidential and if published will not be identifiable as theirs without their consent.

Where participants are interviewed or answer questionnaires they have the right to read a transcript, and may withdraw or change any part of their contribution that they wish.

Participants work will only become part of the multimedia version of this thesis with their consent.

I believe the organisations where my research takes place may be identifiable. Because of this I am requesting the permission of the relevant authorities to give their consent to the use of the name of the organisation.

I retain the right to report my work provided those involved were satisfied with the fairness and accuracy of it and it and it is within the law.

I consent to the use of my multimedia materials in the written and online thesis. I understand that I will retain my copyright in any such materials.

_____ _____

Researcher Participant

Appendix B

Permissions and Consents

I have sought and obtained the consent of the two organisations that I have carried out my research within to carry out the research and to name the organisations.

I have sought and obtained the permission of participants in the research to reproduce their reports and their multimedia artifacts including photographs and videos. In relevant cases consents from parents of students were also obtained.

These statements have been scanned and are provided within the multimedia thesis in electronic format. They can be accessed at:

http://www.ictaspoliticalaction.com/pages/chapters/appendices/appendixb.html

and on the accompanying DVD-ROM in

<drive letter>:/pages/chapters/appendices/appendixb.html

Appendix C

Accessing the multimedia thesis

The multimedia thesis is developed as a website which is published at:
http://www.ictaspoliticalaction.com
The multimedia thesis is best viewed online from the website. However, for convenience, the website has been copied to DVD-ROM and accompanies this printed version of the thesis. In order to view some of the multimedia content you may need additional software on your computer. The software may include:

A web browser
The web site has been successfully tested with MS Internet Explorer 7.0.600, Safari 3.1.1, and Mozilla Firefox 2.0.0.13. You should be able to access the content on DVD-ROM using any of these browsers.

Adobe Acrobat Reader
available from
http://www.adobe.com/products/acrobat/readstep2.html

Windows media player for Vista or XP
available from
http://www.microsoft.com/windows/windowsmedia/default.mspx

Windows Media Player for Safari
available from
http://www.apple.com/downloads/macosx/video/windowsmediaplayerformacosx.html

Windows Media Player for Firefox
available from
http://port25.technet.com/pages/windows-media-player-firefox-plugin-download.aspx

QuickTime 7 for Mac or PC
available from
http://www.apple.com/quicktime/download/

Adobe Flash player
available from
http://www.adobe.com/shockwave/download/download.cgi?P1_Prod_Version=ShockwaveFlash
In most cases if you need this software you will be prompted by your browser to download it.