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EXPLORING TRANSFORMATIVE POSSIBILITIES IN THE USE OF COMPUTERS IN EDUCATION

by

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I wish to thank my wife, Shemeen and daughter, Tahseen, for their patience and endless encouragement during this course.

I'm glad it's over, let us now begin.

ABSTRACT

This mini-thesis deals essentially with the issue of *computers-in-education*. It is a very basic investigation into the impact of computers on the learning and teaching environment and is particularly concerned with the emancipatory possibilities of using computers in the teaching situation.

Computer technology, while being regarded by many as a luxury that a changing South Africa cannot afford, is too powerful and pervasive a phenomenon to be ignored in a modern information society such as ours. Education is about creating opportunities for students to acquire the necessary skills and knowledge to cope with the challenges of society and to transform it. In my mini-thesis I propose that the provision of computer skills to students and teachers, is an important contribution towards the aim of social transformation.

The mini-thesis, is not about technology per se, but rather about the impact of technology on education. I have attempted to search beyond the level of mere excitement about computers with the purpose of finding ways in which computers can be used to advance emancipatory educational practices.

I examine the concept of People's Education and its historical roots within the continuing education crisis in South Africa. I briefly describe the education crisis and argue that education is not politically neutral. I show how education is consciously

constructed as an ideological state apparatus through which the state reproduces the dominant ideology and associated values. Schooling generally presents the values and interests of the socially dominant groups as if they are universal truths. Schooling is an important means of establishing and reproducing the social consent and legitimacy for the state to rule in the way it does. Within a racist state, such as South Africa has been until now, schooling is an important instrument in maintaining the racist values upon which such a society is constructed.

An important argument of this mini-thesis is that People's Education is an attempt to challenge and transform the power relations within apartheid schooling. Among other things, People's Education attempts to democratise the process of developing learning materials and teaching practices. It is in this context that I examine the role of computers-in-education. I am interested in establishing to what extent the use of computers help to give students a greater voice. I look at the creative possibilities of materials development and observe who gets silenced by the introduction of technology within learning groups. I consider to what extent the use of computers lends itself to collaborative-, peer-learning and small-group work in order to establish a greater degree of emancipatory practices. An underlying concern in all these is to create wider access to technical skills and resources, which have historically been enjoyed mainly by the privileged groups in the South African society.

I argue that there are as many dangers in using computer technology as there are emancipatory possibilities. A critical approach is essential in eliciting the transformative possibilities of computer supported education. I refer to the Computer Supported Education Unit (CSE) at the University of the Western Cape (UWC) and its role within the institution's Academic Development Programme (ADP). As the current co-ordinator of the CSE project I reflect on attempts by the project to use computer technology to promote the ADP, which may be regarded as the university's biggest single programme committed to educational change. The usefulness of the computer for large-group teaching is also considered in this context.

A large part of the mini-thesis focuses essentially on my own classroom teaching practice. It reports on an action research investigation into the computers-in-education course for Higher Diploma in Education (HDE) students at UWC. The research, consisting of two action research cycles, reflects critically on my own practice as much as on the impact of the course on the students. The research involved some aspects of the work of the Community Education Computer Society (CECS).

My findings suggest that the use of computers in education cannot be fully understood without understanding the issue of power relations. My research has revealed that the impact of computer technology on educational practices is mediated by issues such as race, gender, language and a host of cultural factors.

This investigation I believe, lends valuable insight into the emancipatory possibilities of the technology, which is the main concern of the mini-thesis.

CHAPTER ONE

DEFINING THE CONTEXT

1.1 Introduction

This study should be seen against the backdrop of educational research as a form of political contestation in South Africa. Educational research has the effect of either supporting or alternatively challenging the status quo directly or indirectly. The arena of educational research has become particularly important in the light of the current socio-political changes initiated by the South African state. There appears to be an attempt by the current government to seize and maintain the initiative in the field of educational change (Unterhalter & Wolpe, 1989). In the light of the present national political negotiations, policy research has been accord a high priority by the major parties involved. All sides of the political spectrum require a strong research base to inform their policy proposals during the negotiations process. It appears to me that the political urgency of policy research has had the effect of turning educational research into a process engaged in mostly by "experts". The proliferation of such "policy experts" and private consultants reflect a tendency both within the ranks of the political left and right. The point here is not to argue against policy research, but rather to alert ourselves to the possible danger of elitism that could emerge from it. If we leave it to

the "policy experts" to bring about educational change, we may find that changes are imposed from the top and that such change may not be sensitive enough to the needs of those practitioners on the ground.

While policy research remains important for political change, it is equally important for practitioners themselves to engage in forms of action research[1] in order to initiate change on grassroots level. Emancipatory action research is centrally concerned with bringing about change in the practices and understandings of people. Although it would be unrealistic to claim that action research could bring about social transformation on its own, I believe it can create the necessary conditions which make broader transformation possible. Action researchers initiate and engage in the process of transformation which many researchers merely theorise about. The importance of this is well captured in Marx's 11th Thesis on Feuerbach.

> Philosophers have only interpreted the world in various ways ... the point is to change it (Marx, 1941: 30)

I hope to show how I started to move from a position of merely theorising about change to one of getting involved in the actual process of change, with all its social and personal ramifications. My own transformation can be largely attributed

[1] I give a more detailed exposition of action research later in this chapter as well as in chapters three and four.

to the M.Ed. Action Research course[2] of which this mini-thesis is the final assignment. In order to lend a better insight into the context within which this mini-thesis appears, I need to say something about my personal background and the things which helped to colour my own views.

1.2 Personal background

I grew up in what can be described as a working class community, Bonteheuwel, in Cape Town. I attended one of the more prestigious middle class Coloured[3] schools - Livingstone Secondary School. It is here where I experienced some of my early political influences. The school's senior staff and most of the other teachers were members of the Teachers League of South Africa (TLSA)[4]. Nevertheless, my initial involvement in protest politics was through the early Black Consciousness Movement[5], which was then regarded as an anathema by the school's authorities. I became the president of the South African Black

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[2] The M.Ed Course was conducted by the Didactics Department, UWC during which time I undertook an action research project.

[3] "Coloured" here denotes one of the four major racially classified population groups - Africans, Indians, Coloureds, Whites - in Apartheid South Africa. There are currently seventeen independent racially-based education departments in South Africa.

[4]The Teachers League of South Africa formed part of the Unity Movement of South Africa (UMSA), now renamed the New Unity Movement (NEUM), which has fought against Apartheid education for many years. The NEUM is perceived as political rivals to other liberation movements such as the Black Consciousness Movement, Pan Africanist Congress and African National Congress.

[5] Black consciousness was popularised in the 1970's by student leader Steve Biko, and formed the basis for future protest mass action led by sympathisers of the African National Congress in the 1980's (Price, 1992).

Scholars Association (SABSA)[6], which was one of the fore-runners of the present Congress of South African Students (COSAS). I was detained by the security police while in standard nine. Although this experience was traumatic, it helped to "politicise" me even more. In 1976 I left South Africa to undertake four years of study at Karachi University in Pakistan. While there, I was further exposed to the political struggles of various "third world" liberation groups. These experiences helped to broaden my political horizons and introduced me to socialist theories of change. On my return in 1981, I continued my studies at the University of Cape Town (UCT). I became active within the militant politics of the Azanian Students Organisation (AZASO)[7] which aimed at promoting political resistance and subverting the status quo.

I also became active in community-based political struggles through the activities of youth and civic bodies. These activities formed part of the national liberation struggle conducted by what was later known as the Mass Democratic Movement[8].

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[6] SABSA was a black consciousness organisation aimed at recruiting High school students into the anti-Apartheid struggle. COSAS emerged in the 1980's with the ascendancy of the ANC's non-racial form of political struggle.

[7] AZASO was the non-racial student liberation movement which was aligned to the ANC-oriented Mass Democratic Movement. AZASO has been transformed into what is presently known as the South African Students Congress (SASCO).

[8] The Mass Democratic Movement (MDM) occupied the political vacuum which was created by the banning in 1962 of national liberation organisations, such as the African National Congress (ANC), the South African Congress of Trade Unions (SACTU), and

I assumed a teaching post at Westridge High School in Mitchells Plain[9] in 1983. The repressive nature of Apartheid schooling, I found, made it difficult to translate some of my "activist" ideas into classroom practice without thereby risking my job. My attempts to subvert the Apartheid curriculum in the classroom through "alternative" History and English lessons, as well as my active involvement in the politicisation of the school's Student Representative Council (SRC), incurred the wrath of both the school principal and school inspectors. In the midst of the nation-wide school protests in 1985, I had to abscond from my duties as a teacher because the security police were seeking to detain me.

As I have tried to point out above, my interest in bringing about educational change stemmed from my desire to make a contribution to the wider process of political transformation. However, if I reflect on it now, it seems to me that my political fervour then was not matched by an adequate theoretical understanding of educational transformation on both the micro and macro levels. This commitment to change was strengthened by the theoretical grounding provided by the B.Ed.[10] studies which I pursued at the University of the Western Cape (UWC) in 1987 - 1988. While the

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the South African Communist Party (SACP). The MDM consisted of ANC-aligned organisations such as the United Democratic Front (UDF), the Congress of South African Trade Unions (COSATU), and the National Education Crisis Committee (NECC) (Barrel, 1984).

[9]Mitchells Plain is the largest "Coloured" township in South Africa, and can be described as being largely working class in character.

[10]This is a post graduate course which can be regarded as the equivalent of an honours course in Education.

B.Ed. Course certainly provided me with valuable insights into the change process, I do not want to suggest that it actually gave all "the answers". In fact, despite my supposed "enlightenment" I still found myself guilty of engaging in classroom practices which were not always emancipatory. I therefore felt the need to pursue further academic studies with the aim of improving my classroom practices and bringing about educational transformation.

1.3 The M.Ed. Action Research Course

1.3.1 My entry into the M.Ed. Course

I joined the Didactics Department[11] at UWC, charged with the responsibility of co-ordinating a computer laboratory aimed at serving the needs of Education students. I was responsible for teaching a computer-based materials development course to the Higher Diploma in Education (HDE) students.[12]

My decision to join the Masters in Education (M.Ed.) Action Research class came after two years of doubt and confusion about what I really wanted to do. I initially felt that I would be more empowered as an education "activist" by getting involved in

[11]This Department is committed to giving greater substance to the UWC's commitment to democratisation. The Department has over the years attempted to replace the philosophy of fundamental pedagogics in their method (subject didactics) courses with that of critical pedagogy.

[12]I explain the nature of this course in more detail when I describe my research project in chapter 4.

examining and analyzing various theories about education, sociology and political economy. I identified that type of intellectual activity as a way of continuing my contribution to the building of a better education system. I was of the opinion that type of role would be more effective than my remaining a teacher at a secondary school where I would be trying to widen the cracks in the apartheid wall with the few and mostly ineffective intellectual tools at my disposal.

Having been an activist in community and education struggles, I felt the need to reconcile my academic and theoretical interests with my activism in community-based organisations. I have been involved with teachers engaging in resource development and skills training, through both the Western Cape Teachers Union (WECTU) and the Community Education Computer Society (CECS). My longer and more significant involvement in the latter, motivated me to consider more serious reflection on the role of computer technology in developing emancipatory teaching resources and to consider how that role relates to democratic classroom practices.

1.3.2 Initial uncertainties

My initial plan was to do ethnographic research on in-service teacher training in the use of computers for resource development. Thinking about what it would mean for my continued practices in the organisation and ongoing in-service training (INSET) workshops, I started doubting the wisdom of my initial

decision. I feared that I could land up doing highly theoretical research, which may or may not be read by other academics. I also had to consider what this research would mean in practical terms for those "non-academic" teachers who actively participate in these programmes and who are thus directly affected by them. I asked myself, "Would a theoretical analysis on computer usage in a politically embattled education system necessarily *change* anything in the way things are currently done and structured?". The practical and political purpose of my research intention was an important consideration in my eventual decision about the nature and direction of this research project.

Through my involvement in the Didactics Department, whose focus is the practice of teaching and the active reflection on related theories in practice, I enjoyed an organic link with other education practitioners. My location within the Department, I believed, would afford me the opportunity to establish a dialectical[13] relationship between educational theory and practice. That was my major motivation for joining the action research M. Ed course. The motivation was rooted very much in the possibilities for educational change which the course could offer.

On a personal level, I was hoping that the action research course would help me develop a deeper understanding of my own teaching

[13] A relationship in which theory and practice mutually influence and shape each other, each with its contradictions and similarities contributing to a dynamic growth in understanding the action research process (Winter, 1989: 25).

practices in the computers-in-education courses that I offered to students (I will elaborate on this in chapter three). One often falls into a routine which tends to make one less questioning of one's own teaching practices. I was also hoping that the course would help me come to terms with the contradictions of using a "first world" technology in a "third world" situation, and develop a new theoretical discourse within this field. This, I thought, would entail theorising some of my practices in a dialectical and self-reflective manner.[14] I expected my involvement in the M.Ed. course to help inform the way I would think of structuring and developing the computers-in-education course in the future.

1.3.3. Anxieties

During my initial exposure to action research it seemed straight-forward, quite clear and neatly-packaged into a four-cycle method of planning, action, observation and reflection. However, in the process of engaging more thoroughly with some of the action research course-readings in the M.Ed. class, a maze of complexities emerged. Concepts and issues concerning change such as emancipation, education, research, democracy, theory and truth started to appear to be much more intricate than what I previously thought. My old "macro-theories" of educational change

[14]The omission of "about" after "theorising" is deliberate. "Theorising practices in a dialectical way" helps me to overcome the artificial conceptual separation between theory and practice, which the phrase, "theorising about practices" would be implying on the other hand. I discuss the relationship between theory and practice in more detail in chapter five.

and liberation were now placed under closer scrutiny. All these conceptual constructs and their theoretical assumptions, which I have always simply taken for granted under the label "progressive", now needed to be unpacked. In starting this process, I feared that I was getting into an ongoing spiral of questions, without adequate answers. There I stood, with all the assumptions which I had based my worldview on, being kicked out from under me. This undoubtedly left me feeling very insecure. What really worried me then, was the fact that there did not appear to be any one answer to the ever-increasing number of questions.

The woolliness and looseness of thought that started to replace my previously clearly defined thoughts, made me feel uncomfortable and intellectually insecure. In retrospect, I came to appreciate the fact that the process of change was not something "out there", but was very much about changes within our personal selves, and therefore very difficult to internalise.

Schon (1971: 12) commenting on the complexity of change, explains that all real change involves

> passing through zones of uncertainty ... the situation of being at sea, of being lost, of confronting more information than you can handle.

The above quotation reflects very much how I felt throughout most of the action research M.Ed. course. The course exposed some of the contradictions inherent in my theoretically-rooted

conceptions of action research. As my understanding of action research deepened, the less I felt that I understood it. The seemingly simple idea of theory-informing-practice and practice-informing-theory now proved to be problematic to me; the solid "truths" based upon macro-social theories seemed not much substantiated any longer; the general perceptions on which I based my understanding of the world and conducted my social and political practices, now seemed questionable. One's automatic response is to resist and complain, and then reflect, become more confused, reflect again, and ... hopefully develop some conceptual framework sound enough to keep one's world turning in the right direction for a while.

I remember how anxious I became when I realised that my colleagues in the M.Ed. course were already "experimenting" with their research projects, while I was still grappling with the uncertainty about which problem area to research. I was unsure about which aspect of computers-in-education I was to research and how best to approach it.

I found the following passage consoling:

> Action Research does not mean that, as a teacher-researcher, you have to undertake a vast plan of action in order to justify calling it "research". Also there need not be a "problem" in your classroom as such, in order to justify your doing Action Research. There may simply be something which you might like to see happening slightly differently (Davidoff & van den Berg, 1990: 33).

1.4 Action Research

1.4.1 What is action research?

I will not attempt to offer a definition of action research since I do not believe that it is the most useful way to explain a concept. A definition, I believe, tends to absolutise a phenomenon, ignoring the changing nature of reality. It is with such caution that I shall try to provide a brief and a necessarily superficial overview of what the action research process entails. I deal with action research throughout the various chapters of this mini-thesis and hopefully that would contribute to a better understanding of action research than any single explanation could possibly do.

Action research is located within the qualitative research paradigm (Carr & Kemmis, 1986) which operates on the premise that reality is socially constructed through the collective meanings of individuals, rather than being cast in stone "out there", waiting to be discovered.

John Elliott (1981: 17) commenting on the change-objective of action research writes that action research is

> the study of a social situation with a view to improving the quality of action within it.

Emancipatory action research[15] focuses not only on the process of change, but more so on the strategic direction of the change and the place of human agency in that process of change. It asks the question, Change towards what end? It treats change as a dynamic whole rather than merely a set of strategies. In this way it differs on the one hand, from quantitative research which seeks to discover and understand causal relations in social situations, and on the other, from interpretive-qualitative research which merely seeks understanding by examining the experiences of subjects within situations (McNiff, 1988).

The action-research approach makes use of what can be called four-phased cycles or spirals - planning, acting, observing and reflecting. These can be repeated continuously, with each cycle establishing a new layer of understanding and improved practice from the perspective of the action researcher. The deeper I became involved in my own action research process, the more I realised how complex these phases are. In many instances these "phases" and "cycles" are not clearly identifiable and ought not to be understood within a mechanistic way. One often underestimates the complexity and the slowness of the process of change.

1.4.2 Political context of action research

The key role of the readings on critical pedagogy which formed

[15] Emancipatory action research can be distinguished from practical and technical action research. I discuss the various strands in action research later in chapter two.

part of the M.Ed. action research course, helped to address my uneasiness about some aspects of action research. One of these concerns was the fact that action research appeared to be too small-scale or too specific to relate to the macro-levels of political change. While I do not agree with sceptics like Gibson (1985: 59) who talks about "its (action research) powerlessness, even irrelevance, in the face of structural inequality and injustice", I share the concern about the need to link small-scale research to the issues of macro-politics. At the same time, I do not believe that large-scale quantitative research would necessarily bring us closer to "*the* truth". Nevertheless, my exposure to critical pedagogy helped to draw together, for me at least, the various micro and macro strands of action research. It is important that teachers are able to link their individual classroom practices to the larger educational imperatives in society. Emancipatory action research can turn classroom practice into a political strategy for social change.

Action research offers the potential for teachers to become "transformative intellectuals" (Giroux, 1988: 121). It gives teachers the opportunity to inquire systematically and critically into the patterns of teaching and learning going on in the classroom. Action research, in my opinion, is a democratic form of research which enables teachers to develop a coherent socio-political perspective necessary to change the overall form of schooling in South Africa.

Action research has the potential to be transformative by translating the political rhetoric into practical action. If widening the cracks in the wall of Apartheid forms part of a wider transformational process, this research initiative can be seen as an important vehicle for change on a grassroots level.

Carr and Kemmis (1986: 205) explain that:

> Emancipatory action research is an empowering process for participants; it engages them to participate in the struggle for more rational, just, democratic and fulfilling forms of education. It is "activist" in that it engages them in taking action on the basis of their critical and self-critical reflection.

1. 5. Education crisis

1.5.1 The current crisis

This action research initiative assumes its significance within the context of a national education system in crisis. Education in South Africa has been a central arena in which struggles for social and political hegemony[16] have been fought. The issue of ownership and control over education and its future direction is still an ongoing battle. The struggle for educational change is closely linked to the broader socio-political changes in the country. On the one hand, significant progress has been made in getting the State to recognise previously outlawed teacher structures like SADTU, as well as the State's willingness to

[16]McLaren (1989: 173) refers to hegemony as a struggle in which the powerful win the consent of those who are oppressed, with the oppressed unknowingly participating in their own oppression.

negotiate with democratic education structures such as the National Education Co-ordinating Committee (NECC). On the other hand, the State is still continuing with the unilateral restructuring of education (Samuel, 1992: 3). According to John Samuel, Head of the Education Desk of the African National Congress (ANC)[17], the present government aims to control the education system and maintain the privileges of the dominant social groups. An example of this unilateral restructuring is the introduction of Model C[18] schooling. Samuel (1992: 3) is highly critical of this, arguing that it

> seeks to privatise education for the benefit of the privileged sectors of our society.

In 1992 the Minister of Education and Culture in the House of Assembly[19], introduced legislation which transformed all non-private white schools into what is referred to as "Model C" schools. According to this legislation the operational costs of these schools would rest with the schools' parent community

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[17]The ANC is a major liberation movement in South Africa, seeking to establish a non-racial democratic society.

[18] This model was one of a number of alternatives previously available to white schools. Model C schools have an "open" option regarding access according to which the local school governing bodies determine admission policy.

[19] Note that there are 17 education departments of which the House of Asssembly (Department of Education and Culture) controls white education. Apartheid in education also resulted in separate departments for Coloureds (House of Representatives) and Indians (House of Delegates) respectively, as well as in several departments for Africans if one included the Bantustans. The Bantustans are tribally-based "self-governing" homelands created by the Apartheid regime for Africans .se of Representatives (Coloured education), House of Delegates (Indian education), House of Assembly (White education) and the Department of Education and Training (African education).

(Sayed & Carrim, 1992: 28). Cautioning against the State's moves to "commodify"[20] education, they argue that

> semi-privatising white education at this point in South Africa's history insulates white schools from any future redistribution of educational resources (Sayed & Carrim: 1992: 28).

The continuing crisis is manifested by symptoms such as chalk-downs and class boycotts in the Transvaal region evoked by intimidation and suspension of teachers on political grounds (Maurice, 1992: 18). The proposed retrenchment of thousands of teachers and increasing unemployment of qualified teachers in the Department of Education and Culture (DEC), House of Representatives. This Department is faced with a R94 million budget deficit which it hopes to deal with by, among other things, retrenching up to 3 200 teachers and increasing teacher-pupil ratios in classrooms. Protests included a three day sit-in at the DEC head offices in Cape Town by an 11-member national delegation of the South African Democratic Teachers Union (SADTU)[21] , mass marches and placard demonstrations (Fischer, 1992: 3).

The deeper crisis in education is reflected in the continued disastrous matric results of the Department of Education and

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[20]Taylor (1990: 191) uses this term to refer to the treatment of education as a commodity to be marketed and to increase profitability.

[21]SADTU is the South African Democratic Teachers Union which is an anti-Apartheid teacher union.

Training (DET)[22] schools. In 1991, 120 528 of the 306 480 DET matric candidates passed the matriculation examinations. This constitutes a mere 39 percent out of which 10 percent were eligible for university admission. At the end of 1991 the per capita expenditure was R4 103 for every white child and R777.73 for every black child (Sayed & Carrim, 1992).

1.5.2 Historical perspective

The current crisis has roots running deeply into many years of Christian National Education (CNE)[23] under Apartheid (Enslin, 1987: 139). Schools have always been regarded as forms of social and political control. Althusser (1972) describes educational institutions as ideological state apparatuses (ISAs) which are aimed at creating ideological legitimacy for the state to rule. The basis of Bantu education was exemplified by the former South African Prime Minister, Dr H.F. Verwoerd's (Hansard, 1953: col 2033-2041) infamous statement:

> It is the policy of my department that education would have its roots entirely in the Native areas and the Native environment and the Native community ... There is no place for him in the European community above certain forms of labour. For that reason it is of no avail for him to receive a training which has as its aim absorption in the European community.

[22]The DET is a racially-exclusive education department responsible for African education.

[23] CNE was adopted by the Nationalist government in 1948 as the official education policy. CNE formed the foundation upon which Apartheid education was built.

Associated with Bantu education was central control in both curricular content and general administration. However, the State's intervention in education was not a smooth, linear process. The continuous crises in education was also a consequence of continued resistance by democratic organisations like the African National Congress, the Progressive Night School Movement and the African Teachers Association in the 1950's (Kallaway, 1987: 19).

African education, because of its repressive nature has given rise to conflict which has not been not limited only to the school, but often spilled over to wider areas of political conflict in the community. The school, particularly since the Soweto uprising of 1976, has become an embattled zone for opposing political ideologies. Schools form an organic part of the general political crisis and conflict, and often reflect these most militantly. During these crises, the role of schools as ideological state apparatuses (ISA's) were seriously challenged. Many schools and universities became sites of resistance, challenging the legitimacy of Apartheid rule (Lodge, 1987).

1.5.3 Resistance

The social reproduction theory of Bowles and Gintis (1976) shows that schooling has a deliberate hidden design in preparing students for integration into a capitalist society. Looking at South Africa, one can clearly see how Bantu Education was

intended to reproduce not only cheap low-skilled labour, but also passive, docile students as potential workers. But as other resistance theorists like Apple (1982) and Giroux (1983) point out, there is no smooth correspondence between education and capitalist production. As borne out by the militant forms of resistance in South Africa, education appears to be tension-ridden and it experiences conflict between various class forces which occur simultaneously on various cultural, social and political levels. Education is clearly not politically neutral and represents a terrain of constant struggle.

In 1985 the education crisis reached unprecedented levels. The State resorted to three states-of-emergency. Many schools were closed down or alternatively forcibly kept open by soldiers patrolling the corridors of school buildings. However, the repressive measures did not succeed in destroying democratic structures in education. On the contrary, they served as an impetus for the establishment of large national democratic structures aimed at transforming education. Colin Bundy (1986: 53) recalls,

> Thousands of young South Africans were detained, whipped, teargassed, and fired upon in 1985, even larger numbers were mobilised at rallies, in organisations, and behind street barricades.

One such structure which grew out of the period of intense repression was the National Education Crisis Committee (NECC), formed towards the end of 1985, under the guiding banner of People's Education for People's Power. Zwelakhe Sisulu (1986: 33) in his keynote address to the NECC Conference in 1986, explained

that the struggle was being moved from the streets back into the schools,

> ... challenging state control over education and transforming schools into zones controlled by the popular movement (Sisulu, 1986: 33).

The NECC was later renamed the National Education Co-ordinating Committee perhaps to signal its move from merely co-ordinating "rolling mass-action" and crises, to its new pro-active role of transforming and restructuring education. It is not surprising that the emphasis of its work has shifted to policy-research, under the National Education Policy Investigation (NEPI).

With the release of Nelson Mandela and the unbanning of the ANC and other political organisations in 1990, the education crisis did not disappear, but altered somewhat in nature. It appears as if the declared commitment by the De Klerk regime to abolish Apartheid, had created a crisis of its own. Uppermost in the minds of many people were questions like, "Do blacks have the necessary skills to move into positions of power and control in the various strata of government?"

The importance of education was underscored by Mandela's call to all students to return to school (Anon, 1990), despite the continued existence of repressive conditions in African education. The crisis of education provision is an ongoing one. The forceful occupation of a few empty white schools by black students (Cruywagen, 1992) succeeded largely because of

continued mass action in this regard. Education departments remain racially segregated, despite some leniency in terms of enrolment of black students at some white schools. Many of these superficial reforms have created their own contradictions. These include issues of language, medium of instruction, and various levels of educational disadvantagement experienced by black students entering white schools. Apart from the financial constraints, geographical distance from the school has many socio-cultural implications for the affected student.

1.5.4 The challenges ahead

With the process of liberalising and opening up of our Apartheid society, the State is and will continue to be faced with large numbers of marginalised communities which now make demands for educational provision. The State on various occasions alluded to the use of educational technology - such as satellite-broadcast education - as a possible solution. This could present some problems in the face of the existence of 66 percent basic illiteracy and innumeracy (Sayed & Carrim, 1992). Can education by satellite adequately satisfy the need for basic schooling? How many of the masses living in areas without electricity, will be reached? If reached, what would the quality of such education by satellite be? There is a danger that such education could become a form of mass gutter education, producing an army of certificated illiterates.

I am, however, not opposed to well-researched and well-planned

models of distance education. Computer technology, I would argue, can and should assist the educational process, but not replace teachers and schools. It is nevertheless simplistic to argue that all teachers teach better than computers. Where teachers use drill-and-practice and other transmission forms of teaching[24], the computer may be better at those. My argument rests on the need to discover and harness the progressive possibilities in using computer technology as an educational medium. To juxtapose the teacher with the computer is not a very useful way of approaching technology in education.

The future South African government will continue to be faced with an education crisis until the entire education system is restructured as part of an overall socio-political and economic transformation in the country. Computer technology and distance education can possibly play an important role in alleviating the continued shortage of qualified teachers and educational resources. The issue of educational technology, however, needs to be considered critically and its introduction into schools must proceed cautiously. I deal with the issue of technology and possible teacher displacement in chapter two.

1.6 Chapter outline

In Chapter one I have attempted to contextualise this mini-thesis. I described some of the issues to be addressed and the

[24] Transmission teaching refers to a linear form of teaching in which the teacher as the all-knowing, passes on knowledge to the student who is a passive recipient (Shor, 1987: 105).

socio-political environment within which my action research is located. The ongoing education crisis was discussed. I sketched some personal background which would help to illuminate my engagement in action research. I commented on the emancipatory possibilities of action research and considered its significance within the process of social transformation in South Africa.

Chapter two focuses on computer technology. I consider the relevance of using computers in the context of educational change and social empowerment. I examine the implications of Habermas' theory of knowledge-constitutive interests for the use of computers-in-education. This sets the context within which I consider the socio-political implications in using computers. I examine some conceptual issues in the various discourses about computers-in-education - technicist approaches on the one hand, and emancipatory possibilities, on the other. I attempt to demystify the computer as a resource and argue that the use of the computer is a human act, and should not be perceived merely as a tool with an autonomous existence outside of human relations. I attempt to place the discussion within the context of People's Education and its stated objectives of transforming education.

In chapter three I discuss the first cycle of my action research project. My research entails a period of self-reflection on my teaching of the computers-in-education course to HDE[25] (Higher

[25]The HDE course is a post graduate teaching diploma course. It attracts both fresh graduates as well as experienced teachers who wish to improve their professional qualifications.

Diploma in Education) students at UWC. My research is closely linked to and informed by the *discourse of change* developed within the M.Ed. Action Research class. Having worked with my fellow M.Ed. colleagues within groups and engaging in debates about various theoretical readings, helped to make the research process for me, more of a real-life concrete activity and less of an abstract intellectual exercise.

I examine the first action research cycle and discuss its theoretical underpinnings. I find it important and necessary to discuss action research as a process and consider possible tension between micro-levels of research and macro-theories of political economy. An elaboration of the various schools of thought in action research lends an important insight into the different approaches and their socio-political agendas.

Chapter four looks at the second cycle of my action research project. In this chapter I show how I attempted to deepen the research process. This cycle was directly influenced by my research findings in the first cycle. In this cycle I manage to conduct research on CECS which I intended, but did not manage to do within the first cycle. It is in this second cycle that the research process acquires clearer meaning for me.

In chapter five I reflect on the entire research process. I discuss the complexities of implementing change. I look at conceptual issues concerning action research as research methodology and as strategy for educational transformation. I

view the significance of my research findings and make wider inferences. I consider to what extent various types and levels of transformation had occurred; what contradictions had reared their heads; what confusion and frustrations had resulted in the process; but most importantly, what possibilities and hope had emerged.

CHAPTER TWO

COMPUTERS IN EDUCATION - POSSIBILITIES AND LIMITATIONS

2.1 Contextualising educational technology

In this chapter I examine some of the theoretical arguments about computers in education and attempt to flesh out the conceptual framework within which I discuss my action research project in later chapters. I suggest that there are dangers as well as transformative possibilities in using computers for education. A critical approach, I maintain, is essential in eliciting the transformative possibilities of computer supported education (CSE)[26]. I argue that technology is not politically neutral and that it needs to be problematised conceptually. Moreover, information technology is too infused in our society and too powerful a phenomenon to ignore. It is necessary to demystify perceptions of computers, open up access to the technology and redirect their use in accordance with popular democratic ideals in education. Computers despite their anti-democratic origins can, and ought to be used to facilitate democratic change in education.

[26] The term CSE has been adopted at UWC to replace the term CBE - computer based education. It suggests that the computer be viewed more generally as a learning/teaching aid rather than only as an instructional medium in education. The term, CSE does not preclude the use of computer-based education, neither does it suggest a total reliance on the computer as a teaching medium.

The use of microcomputers in education has become an increasingly important issue within current debates about educational change. Expectations about the educational impact of computers appear to be high, as demonstrated by the extent of investment in computers by educational authorities in the leading industrialised countries such as the United States of America, Canada and Britain (Olson & Sullivan, 1988 :95). A few years ago an annual increase of 56 percent in the use of computers in the United States was reported (Apple, 1989). The British government on its part, has made information technology a compulsory component of the new British National Curriculum. Computers-in-education, it appears, has become a major industry which is driven more by market incentives rather than by educational imperatives[27]. Mehl (1991: 15) asks the following pertinent question,

> Are we convinced that the great technology high on which we all find ourselves actually works educationally?

The South African Government appears to have made ill-informed moves in its attempt to introduce computers into Black schools. The Department of Education and Culture (DEC) in the House of Representatives, for example, invested millions of rands to install 64 kilobyte Commodore computers in the Coloured schools. This venture ran aground as a result of various factors, some being technical, others political.

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[27] Julie (1990: 226) argues that a multi-million rand computer industry has been developed to "remedy deficiencies" in so-called disadvantaged students. This industry, he argues, designs products which sustain the social and political order rather than challenge its inequities.

> The major implementation intended was of the drill-and-practice variety, the purpose not being to promote critical thinking, but to find efficient ways of teaching the students the fixed content of state-controlled syllabuses (Julie & van den Berg, 1989: 34).

The Department of Education and Training (DET) similarly invested millions of rands of the taxpayers' money into ill-fated computer projects. This emerged in the wake of the scandal surrounding the Learning Technologies Project in 1988 (Taylor, 1990: 188). With the political shifts currently afoot in South Africa, government ministers have been making pronouncements about solving the education crisis through educational technology. Gerrit Viljoen (1987) referred to the government's plan to offer distance education through television and radio. It is also well known that the present government is well-disposed to the idea of putting more computers into schools. Taylor (1990: 191) refers to the attempts by the South African government, in alliance with industry, to "commodify" education through the IBM Video Education Project in 1979 and the IVIS Interactive Video Project of Learning Technologies in 1987. According to Taylor (1990: 195), teaching was regarded as "a one-way transmission of byte-sized bits of information." He shows how teachers were deskilled by that exercise and their role reduced to that of "facilitating the deployment of high-tech curricular packages" (Taylor, 1990: 191). Giroux (1988: 124) refers to similar initiatives in the USA where schools were presented with "teacher-proof curriculum packages" as part of a wider system of "management pedagogies". These terms reflect a view of education according to which

> ... knowledge is broken down into discrete parts, standardized for easier management and consumption, and measured through predefined forms of assessment (Giroux, 1988: 124).

This view of education reduces teachers to classroom technicians managing pre-defined curriculum content and procedures. Teachers are accordingly removed from the process of curriculum development and innovations, and are required to implement the theory conceptualised by outside educational experts and bureaucrats. Teachers are thereby disempowered and silenced within their own teaching environment. The use of computers in this context would promote transmission learning and would help to maintain the status quo rather than transform it.

I believe that the issue is not so much whether we need computers or not, but rather *how* we would use computers and to what end. The absence of adequate research initiatives dealing with the socio-political impact of computer-supported education in South Africa, is cause for concern. The need for "progressive"[28] educationists to respond effectively in this respect to the South African state's policy of reform and co-option in education, becomes a political imperative. The present government appears to be committed to the use of computers for education within the next few years. The question is, How do we ensure that the technology is not used to entrench social inequities of the current schooling system?

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[28] I use the term to refer to somebody who, through his/her educational practices, tries to bring about educational transformation.

2.2 Technology and education

Like technology, education itself is a contested terrain of competing political ideologies. The dominant social order defines education in terms of the mastery of techniques and transmission of knowledge which it claims are needed to make students fit into the existing economy and society. Education accordingly, is designed to make students conform to the existing social order and to reproduce the racial, class and gender hierarchies upon which the current state is structured (Bowles & Gintis, 1976).

However, an emancipatory view of education is one that encourages critical thinking and cultivates democratic values. It is meant to challenge and transform the dominant social order (Shor & Freire, 1987).

As I have mentioned before, the question of power is crucial to the understanding of education. Giroux (1988: 127) describes education as representing "both a struggle for meaning and a struggle over power relations." Assessing the role of computers in education, one needs to be guided by the question, Who benefits? (Olson, 1987: 187)

Technology can best be understood in the social context within which power relations play themselves out. Technology grows out of and reflects existing forms of production and social organisation. Robins (1983: 30) argues this point below,

> Against (its) technicist and instrumental conception, I want to argue that technologies exist only within the context of a particular organisation of production and social life, expressing and mediating the social relations specific to that historical and social configuration. In capitalist societies, technology becomes an expression of the capital relation.

In the same vein Mackenzie & Wajcman (1985: 2) suggest that technology is "socially shaped, in design and configuration", and that it is "inherently political". They dismiss the possibility of technology being regarded as politically neutral.

Paul Olson (1987: 187) writes,

> Technology, in short, holds the capacity to transform the organisational form of society - to rewrite the rules by which the socio-material forms of society are shaped. Ideology and political differences are important in this context because they address how a society wishes a change to occur, by what manner of implementation, and to whose benefit.

Using computers is not merely a technical issue. An uncritical approach would therefore serve to obscure the class nature of technology. We need to understand who owns or has access to the technology, to what social ends it is used, and in whose interests the technology is used. Tomaselli (1988: 2) reminds us of the military origin of computers and cautions us that the commercially produced software packages bring along their own cultural baggage which "socialise students and users into a technological state of mind." While technologies are products of particular social systems, it is possible to use some or all of the new technology for purposes quite different from those of the

existing social order (Williams, 1974: 135). This kind of intervention would form part of a broader process of social development and social struggle.

Whatever our reservations about technology, we are faced with the reality of an increasingly computerised world - a process we have very little chance of halting. Olson (1987: 187) claims that it is not

> ... conceivable that any of these technological societies could turn their backs on this technology, for to do so would be to beg economic (or military) destruction.

It is important that communities gain some control over their technological environment which threatens to swallow them completely. I believe that the computer is at present, one of the most powerful and sophisticated instruments of exploitation wielded by the socially dominant classes. It becomes not only necessary for common people to acquaint themselves with computer technology but also to learn how to counteract the sophisticated forms of exploitation and control. Communities ought to break the monopoly over technology by the politically dominant sectors of society, and examine ways of using computers to promote democratic ideals.

2.3 A critical approach

Computer technology, as I have argued above, needs to be

approached in a critical way. To regard the computer as a panacea to our educational ills, would be to apply technical solutions to political problems. Olson (1990: 146) cautions that

> Computer learning as an educational practice, unlike certain theoretical claims about what computers can be, does not in and of itself appear to generate innately better instruction; instead it mirrors older forms of stratification and dis-enfranchisement.

Unless the introduction of computers into the educational process forms part of a broader intervention aimed at social and educational transformation, the use of the computer may possibly accentuate existing power and social inequalities. Children from middle class homes often have a computer at home. Their parents are usually in a better position to offer them additional help or encouragement than is the case with working class students. Studies, according to Simpson (1990: 173) suggest that where working class families own a computer it is either of a lower byte capacity or it is used mainly as a games machine by these families. Computer technology operating within education becomes part of the contestation between hegemonic and counter-hegemonic forces (I explained the term hegemony on page 20). Computer technology can be used either to entrench existing power relations in education or to challenge them. Micro-computers are environments within which certain values, biases, and characteristics are played out. We therefore need to examine the way computers are used in education and the implications of this for the future of education.

The challenge that faces progressive educationists is to ensure

"that when it (computer technology) enters the classroom it is there for politically, economically and educationally wise reasons, not because powerful groups (industry and government authorities) may be redefining our major educational goals in their own image" (Apple, 1989: 307).

2.4 The computer as an educational resource

In discussing the computer as an educational resource, one needs to demystify the nature of computers. One needs to ask, To what extent is the computer merely an instrument to be used at will by anyone in any way?

I would like to challenge the notion that the computer is merely a tool like any other. Many argue that the computer is as useful as one makes it and that it is no different from an instrument like a knife with which one may either eat or alternatively kill. However, this argument implies the socio-cultural neutrality of technology. When black or working class children in South Africa feel intimidated by the computer screen, it is not so much a failure on their part as it is the socio-cultural bias of the technology and those who design the computer.

The computer, by its design, has the effect of atomising knowledge into computable units. It determines the environment within which the user can interact with it. The operating system imposes its own will on the learning environment. In order to use the auto-teller, one needs to follow the pre-determined format

of communication. It demands a certain technical mind-set on the part of the user. The human mind becomes conditioned by the needs of the machine's operating system. As such the use of the computer within the educational environment could have the effect of "technicising" (Tomaselli, 1988: 2) education. There is a danger that curricula will be packaged to fit computerized instruction, even though such curricula may prove to be inappropriate and less effective than the non-computer methods that teachers have developed over many years. Rather than considering how the machine fits the educational needs and visions of the teacher, the students and the community, these needs are all too often made to fit the technology itself (Apple, 1989: 307). The issue is about making sure that our use of technology is education-driven rather than education becoming technology-driven.

2.5 Producing knowledge

In critically assessing the computer as a resource with which we produce knowledge, it may be useful to raise the issue of knowledge itself. Habermas (1972: 308) argues that there are three basic interests which shape and determine our understanding of knowledge in society. According to him these interests are the technical, the practical and the emancipatory:

> The task of the empirical-analytical sciences incorporates a technical cognitive interest; that of the historical-hermeneutic sciences incorporates a practical interest; and the approach of the critically oriented sciences incorporates the emancipatory cognitive interest (Habermas, 1972: 308).

According to this argument, knowledge production based upon the technical interest would focus on improving efficiency and be based on a system of rule-following. The problem with such a technicist approach is that it reduces the complexities of human learning environments to technical processes which are driven by generalizable formulae. This approach tends to treat human learning like a natural science, ignoring the complexities of human subjectivity.

The Habermasian concept of the practical interest is described by Shirley Grundy (1987: 148) as

> ... a fundamental interest in understanding the environment through interaction based upon a consensual interpretation of meaning.

Knowledge in this respect depends on the subjective interpretation by individuals of their own actions. The problem with this approach is that it assumes that society is benign, thus ignoring the existence of inherent social contradictions and conflicts. This understanding of knowledge lays itself bare to the risk of ideological distortions, which includes personal biases and perceptions (Grundy, 1987: 5). Since this interest fails to contextualise knowledge within an understanding of power relations in society, it tends to describe social reality rather than critique and transform reality.

Knowledge production informed by the emancipatory interest, is

centrally concerned with the empowerment of individuals and groups, and not merely with the issue of control (technical interest) or understanding (practical interest). An emancipatory approach searches beyond the superficial appearances of phenomena by engaging in ideology-critique (Grundy, 1987: 8) to uncover the power relations at work at any given point in time. It contextualises the individual event on the micro-level, within the broader socio-historical context on the macro-level.

In other words, an emancipatory educationist would develop an understanding of computers by asking critical questions about whose interests the use of computers serve; who becomes empowered through the use of computers; and how the use of computers impact on schools, labour markets and forms of social organisation. An emancipatory approach would consider whether the use of computers would redress or reinforce social, racial, class, and gender inequalities.

The technicist approach however, would merely consider how computers can increase efficiency in terms of input-output ratios, and improve skills. It would aim to set up problem-solving formulae which could be universally applied as blueprints. Efficiency is not a problem in itself, but it needs to be conceptually unpacked in the context of social inequalities and power relations. Similarly, an uncritical use of the notion of excellence can amount to the effective entrenchment of the current social inequities in our society. Furthermore, developing creative and interactive modes of computer usage by itself would

not challenge the status quo. It is only when this development is harnessed as part of an overall strategy of change in education that it becomes emancipatory.

An emancipatory approach to educational technology is one that has, as its method and goal, democratic empowerment and social change. It searches for ways in which computers can be used to enhance popular democratic learning as reflected by the concept of People's Education[29]. Merely widening access to computer facilities will not be adequate in redressing social inequalities. We need to develop some strategic ideas about how to use computers in such a way that they will redress social inequalities in the learning environment. Bruce (1985: 37) emphasises that change in education depends on the educationist using the computer strategically and not on the computer, itself.

> In fact, computers per se do nothing; they are simply tools which can amplify the power people have and the social relations they engage in. In that sense, the positive or negative consequences realized by computers will be caused by people making the most of computers to accomplish ends for change in education (Bruce, 1985: 37).

Let us now look at what are some of the reasons why people use computers.

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[29]One of the resolutions at the (NECC) National Consultative Conference, March 1986 explained People's Education as that which aims to

> equip and train all sectors of our people to participate actively and creatively in the struggle to attain People's Power in order to establish a non-racial democratic South Africa (Kruss, 1988: 11)

2.6 Rationales for using computers in education

David Hawkridge (1989 :2) examines some popular rationales for using computers in education. He describes them as the Social, Vocational, Pedagogic and the Catalytic Rationales. While his separation of these four rationales is conceptually useful, these rationales often overlap and do not present themselves in such a clearly defined way in reality. According to Hawkridge the social rationale aims at demystifying the technology and instilling enough confidence in students to deal with technology which they will inevitably encounter in society. The vocational rationale, he explains as being aimed at preparing students for computer-related jobs and possibly computer programming. The pedagogic rationale, according to him, focuses on improving teaching and learning while the catalytic rationale aims at changing the organisational structures within the educational situation in order to improve the efficiency and effectiveness of the teaching and learning processes.

Although the catalytic rationale seems to be the one that appears to offer most emancipatory possibilities, I share Hawkridge's caution about it. To view the computer itself as a catalyst, is to assume that the computer can bring about change. Educational change is about changing the social relations which only human agency can effect. The extent to which educationists are willing to bring about changes depends on the nature of the driving forces demanding change. One would also ask what kind of change is desired, and whose interests would be served by them.

Another important consideration before adopting the catalytic rationale is the question of what resources would be needed to achieve the objectives of this rationale. The post-Apartheid South Africa will be faced with many more pressing priorities than computers, such as the provision of basic housing and health amenities. Very few countries, if any, can afford to restructure education in such a way as to make computers play a central role in the teaching-learning process on a large scale. It may be more realistic to think about a smaller scale intervention in this respect.

Viewing these rationales in terms of Habermas' knowledge-constitutive interests, the social and vocational rationales would correspond to the technical interests while the pedagogical rationale would fall in line with the practical interests. The catalytic rationale could possibly be viewed as being linked to emancipatory knowledge-constitutive interests.

Although the various rationales imply different types of usage of computers, I would argue that all four rationales could be equally appropriate to the current South African context. These rationales should not be viewed within a strictly hierarchical order. For example, exposing students from marginalised communities to the use of computers (social rationale) can be emancipatory as well, if it is linked up with educational processes resulting from the catalytic rationale. In trying to redress the imbalance in technical skills in South Africa, the vocational rationale which is based on technical knowledge

interests, becomes very important. The widening of access to technical skills can be empowering and have an significant impact on the participation of previously marginalised blacks in the economy of the country. Since the entire education system in South Africa may be (or nevertheless needs to be) restructured, the catalytic rationale is important in order for the computer to be used in facilitating emancipatory education.

In the next section I look at various initiatives to develop emancipatory uses of the computer in education.

2.7 Transformative possibilities of computer supported education (CSE)

Computer supported education can and has been implemented in many different ways. I will examine to what extent these various "applications" offer transformative possibilities. I will attempt to elaborate on two major kinds of applications, that is, using the computer as a materials development resource on the one hand, and on the other, using the computer as an instructional and testing medium. While I do comment on the latter use of computers and its transformative possibilities, my action research project, which I discuss in detail in chapters three and four, focuses on the former use, that of computer-assisted resource development and the acquisition of general computer competency skills.

2.7.1 Computer-assisted resource development (CARD)

CARD is probably best understood through the work of the Community Education Computer Society (CECS) on which I would elaborate in chapters three and four. CECS, being a community-based organisation, strives to highlight

> the dangers associated with the uncritical introduction of computer technology into education (Manie & Meerkotter, 1990: 219).

One of the stated objectives of CECS is to widen access to the use of computers for teachers and students. It encourages teachers to use computers in ways which would empower them. CECS arranges computer training workshops for teachers, at which teachers do not merely acquire basic computer literacy, but in the process, learn to produce lesson-worksheets that they can use immediately for classroom teaching. These trainees are placed in subject groups, where they discuss and collectively plan lessons in their particular subject areas. The result is the ongoing production of People's Education resources. In this respect the use of computers not only skills teachers, but helps to engage teachers actively in the production and dissemination of ideas which challenge the hegemony.

The materials that they produce enable these teachers to provide a greater sense of immediacy in the subject content through the use of current images and examples of names, places and events, based upon their own lived experiences in the community. This

approach helps to challenge what Freire (1972: 61) calls "banking education". According to this approach education becomes "an act of depositing, in which the students are the depositories and the teacher is the depositor" (Freire, 1972: 61). Students and teachers must be made to realise that education is about themselves and **their** social relations, about **their** stories and **their** voices[30]. McLaren (1989: 241) proposes that teachers transform classrooms into "critical spaces" in which they make more apparent the "subjugated knowledges" of those who have been marginalised and disaffected, and whose histories of suffering and hope have rarely been made public. It is important that both teachers and students collaboratively reinterpret and challenge the symbols and meanings handed down to schools through the official curricula and educational media. By getting involved in producing their own teaching-learning materials teachers can begin to challenge the monopoly of the state in this respect.

> This helps to destroy the monopoly on "truth" that the state exercises through the medium of the official textbook which acts as a tool to transmit its ideology in the classroom (Manie & Meerkotter, 1990: 221).

Teachers, can thus in a practical way - through materials development - become involved in the broader process of building an alternative democratic education - People's Education, though in a small way. It is important for teachers and students to realise that they **can** actually influence and possibly transform

[30]Giroux's (1988: 122) concept of voice refers to the multifaceted and interlocking set of meanings through which students and teachers actively engage in dialogue with one another.

aspects of the learning process.

2.7.2 Computers and language teaching

While teaching at one of the secondary schools in the Cape Southern Suburbs in 1987, I made use of computers as part of my teaching English to Afrikaans-speaking students in Standards 6 and 7. Most of these students came from a predominantly working class background and their ages varied from 13 to 16 years. The school was one of very few DEC schools fitted with a laboratory of 34 Commodore micro-computers.

The novelty in using computers, I believe, helped to motivate the many "at-risk"[31] students, despite the initial chaos and confusion as a result of my attempt to turn learning into fun. The excitement expressed by these students about using computers was interesting to observe. Many of the students who were often "problematic" in class seemed interested in the lesson because it was an opportunity to "play" with computers. Many of these students came from very poor backgrounds and this exposure to computers was probably an opportunity of a life-time. I noticed the marvelling on their faces.

This application of the technology, helped me to create an environment within which language learning could take place more successfully. Learning occurred in a collective, collaborative

[31]This term aptly describes students who are typically at risk of dropping out of school or who could generally be regarded as being disadvantaged, both culturally and economically.

mode as the pupils were divided into small groups while working on a class newspaper. The process involved individual and joint editing. Since we were using a wordprocessor, I could ask the students to correct language errors deliberately placed in the given text by me. They would then be asked to discuss these, as well as errors in the written (typed) work of their peers.

The result was an apparent excitement among pupils for language learning. A new confidence in the technology, as well as an improvement in language skills emerged. The discussions concerning the newspaper pages encouraged the emergence of more interesting and socially relevant content. These activities also helped with practice in oral language skills. It is my opinion that the use of the computer helped many of these working class students to develop a voice of their own, as well as creating a less hostile learning environment.

2.7.3 Computer-supported education (CSE) at UWC

The CSE project of which I am currently the co-ordinator, offers various possibilities for educational change and development. The CSE project forms part of the University of the Western Cape's (UWC's) overall Academic Development Programme (ADP), which has as its mission, a commitment to "redress the social imbalances in education caused by Apartheid" (CSE Unit Information Brochure, 1992).

The transformative possibilities of using computers for education

at UWC, need to be understood within the context of the academic development programme (ADP). The University, through its open admissions policy, attracts large numbers of students from a variety of socio-cultural backgrounds and educational levels. The ADP addresses this diversity in order to improve the chances of academic success of students. The majority of students entering UWC come from educationally disadvantaged backgrounds. The ADP therefore offers students access to additional resources and skills to improve their academic performance.

What possibilities does computer-supported education offer in achieving some of the above objectives of the ADP? There are three main areas of computer usage that can be considered in this regard. These are firstly, the use of general application software, like wordprocessing, desktop publishing, databases and spreadsheets. Secondly, the CSE project has content-specific software, which is commercially available. The third category is that of context-free authoring software with which subject-specific courseware may be developed by users themselves. All three types of software applications have their usefulness, depending on their strategic deployment in the process of educational change. In my opinion, the use of "context-free"[32] software holds out the most potential for creating participatory possibilities in curriculum development.

[32] Context-free here refers to software such as authoring software as well as general application software like wordprocessors, databases and so forth, which are not confined to the use within a specific context, as would the case be with "content-specific" software.

The transformative possibilities of computer-supported education depend not so much on the *type* of programme or system that is being used, but more on *how* such a system is being used. There is a tendency to expect the computer to solve our educational problems. The computer will not succeed where we have failed, for the computer merely enhances what we as teachers do. Beverley Hunter (1987: 38) in this regard, points out that

> ... we cannot expect the tools to teach the skills, any more than we expect a pencil to teach a child how to write.

2.7.3.1 Facilitating student learning

The CSE project has a lot of potential to enhance student learning. However, the use of appropriate courseware needs to be carefully defined in terms of the educational objectives of particular courses. Experience has shown that students perform better when working at the computer terminals, not as isolated individuals, but within tutorial groups and having tutorial assistance at hand. The approach facilitates interaction between the various instructional/educational media and actors (students and tutors). The learning process then becomes an interactive rather than a linear one. Torbe (1986: 150) explains that

> ... our job as teachers is to make the students' learning effective, so that the young people gradually and steadily acquire control over information, knowledge and events, and over themselves as learners ...

Interactive learning, however, is not just about control and

efficiency, but also about empowerment of learners, and not just about individual empowerment, but also about bringing about wider transformation in education. Robinson (1989: 194) notes that

> ... we have one approach which sees itself, through engaging students more actively in the learning process, as providing an alternative to the system of transmission teaching. The other approach goes beyond this and sees these teaching methods as playing a role in transforming the context which maintains the relations of domination in society and in education.

Using computer-supported tutorials within this context would serve not only to consolidate and assimilate subject content, but also to address the lack of adequate language and study skills which place most black students at an academic disadvantage. This type of use of the technology could help to redress some of the imbalances in the power relations in education.

> In writing courseware, the notions of learnable intelligence and the findings related to the infusion of thinking skills into the curriculum must be integrated as part of what is presented. This carries with it the real hope of enhancing accessibility, especially for disadvantaged students in areas from which they are traditionally excluded (Mehl, 1991: 16).

There is considerable value in enabling students to engage in additional exercises and to provide an opportunity for students who may have fallen behind or failed to grasp concepts during lecture sessions, to catch up with the rest. However, this should rather happen in tutorial groups than by putting individuals through rote-learning or drill-and-practice sessions at the

computer. It is important that the educational value of the students' activity on the network is discussed or assessed collectively by the CSE courseware developers and the lecturers involved, lest the exercise lapses into a technicist one. One needs to realise that testing by the computer does not always accurately reflect the level of understanding that a student has attained, nor does it explain the wider social causes for the student's problems. It is important that both parties - CSE staff and lecturers - understand the context within which the computer courseware is presented. A collaborative approach will therefore be more helpful in ensuring that the use of the computer courseware engenders emancipatory educational practices.

The provision of computer literacy/competency skills to historically disadvantaged students can play an important role in redressing some of the social deprivation created by years of Apartheid discrimination. The ability to use wordprocessing and other information storage-and-retrieval programmes would help students, who normally lack access to such skills, in their academic assignments. Computer competency is an advantage for both students and staff in doing research which generally requires them to access and interrogate different sources of information. Competency in the use of the computer as an information tool, will certainly be an advantage to graduates entering the place of work in society.

There are both advantages as well as disadvantages, in using computers for education. It is therefore essential to guard

against a technicist approach and to ensure the centrality of human agency at all times. Using computer skills within an academic context can assist students in the enhancement of academic skills. These skills, however, need to be integrated with subject-specific courses so that the use of computer-supported learning becomes an integral part of the teaching-learning process.

2.7.3.2 Staff development

The teacher has a pivotal role to play in bringing about transformation in education (McLaren, 1989: 241). In order to facilitate emancipatory educational practices which would help to empower students, teachers themselves need to be empowered. I will now look at how computer-supported education could facilitate this process of empowerment.

For teachers, computers can facilitate creative lesson preparation and materials development. The process of designing and developing courseware requires the teacher to think more carefully about the process of learning. The designer needs to understand how the student thinks and anticipate possible responses to the material presented in the lesson. The teacher needs to think carefully about the desired outcomes of the lesson input and develop appropriate strategies to achieve those. The process of courseware development is as important as its product. I believe that courseware development has the potential to facilitate emancipatory educational development and change in

both the teacher who designs materials, as well as the students interacting with those materials.

The close collaboration in developing computer-supported lessons could be an empowering process for all parties involved - teachers, CSE staff and student-users. A technicist approach will mean that a lesson prepared on paper by the lecturer is merely handed over to the CSE staff to computerise and administer. While this approach may be less time-consuming and appears to be a more efficient way of doing courseware development, it nevertheless offers fewer emancipatory possibilities. It is important that the "technician" as well as the "academic" mutually inform the development of computer-based lessons in an inter-active way.

2.7.3.3 Language skills development

With the gradual opening up of the previously racially-exclusive South African society, educational institutions are faced with new challenges pertaining to socio-linguistic and cultural issues. In an attempt to shed the Euro-centric bias of the old order, it becomes important to address the language problem, which means, among other things, dealing with the issue of medium of instruction. In the light of the wide variety of language backgrounds of UWC students, many students have shown a need for assistance in attaining proficiency in "academic" English, which is the official medium of instruction at UWC.

Language skills development is an important area in which generic

software, for example the wordprocessor, can play an important role. By using wordprocessing for writing, one treats

> ... writing as a process, by making it much easier to edit and redraft a piece of writing. Wordprocessors and desktop publishing packages allow [students] to experiment easily with different forms of written text, before giving their writing a professional appearance (Stubbs, 1989: 5).

Michael Stubbs (1989) argues that since information on a computer screen is visible to several students at the same time, it could facilitate group discussion and collaborative input. He claims that technologies of writing affect the way people think. He asserts that linear forms of writing are believed to facilitate the development of certain kinds of logic and coherence of arguments. On the other hand, wordprocessors present information in a non-linear way. It may, he (1989: 6) argues, help students to "make explicit a wider range of rhetorical structures." This may, according to him, facilitate increased flexibility in thought and expression, encouraging language development.

2.8 Can CSE promote transformation at UWC?

We need to ask how the use of computers can help to address some of the issues concerning the University's twin objectives - equity and excellence. The University's commitment to democracy forms the basis of its open admissions policy. This has had the effect of not only increased numbers in the University's student population, but also a diversification in socio-cultural and linguistic backgrounds. Students at UWC who reflect varying

educational disadvantages, find that they are required to compete against students with different (perhaps more privileged) educational backgrounds. It is within the context of student numbers growing disproportionately to academic resources, that the concern about academic standards and quality becomes so urgent. The reality is that educational disadvantagement at UWC is a majority phenomenon and therefore the ADP cannot be merely a "special" programme to help a small group of students fit into the mainstream.

Mehl (1991) is convinced that computer-supported education is particularly suitable for a learning situation where student-teacher ratios are high. He (1991: 16) explains,

> Three features here are particularly interesting: two tutors easily manage 1 000 participants per week. They are able to extract necessary data, and thus monitor accurately student progress through the curriculum.

Here one needs to caution against the danger of computer-supported education being used as a form of mass conveyer-belt education. Mehl (1991: 17) elaborates in this regard,

> Our experience has shown that the computer can be used to generate a small-group learning environment. Thus we seldom place one learner per terminal, but rather encourage groups (2 to 4) around a terminal. The interactions that take place (between peers) are sometimes more valuable than the information presented by the computer.

The use of computer-supported education has many possibilities for democratic transformation in education. However, an

uncritical adoption of computer technology can serve to entrench the current social relations of power, rather than transform them. The use of computers ought not to be considered outside the current and changing realities of education. It remains the task of all education democrats to subject this powerful "monster" to the imperatives of change. As Olson (1987: 182-183) notes:

> ... no tool autonomously organises and employs itself. Tools are used by people for particular ends (good and bad). Understanding who uses them, how, and for whose benefit - the structure of intentional use - action is necessary if we are to assess how computers are likely to be employed. Understanding how computers will have an impact on schools, labour markets, and modes of social organisation, therefore requires that we look at the various interests served together with the necessary social organisational and purely technical decisions.

In this chapter I have attempted to locate the discussion of computers-in-education within the context of emancipatory education, as well as in the context of my work. I will now proceed to discuss my action research project within this paradigm.

CHAPTER THREE

RESEARCHING THE HDE COMPUTER COURSE

3.1 The aim of the research project

This action research project was part of the M.Ed. course requirement. I was asked by the course convenors to identify any aspect of my teaching practices that I wished to improve. The action research course readings and class discussions were meant to guide and stimulate such research. It was a case of developing theory in practice. In retrospect, I can clearly note how the *"theoretical"* class discussions helped me to grapple with the uncertainties and confusion of the *"practice"* in my own classroom. Similarly, the practice during my teaching sessions, helped me to unlock the theoretical texts that I was confronted with in the M.Ed. class. In reality, this interactive process was less transparent and much more tension-filled than it appears now. Having gone through the process, I can now appreciate the dialectical relationship between the M.Ed. course-work and the project-work.

The project comprised two action research cycles of which I will describe the first in this chapter and the second in chapter four. The first cycle was my first attempt at action research and occurred within the first three months of the M. Ed. course. I had minimal exposure to the action research readings then. The second cycle of my research was undertaken in the latter part of

the course and had the benefit of the experience of the first cycle, as well as the benefit of more comprehensive reading and discussion.

On a general level the project set out to examine, through a process of critical self-reflection, whether the use of computer technology had any impact on the development of collaborative and emancipatory teaching practices and resources. More specifically, the project set out to examine my own teaching practices in the classroom, the responses of the HDE students, and the responses of their class pupils during their practice-teaching sessions.

The project was aimed at assessing whether I was succeeding in integrating the political aspects of the course with the technical, in a way that challenged the status quo. In chapter two I revealed some of the pitfalls in trying to "depoliticise" the use of technology. Technology is commonly viewed as being merely a technical matter and most people consider the computer merely as a tool to perform certain functions. However, as I have attempted to illustrate in chapter two, the use of the computer within the educational situation has many socio-political ramifications. Part of my action research mission was to establish whether the HDE computer course actually succeeded in contributing to transformative teaching, that is, challenging rather than promoting the political status quo. I hoped to show that despite the historical links with the dominant social classes, computer technology offered various possibilities for the development of an emancipatory education.

I realised that it in many instances high-tech resources can cause greater degrees of alienation than facilitating improved working conditions. In that respect, I believe they may stifle rather than facilitate the empowering process among staff or students. I was interested in studying the social effects of injecting technology into an educational situation, distorted by years of class, racial and gender discrimination and inequality. I realised that a technicist[33] approach to the research on computer-supported education, could easily exacerbate the above-mentioned social inequalities. The concern of this research project was to undertake a critical examination of the impact of the technology on the educational situation. The critique which this project hoped to embrace, contrasts sharply with the notion of education technology as an answer to our educational ills.

3.2 Description of the HDE computer course

At the time of the project I was involved on a full-time basis in the pre-service teacher-training programme of the Didactics Department at UWC, as mentioned in chapter one[34]. I offered an optional computers-in-education course for HDE students. I taught two classes of twenty students each, for two double periods a week respectively, stretching over a period of eight weeks. The course was restricted to forty students per semester

[33]An approach which focuses on the improvement of skills efficiency only. I already explained this in more detail in chapter 2.

[34]I am currently employed as co-ordinator of the Computer Supported Education Project, within the Academic Development Centre at UWC.

because of the limited number of computer facilities available.

The course had as its aim to:

1. demystify computers on a conceptual level and to make them accessible resource media for teachers.

2. explore in a practical way, how computers may be used to develop democratically-oriented resource materials. The aim would be to help develop more effective and emancipatory teaching practices.

3. problematise the issue of computers-in-education by examining its possibilities as well as dangers for democratic social transformation.

4. produce computer-competent and -confident teachers.

The course, in its content and method, drew upon the experiences of the CECS in-service training (INSET) courses for teachers. The similarity between the HDE computer course and the CECS INSET courses was deliberate and was meant to link the pre-service teachers with their qualified counterparts the following year. I attempted to develop a course which was rooted in and based on the experiences of practising teachers. Pre-service teachers, I felt, were best guided by the experiences of their experienced colleagues, while the latter could benefit from the fresh ideas

of their younger counterparts. I was also hoping to conduct joint workshops with CECS where these computer skills were put to practical use in developing and evaluating teaching resources which promoted democratic values and facilitated better interaction between students, teachers and learning resources. One of the objectives was for students to learn computer skills by producing teaching materials on the computer.

3.3 Research ethics

The issue of ethics is central to qualitative research. Smith (1990: 258) explains that

> Ethics has to do with how one treats those individuals with whom one interacts and is involved ... The two most important principles for the protection of human subjects (of inquiry) are informed consent and anonymity.

Many action researchers, for example Ebbutt (1983: 6), have emphasised the seriousness of the ethical question in research, but perhaps John Elliot (1981: 9) puts it the most aptly:

> One must ask the question: can the information gathered about other people's activities and views be misused by me and those I disseminate it to? If the answer is "yes", then one should try to give people control over one's access to their activities and views, and over the extent to which the information one gathers should be released to others. The key concepts are confidentiality, negotiation and control.

Right from the start I faced the dilemma of research ethics. I

was not sure whether I should discuss my research project with my HDE classes. Initially I decided to do, what is definitely unethical. I did not inform the students about my intention to monitor their behaviour, for fear that it might unduly influence their responses in class. I wanted to observe them as "naturally" as possible. I reasoned that I did not want to turn them into guinea-pigs and the class into an experiment with the actions becoming a performance. These probably reflected my own bias towards neutrality.

3.4 The research process

The action research approach makes use of what can be called four-phased reflective cycles or spirals. These can be repeated continuously, with each cycle establishing a new layer of understanding and improved practice. The four phases are: planning, acting, observing and reflecting. In practice these phases are much more complex than what their description suggests. However, these phases must not be viewed as neatly separated events, but rather overlapping, interweaving action moving back and forth between phases and between the many intermediate levels of the micro- and macro situations.

Grundy (1987: 145) explains the process:

> The process of action research consists of a number of "moments" which are reciprocally related to one another... Reflection looks back to previous action through methods of observation which reconstruct practice so that it can be recollected, analysed and judged at a later time. Reflection also looks forward

> to future action through the moment of planning, while action is retrospectively informed by reflection through planning.

In this approach the teacher (human agency) remains central to the process. Once a problem has been identified the teacher strategises how to change the situation. The *theory* of reflection is transformed into the *action* of implementation. This eliminates the artificial separation between theory and practice which tend to appear within the positivist research paradigm.

Lest we fall into the trap of oversimplification, John Elliot (1989: 6) reminds us that action research

> is a form of inquiry which acknowledges the realities which face practitioners in their concreteness and messy complexity.

Given the participatory nature of action research, the process of inquiry is not necessarily initiated with a predetermined or identified problem. The research problem can be arrived at as a result of the first reconnaissance cycle of research. Engaging in critical self-reflection enables one to identify situations to be investigated with the intention to change them. Understanding of these situations are arrived at through the collective participation of all involved in the process. The research aims are continuously changed and modified with the completion and even during each cycle of investigation. There is thus no grand plan, nor grand theory with neat solutions in action research.

3.4.1 Starting the process

In order to lend a better insight into what the HDE students were exposed to during the course, I elaborate below, on some of the course sessions, each eighty minutes long.

In the first session of the course students discussed their expectations of the course and their individual perceptions of the technology. The second and third sessions were fairly practical in nature.

In the fourth session students had a workshop on People's Education in practice, and were required to relate these to the development of teaching materials on computer. The following three sessions were devoted to the practical aspects of the development of lesson worksheets in their subject-based groups. These entailed planning, discussing and working on the computer itself. These were followed by an individual assignment to be completed before they were to go on practice-teaching. The assignment required that every student develop a school-period lesson on any topic within their subject area. The lesson had to be based on what they understood to be a People's Education approach and it had to be done with the help of the computer. Students were expected to integrate their computer skills with emancipatory educational ideas. Writing had to be done with a wordprocessor (Microsoft Word), while graphics and line-art were to be done with a simple graphics programme called, Newsmaster. Other graphics and photographs were scanned into Newsmaster and

integrated with the wordprocessor-generated text.

3.4.2 Data-collection

Data-collection is a vital aspect of research and influences the outcome of one's research inquiry. There are many different types of data-collection techniques of which some prove to be more effective than others for different action researchers. McNiff (1988: 76) advises the researcher to consider the following two criteria in choosing data-collection techniques:

1) which techniques are available for classroom data-collection
2) which techniques are appropriate for which reason.

The seriousness with which a research investigation is treated is often determined by the means and the efficiency with which the data was gathered.

On this issue, Grundy and Kemmis (1984: 123) comment:

> The function of data in action research is to provide a basis for reflection. Data represents action in such a way that enables it to be reconstructed rather than only recollected. Data collection is therefore not an end in itself, nor purely for hypothesis testing; rather, it is a means of documenting observations and thus mediating between moments of action and reflection in the action research cycle.

3.4.3 Personal diary

I attempted to keep a personal diary about my observations, doubts and fears. I had to force myself to be disciplined about it, because I often forgot to make entries. I sometimes entered information a few days afterwards and mostly while planning for my next class. This allowed me, to some extent, to reflect on my actions thus far and it informed my planning for my next move.

3.4.4 The tape recorder

During my first two classes with the HDE students I tried using a small tape recorder which unfortunately proved to be somewhat ineffective. Because I tried to conceal the presence of the tape recorder, the recorded sound was of a poor quality and most voices were inaudible. What made it more difficult to obtain better sound, is the fact that in doing group work, the students do not always speak loudly in class, as the case would be when they need to address the teacher at the front. The teacher moves around, so do the students.

As a result of this failed attempt with the tape recorder, I decided to inform the students about the tape recorder - but that was all, no details about my research. I was still being unethical (not without guilt feelings!). Some wanted to know what it was all about. I gave them the following obscure answer, "Oh, I'm doing some research, just ignore it." During this time I was discussing, with individual groups, details of their resource-

package plans which they were supposed to develop. I found that their awareness of the tape recorder silenced some of them and made them uncomfortable. Because of my "obsession" to let the process be natural, I did not prepare specific questions, and just recorded responses during our discussions about their group assignments. I soon ran out of tape and found that it was difficult to identify common patterns.

The use of the tape recorder was not completely futile. Its usefulness lay in some of the general comments by students which I recorded in my field notes on paper and the few comments which were audible on tape. These comments indicated that most of the students were still exam-oriented and aimed at pleasing the authority figure who evaluates them. One of the questions was, "How much marks do we get for this?". Some comments in response to my inquiry about how alternative their worksheets were, "Is this how we must do it?"; "We don't know what is alternative? Give us some ideas". Others again feared that as teacher, I would find fault with their work and that they would be required to do it all over again. One of them complained, "Please, don't tell me that I must do it again, this is the third time I'm coming up with something new."

Some of the other comments related to the difficulty that they found in working in small groups. One of the female students came to me and complained,"I don't want to be difficult, but I find it impossible to work in this group. It's most frustrating, they don't do their part. I prefer to work on my own because I can't

be made to suffer because of them!"

3.4.5 The questionnaire

I abandoned the tape recorder as an aid. I decided to use a questionnaire to elicit some specific responses from them. The questions inquired about their initial expectations of the course; whether these expectations were realised; the impact of the course on their teaching; the teaching style of the teacher (me); suggestions for possible improvements in any aspect of the course.

The questionnaire included the following questions:

1. How did you benefit from the course?
2. Has your understanding of computers changed or improved since the beginning of the course?
3. What effect did the course have on your skills as potential teacher?
4. How could the course be improved?
5. Should the course be continued as part of your HDE programme? Motivate.
6. What were your expectations before the course? Which of these expectations have or have not been met?
7. Offer any general comments.

At this point I had decided that it would be a much better strategy, besides it being morally and ethically correct, to

explain the whole research exercise to them and persuade them to be part of the action research project. Some of them frowned upon it and one made the following remark, "Do we really have to do it? This isn't actually part of the course." Others were enthusiastic, but when they eventually handed the questionnaire back, it appeared to me that not much thought had gone into answering it.

3.4.6 Triangulation

Triangulation is peculiar to action research and needs to be more fully explained. McNiff (1988: 15) says that triangulation is commonly referred to as the process of obtaining information on a subject from three different points of view, namely the teacher, pupils and outside observer or other third party.

While it cannot be said to be a source of validating data, it can be seen as a means of developing consensual meaning, through cross-referencing research findings three-way.

Grundy & Kemmis (1987: 128) emphasise the importance of triangulation:

> The purpose of reflection is to provide the practitioner with authentic insights which will further the process of enlightenment. The actor must always be the final arbiter of the 'truth' of the interpretation. Authentic interpretation of data may, however, be denied by the practitioner through self-deception or because the existing attitudinal framework obscures rational analysis of the presented data. The interpretations of others can thus provide perspectives that may be inaccessible to the lone

> subject ... The term 'triangulation' has been appropriated to refer to the cross-referencing of a number of participants' perceptions of an event.

I asked one of the student assistants in the laboratory to act as a triangulator. He was a final year Bachelor of Science student. He was also a member of CECS and had extensive experience in training adults in computer skills. I explained the purpose and requirements of the process to him and asked him to observe certain phenomena during the various lesson periods. I asked him to watch which aspects (technical or political) of my lessons elicited more active student response than others. I also asked him to observe who spoke more often in class - along racial and gender lines. He managed to offer some very valuable insights on these phenomena.

3.4.7 Student reports

The three week practice-teaching[35] session which is compulsory for all HDE students, offered a good opportunity to advance my action research project. I proposed that my students use the lesson worksheets that they developed during my course, in their practice-teaching sessions. I asked them to write up a report on how the school pupils responded to the computer-assisted resource materials which they had produced in my course. I asked the HDE students to use that as an opportunity to "test" the

[35]Practice-teaching is the practical requirement which all HDE students must complete before qualifying as teachers. This consists of three visits, of about three weeks each for the year, to schools. During those sessions they are required to teach and these lessons are then evaluated by lecturers.

effectiveness of these pupil worksheets and to arrange for one of their colleagues to observe and record the response of pupils. They should then assess whether the use of the computer in developing these materials had any effect whatsoever on the success or failure of the lesson. I anxiously awaited feedback from them.

I asked them to complete the following evaluation questionnaire for the purpose.

1. How did the pupils respond to your lesson generally?
2. Do you think your computer-assisted worksheet had any positive impact on the response of the students? Explain how.
3. Were your lesson expectations in planning the lesson realised in practice? Explain.
4. How would you judge whether your lesson was a transformative one?
5. Do you think the computer course contributed to the success or failure of your lesson? Elaborate.

3.4.8 Field notes

At the beginning, my field notes were fairly unstructured and tentative. I recorded general observations about different aspects of the field. As the project progressed and as a result of some consultation with colleagues in the M.Ed. class as well increased exposure to relevant readings, I developed more

systematic patterns in recording my notes. I tried to monitor the same things that I asked the triangulator to do, with the hope of corroborating his "evidence" and identifying some common trends. I structured time for writing up my observations immediately after the lessons, or alternatively at the end of the day. I often, though not regularly, reflected on these notes and consequently reworked some of my notes over weekends at home. The following statement by Hopkins (1985: 59) rings very true:

> The greater the time-lapse between the event and recording it, the more difficult it becomes to reconstruct problems and responses accurately and retain conscious awareness of one's original thinking.

Although field notes reflect my personal interpretation of events, I found this to be the most useful and convenient method of data-collection.

3.5 Findings in first cycle

Rather than presenting raw data and statistics from each data-collection technique employed, I shall attempt to reflect a general sense of the responses taken from all the techniques. In qualitative research statistics never mean much by themselves, and can often be misleading. McNiff (1988: 81) comments on this:

> How does one make sense of the flood of data that pours in? The situation is doubly confusing when the main focus of the original study seems to get lost in the mountain of information.

I find it more useful to share some of the meaning and interpretation that I extracted from the data-collection exercises. I identified some issues which emerged from these exercises, which I will comment on.

Based on the motivations expressed on the application forms upon registering for the course; and from the discussions at the commencement of the course, as well as the responses to the questionnaire which followed later, it appeared that most students either had higher expectations, or unrealistic expectations about what the course was intended to achieve. There seemed to be a mystification and exaggeration of the capacity and power of computers. All of them seemed to attach unduly high social and educational status to the role of the computer. One commented, "the computer seems to have taken over our lives, and therefore one cannot hope to be a good teacher without knowing how to use a computer." Another claimed that "the computer can be used to solve many of our problems in the community." Another comment was, "Jobs are very scarce, computer training will prepare one to fit into any job."

From the feedback of the questionnaire, and the observation process, I got the impression that most students expected the course to have been more "technical" and less "political". Most found the course to be "easier" than expected. Initially they were nervous but started to relax when they realised that they could "get up and mingle as we liked". Many got frustrated when they "lost" their computer files as a result of not successfully

saving their document on the disk. One of the students remarked, "I thought to myself, I spent more than two hours on this document, if I should lose it again, I'm definitely dropping this course!" Fortunately he did not. Others talked about how good it made them feel, and one remarked, that " I can now confidently use a computer and chat to my friends about computers".

The triangulator's notes corresponded largely with mine and shared both the fear and confusion as well as the shrills of excitement when the students eventually got something right on the computer. I'll extract one of his interesting observations,

> Group C seems to be lost. They have no idea what to do. They seem to be scared to make mistakes on the computer. They need more personal attention. They argue a lot between each other. The one girl seems totally quiet (16/04/91).

It may be interesting to note that Group C consisted of one Coloured rural male student, an African male and African female student and an urban Coloured female student. The African female was the quiet one referred to by the triangulator.
(See the discussion below on participation.)

On the question of empowerment, the statement by one of the female students from Transkei (summarised from a recorded interview) was quite illuminating:

> I'm very happy to do this course. I been two weeks late, and I'm very relieved and much grateful you made exception for me. I'm so nervous ... Oh, I just hope I succeed! I think computers is important for the upliftment of our black people. We don't have computers there. Now that I'm

> using computers I feel much more confident as a teacher. It is quite easy to learn, much more than I thought before. It's also important for People's Education. I think every teacher must be computer literate (20/03/91).

3.5.1 On participation

Some tensions raised by the findings, based mainly on my personal observation and that of the outside observer, are those concerning issues such as race and gender. It appeared that there was more general participation in discussion about non-technical issues, such as People's Education, and practical school issues. The "African" component of the class participated more in the overtly political discussions. It also appeared that the males (African and rural-Coloured) dominated the discussions on political issues. The "Non-African" urban females appeared to be more confident in discussions about computers than their African and rural-Coloured counterparts. However, the urban Coloured males seemed most confident in the discussions related to the technical computer aspects of the course.

The findings related to group participation seemed to show that most females in the groups worked harder than their male counterparts, were more competent, came to practise more on the computers and showed more enthusiasm. Their lesson-packages displayed evidence of much more effort and preparation (in collecting additional articles and pictures) than those of most of the males.

My field notes (07/05/91) reflected the contradictions in

behaviour between male and female students in the following way,

> It appears that it is mostly the female students who are working on their assignments. There seems to be a pattern here ...? I need to chase up some of the boys.

A worrying factor that emerged from the findings, was that five out of the eight African students were not doing well technically and were not very talkative during the technical sessions of the class time. However, I noticed that the same students often missed classes. They did not seem to catch up and did not practise their computer skills on their own. I tried to shift some "weaker" students into more confident and competent groups, but did not meet with much success.

This apparent lack of confidence with the technology among the African students can perhaps be attributed to the many years of extreme socio-economic disadvantagement. One would expect much less exposure to computer technology within the African sector of the community. It is easy to underestimate what it takes to break down the psychological fear of an alien technology, like computers. Or is it merely the persistence of bad habits and lack of commitment to the course, on the part of those individual students? Whatever it may be, I believe that bold and creative initiatives are needed to correct the social imbalances as manifested by the attitudes of these students.

It appears from the findings as if small-group work does not always work effectively. About sixty percent of the students expressed satisfaction with the group dynamic. When they were

questioned about it more, some complained about an unfair and unequal spread of workload within the groups. Others mentioned the unreliability of some group members which affect the overall performance of the group. Most preferred to work on their own, although they liked having partners to refer to for help and advice. These observations about small-group work made me question what has always (wrongly) been regarded by me as one of the "holy cows" of People's Education. The use of small-groups in a teaching situation can be very useful, but should not be applied in a mechanistic or uncritical way.

In the feedback more than half of the respondents indicated that they felt that more time should have been allocated to the technical aspects of computer training in the course. It appeared that students required more personal attention in their attempt to master technical computer skills. They felt that they were left on their own too soon to work on their worksheets. There does not seem to exist a strong tradition of computer manual reading. Students still require to be accompanied through the computer manuals. It seems that they want to be "taught" computer skills. A significant degree of frustration was expressed about losing their files on the computer and thus losing many hours of work.

3.6 Tentative conclusions

In reflecting upon some aspects of the first phase of my action research project, it seemed as if I managed to instil a measure

of self-confidence in some of the students concerning computer skills. There appeared to be greater enthusiasm among the group of students this year than was the case with the students of the previous year. I tried to "teach" the current students more of the technical skills, before leaving them on their own, but it appears that more needed to be done in that respect. Small group-work as a learning method remained problematic, as I have mentioned above. The fact that I was asking them to "test" their worksheets in the actual school set-up, compelled them to think about their worksheets in a more realistic and practical way. The computer, I had hoped, would in the process become more demystified. The fact that the students engaged in critical reflection on the practical use of their computer-assisted teaching materials as applied in the schools during their practice-teaching period is significant. Through that exercise some of them could start to perceive themselves as participants in the process of materials and perhaps, curriculum development - a minor step towards democratising educational practices.

By situating the learning of computer skills not only in the broader socio-political context, but also making these skills immediately applicable in the teaching practice experience at school, the course attempted to produce "transformative intellectuals" (Giroux, 1988: 125) who could act as agents of social change. In referring to the importance of teachers becoming transformative intellectuals, Giroux (1988: 125) writes,

> First, it provides a theoretical basis for examining teacher work as a form of intellectual labor ...

> Second, it clarifies the kinds of ideological and practical conditions necessary for teachers to function as intellectuals. Third, it helps to make clear the role teachers play in producing and legitimating various political, economic and social interests through the pedagogies they endorse and utilize.

The above statement reveals a course agenda which extends way beyond the provision of computer skills. The computer within this context ceases to be merely an instrument, but forms an integral part of the empowering process in which the teachers assert themselves both as intellectuals and as initiators of change. As transformative intellectuals, teachers would question the underlying philosophies of current pedagogies functional within our schools. Ongoing critical reflection about social practices and traditions in school could form the basis for transformation in education. Teachers would not only question certain practices and values but also engage in such intellectual activities which would help to redefine the school curriculum. In this respect, the use of the computer would reflect these shifting and changing power relations in education.

In the next chapter I will describe the second cycle of my action research project and discuss the various issues emerging from it.

CHAPTER FOUR

DEEPENING MY INVESTIGATION

4.1 The second action research cycle

The second cycle of my action research project was undertaken during the second university semester. It targeted another group of HDE students doing the computers-in-education course. In addition it included a look at the impact of the CECS computer-assisted resource development courses.

At that stage I felt much less confused and insecure about the project as I did during the previous cycle. The first cycle of self-reflective investigation lent valuable insight into my own teaching practices. Both the M.Ed. course readings and class discussions contributed significantly to enrich my understanding of the various research issues. While I made significant progress, I realised that I was merely scratching the surface and still had a long way to go in unravelling fully the epistemological issues and problems entailed in my action research project.

My second action research project cycle was an extension of the first and would both build on it, and refer to it throughout. The first project can be regarded as a reconnaissance phase for this second cycle. It served to highlight and identify some problems which deserved my closer scrutiny and critical reflection. The

limited scope of this project compelled me to narrow my focus on one or two of the issues only. Here one needs to be aware of the fact that, in selecting any one area of focus, it necessarily distorts the reality, because it represents only part of the picture. It is with that acknowledged limitation in mind that I proceed to discuss the findings of the second cycle of my research project.

4.2 Issues arising out of the first cycle

The number of side- and related issues that emerged out of the first cycle of this research initiative were interesting and informative. The first cycle revealed different behaviourial patterns identified along racial, gender and language lines (See section 3.5.1 On participation, also fieldnotes 07/05/91). The first cycle also highlighted some tensions around the use of small-group work (See 3.4.4 The tape recorder). The issue centering on the technical-political balance of the course featured prominently for me. It is the latter issue that I decided to focus on more specifically in the second cycle of the project. I realise that focusing on any one aspect narrows the scope of my research lens, but as we know, researching everything could effectively mean researching nothing.

4.2.1 Problems encountered

In my previous project I was guilty of treating the issue of research ethics lightly. During the second cycle, however, I was

intent upon not persisting with that short-coming. I realised that a neglect in that regard had the effect of undermining the credibility and authenticity of my action research. Pym (1990: 6) points out that

> Action research demands sanction for the investigation and an accountability to the students. There is the imperative of feeding back to, and clarifying research findings with, the participants of the research.

The other problem I experienced, was the fact that I involved all 40 students in my research project. It had the effect of casting my net too wide. I realised that working with large numbers of students made it difficult to do accurate monitoring of the situation. It became clear that I had to adopt a more targeted approach. The first semester experience showed that some of my data-gathering methods, like the use of a tape recorder, were ineffective. I now had doubts about the usefulness of long transcriptions even when I was able to achieve a clear and audible recording.

4.2.2 Initiating change

With reference to my previous cycle, I undertook to use the critical feedback that I received from the first semester HDE students to help me reshape the entire course during the second semester. I was planning to "involve them (HDE students) more fully in the project and let them develop a sense of collective

ownership of this research project[36]." This subsequently turned out to be an underestimation of the complexity of the process of change. On their return to the University from a three-week practice-teaching session in the schools, the first semester students made a number of recommendations. These, however, proved to be much more difficult to implement than I initially anticipated.

Many of them proposed that the course be lengthened to a year-long one, rather than it remaining limited to one semester. The authority to make such a decision did not reside with me, but with higher University structures. I could not simply implement their recommendations by myself. Then there was the limiting factor caused by the relatively small number of computers available. If the course were to be changed to a year-long one then only forty students, instead of the current eighty, could be accommodated.

The idea of involving the HDE students more fully in my research project, proved to be somewhat unrealistic, since I found that students tend to become highly pressurised by the imminence of examinations towards the end of the semester. On their return from practice-teaching, the first semester HDE students were left with only three remaining weeks on the course. Given the mounting examinations pressure, a few of them dropped out of the course, leaving the last class assignment uncompleted. I suspect the fact

[36]This recommendation was made by the first semester HDE students involved in the research project.

that the computers-in-education course was an optional one, made the students accord it a lower status to that of their other courses.

It is clear that it demands much more than good intentions and commitment to bring about structural change. It also becomes apparent that change on the micro-level of the classroom is tied up with change on the macro-level of broader educational structures (Fullan, 1982). Individual change relates closely to institutional change. Being conscious of the immediate constraints experienced on the individual level of change, helps to make one realise the need for a commitment to broader political transformation. Again, lowering one's expectations in the light of the above makes for more realistic planning. Fullan (1982) is helpful in lending some insight in this respect, when he suggests that

> ... the most beneficial approach consists in our being able to understand the process of change, locate our place in it, and act by influencing those factors that are changeable and minimising the power of those that are not (Fullan, 1982: 80).

4.3 The research process

4.3.1 Limiting the number of participants

As I stated at the beginning of this chapter, I started off examining the issues of race, gender and language which were highlighted by the first cycle of the project. This informed my planning of the second cycle of research. I decided on the one

hand, to limit the number of participants in my research to six HDE students and on the other hand, extend it to include six teacher-members of the Community Education Computer Society (CECS). My motivation for doing so was based on my decision to focus on examining the technical-political balance in teaching the use of computers-in-education. The aim was to reflect on possibilities and tensions arising from locating the use of computers within the political economy of education (I have already raised some of the theoretical issues in chapter two). In the light of the above aim, I felt that my research focus had to move beyond my own classroom to include practices within schools themselves. It made sense to engage CECS teachers in this research project since CECS is engaged in inservice-teacher training programmes which not only provides computer competency skills but also locates these within the socio-political context of South Africa. As Manie & Meerkotter (1990: 221) have noted:

> CECS has successfully employed the computer as a tool for the empowerment of teachers.

4.3.2 Negotiations

Unlike my previous approach in observing my students secretly, and not telling them about my research project, I now decided to negotiate the whole process right from the onset. I am fully aware of the political and moral responsibility in observing research ethics. Some researchers fall into the trap of doing research on communities without any accountability to such communities. These outside "experts" use the community as

research objects merely to increase their academic qualifications or publish their next book. Baker (1986: 37) explains that such research

> ... is very often predatory and parasitical in that researchers use schools and teachers to test, often unsound, hypotheses and then further their own careers by publishing papers and books ...

It is a contradiction to do democratic research by using undemocratic means. Besides the moral and political ethics of the matter, I believe that the authenticity and effectiveness of the research project would be increased by a feeling of involvement by research subjects. Having a sense of joint ownership of a project would invite a more serious sense of commitment to the objectives of the research. In order to achieve an acceptance of a common set of objectives shared by all participants, one needs to engage in a process of patient but honest negotiations. Davidoff & van den Berg (1990: 36) emphasise this:

> A very important part of the planning of Action Research is negotiation. If you are researching with people, you need to explain to them exactly what it is you would like to do, and why you want to do it. You need to gain their support for this. This is what negotiation has to be about, because you are researching **with** people rather than **on** or **about** them (my own empasis).

4.3.3 The second semester HDE students

I discussed the nature of my M.Ed. course with both my HDE student groups and explained what my research project entailed. I motivated its importance for education generally and its

significance for the future of their computers-in-education course. I invited any five students from each group to work with me on this project. Four of the one group and one of the other group volunteered, while I had to use some personal persuasion to get another one from the second group. The group comprised four females and two males, of whom one was an African male and another an African female. These HDE students appeared to be enthusiastic about the educational possibilities of computers.

4.3.4 The CECS teachers

I found it less threatening to discuss my research objectives with my CECS colleagues. I suspect it could be because they were, formally-speaking, my colleagues and not my students. Many of these CECS teachers already shared my ideas on the progressive use of computers for democratic resources. It was easy to explain the merits of the research project. However, the most difficult thing was to get them to commit some of their time to this project. Time is the scarcest commodity among teachers! I managed to get six teachers (two males and four females, all "Coloured") involved in the project.

4.3.5 Data-gathering

Again I learnt from my problems in the first cycle of research. I was not going to use techniques which proved ineffective in my situation, for example the use of a tape recorder (See 3.4.4). I decided to be more focused in my approach, doing less, but

doing it thoroughly. I used a questionnaire for the six student research participants to complete upon their return from their final practice-teaching session. I also asked them to hand out similar evaluation questionnaires to the pupils whom they taught during their practice-teaching session. Before the students went out to the schools, I discussed the issue of data-gathering for the project with them. This helped me to assess how they felt about my proposed research tasks. All of them displayed a fair amount of enthusiasm. On their return to the University, I held separate interviews with each of them.

The six CECS teachers were asked to undertake similar research tasks as the HDE students, that is, hand out questionnaires about the impact of the computer-aided lesson worksheets for the pupils to complete. In addition to their findings, I asked them to include an overall assessment by themselves about what impact the use of computers have had on their teaching practices since they joined CECS. I held a group-interview with these six teachers afterwards. The group interview was by default rather than by choice. I initially planned to do the interviews individually, but circumstances (the notorious time factor) left me with no other choice. Nevertheless, some definite advantages emerged from the joint interview. It enabled them to compare their findings and comment on one another's views.

4.3.6 Introducing changes

The changes I introduced interestingly enough, were

circumstantial rather than planned. Because of factors beyond my control, I was compelled to change the order my course programme. According to the academic calender, drawn up by the University authorities, the HDE students would only have two weeks of computer classes (four double periods), before they would be required to go out on practice-teaching (See 3.4.7) to the various schools. This meant that I needed to start off the computers-in-education course by teaching the students computer skills, instead of the usual discussion on the socio-political context within which they needed to use the computers. If the six selected HDE students were to use computer-assisted worksheets during their practice-teaching session, I had to ensure that they were equipped with the necessary computer skills with which to prepare their worksheets before they went out on practice-teaching. These circumstances did not allow me to follow my normal course programme as was the case in the first semester.

I had to adjust the HDE computers-in-education course programme to respond to the demands of the situation. I decided to teach the HDE students technical skills without providing the usual political context. This change made me feel anxious, but I was nevertheless interested to know what effect this change in course programme would have.

The immediate task of the students was to acquire the necessary computer skills in order to put them into practice at their respective schools. They were taught how to use the programme NEWSMASTER, an elementary desktop publishing programme which has

successfully been used by teachers in the development of teaching resources. I explained this change in the course programme to the students and explained why I was pushing the technical side of the course so urgently. I invited both HDE classes to have a look at the work of the students of the previous semester, in order to serve as some guideline and inspiration for their own. It appeared that very few had enough confidence at that stage to use computers in preparing their worksheets. They did not appear to feel ready yet. One of them remarked, "Why do we have to use the computer for practice-teaching? I'm not going to do it!" My field notes reflected my own anxiety about this hesitancy on their part,

> They seem somewhat reluctant to use the computer. How am I going to persuade them? They seem very anxious about practice-teaching itself (27/7/91).

I had to do a bit of personal persuasion with my HDE project team to get them ready for "experimentation" in the schools. These particular students did some extra practice sessions on the computer and successfully managed to produce computer-assisted lesson worksheets for their practice-teaching sessions.

My final interviews with them were held after they returned from practice-teaching. I made field notes throughout.

4.4 Findings in the second cycle

I observed that only two of the six HDE students seemed to have

a strong political orientation, the other four were more keen on using the computer skills. I recorded the following in my field notes:

> Tembile and Sandra (fictitious names) show strong political consciousness and are responding well to my political input about People's Education. The others seem more excited about Newsmaster (12/9/91).

Similarly I noted that four of the CECS teachers were senior members of the organisation and fairly committed to its political ideals in using computers. The other two were relatively new in the organisation. I remember my excitement about the willingness of the two newer members of CECS to participate. This is reflected in my personal notes:

> I'm so glad they agreed to participate otherwise I could have a one-sided view of the experiences in CECS (7/8/93).

None of these teachers in CECS had been exposed to computers before their entry into CECS. I suspect that the above factors invariably influenced the feedback of the two groups to me.

4.4.1 HDE students

The questionnaire, which was used with the first semester group, was modified to look like this:

EVALUATION QUESTIONNAIRE

NOTE:

The aim of this questionnaire is to assess whether the use

of the computer in making teaching resources, had any impact on your teaching practice. This you may assess through the response of your school pupils and the effects on you and your style of teaching. You may, if you wish, use any other method to assess the effect of the computer.

QUESTIONS

1. Did your pupils respond any differently to the lessons in which you used computer-assisted worksheets than to the other lessons? How could you gauge this?

2. Do you think your computer-assisted worksheets made any positive impact on the students? Explain how this was displayed.

3. Were there any disadvantages in using computer-assisted worksheets? Explain.

4. Did the use of the computer help to make your lesson more transformative/alternative? Illustrate.

5. Weighed up against the cost of computers, do you think all teachers need to be trained in the use of computers?

Based on the feedback from their questionnaires, all six of the HDE students seemed to think it was well worth using computers in preparing worksheets. They all seemed to think that the

computer was an excellent teacher-aid. The pupils, the teachers at the school and their HDE colleagues seemed to be impressed with their computer-assisted worksheets. These worksheets made them "feel more confident" and evoked "a better response from pupils". They expressed the opinion that the computer could be "a teacher's greatest asset", as it enabled her to present neater work and to plan better.

I was looking out for the difference in the type of response between the "non-political" and the "political" HDE students. The difference in response between the groups appeared to be insignificant. I realise that my arbitrary categorisation can be problematic, and I use it hesitantly to distinguish between the two groups. It was only during the individual interviews that I noted different interpretations of what actually happened "out there" in the "real world" of the schools. In response to my question about the extent to which the computer-assisted worksheets helped to create an alternative/ people's education lesson, one of the "politically-oriented" two, mentioned the political importance of being able to move beyond the confines of the textbook.

In her history lesson, the above student explained how she could supplement the official texts on the "Treaty of Versailles" with more immediately experienced examples of fighting and peace treaties among local criminal gangs. In explaining how much the pupils seemed to "enjoy" the lesson, she mentioned how appreciative the pupils were of her "special effort" to break

away from the routine boredom of the textbook. She said that she believed that a lesson like that was more "democratic" in nature because it got pupils to feel more involved in the lesson and encouraged more active participation and group discussion. She admitted that she could have done a similar lesson without the help of the computer, but pointed out that she was more stimulated, knowing she could use the computer to replace the textbook. (I commented that I did not think it would be practical to replace the textbook completely.)

The other "politically-oriented" HDE student commented on his English language lesson. He referred, among other things, to the "empowering effect" on both pupils and teachers, having control over the content of a lesson. He felt that the computer could play a key role in making "more relevant worksheets" which dealt with the daily lives of the students. He felt that a subject like English offered enough scope for experimenting with "alternative" ideas. The computer, according to him, was the ideal instrument for that purpose.

In response to the same question the other HDE students seemed to lay greater emphasis on the personal and technical advantages of using the computer. They emphasised the positive effects that the impressive appearances of their worksheets had on the pupils and teachers. They remained vague about the "political" potential of the computer.

4.4.1.1 Effects of change in the HDE course programme

In examining what effect, if any, the change in my course programme had, I observed that there appeared to be generally more confidence among students after two sessions on People's Education. The sessions aimed at locating the use of computers in the context of building a democratic transformative education. The sessions dealt with the social implications of computer technology. However, these sessions they received only upon their return from their practice-teaching sessions.

I sensed a certain lack of cohesiveness in the class among the students when they returned from their practice-teaching. That I gauged from the type of responses I received when I gathered the whole class in a circle for a discussion on their experiences out in the schools. They displayed an uncertainty of just how useful computers and this particular course were for them as teachers. One of them said, "I don't know if it made any difference, I couldn't tell." Some of them still motivated the wider career potential of the course. This was one of their comments, "I don't know about empowerment and this (sic) things, because I just want it (the computer course) on my diploma and that's it!." It appeared to me that their response was influenced by the fact that they until then, not had the discussion on the social and educational context of the use of computers. The educational and broader socio-political link had to be developed more firmly in the minds of the students.

A small group of students did show a political awareness when I raised the issue of transformative possibilities in the use of the computer. This was evidenced by the following response, "Although I did not manage to use the computer for my practice teaching, I think it can help to teach People's Education lessons". When I asked what made her think so, she did not answer. Her response I suspect, was a result of the other HDE courses in which these students were exposed to ideas on People's Education.

However, I noticed a remarkable change in atmosphere and attitude among most students when we started with the sessions in which they had to do their group assignments (These followed the "political" sessions on People's Education). As teacher/facilitator I moved around to discuss with them the planning of their group assignments. They seemed to exhibit much more political insight into developing democratic resources with the computer than was the case before the People's Education session. They seemed more confident and excited about their assignments. Statements like, "... but how can such a lesson be made to be alternative?", and "...no, we can't! that's sexist!" were heard within the working groups. I reflected in my notes, "if only they had this attitude before they went on their teaching-practice session" (18/9/91).

In the interviews with my research participants, some members of the "non-political" group acknowledged that they did have a better understanding of the political link between computers and

education after the above-mentioned sessions. One mentioned, "I don't think your People's Education sessions taught me anything I did not know already, but it was fun!" The other two ("political" ones) did not experience a real difference in their understanding of the political role of computers in education, but one declared that "it helped me to understand People's Education in a more practical way. The other commented, "You know, sometimes you just use words without really understanding it."

In response to my question about the usefulness of computers for teachers, all of the research participants expressed reservations about its feasibility because of the lack of access to computers. They felt that there were not enough computers available in the schools and in the community for teachers to use. This was a source of frustration as reflected by the statement from one of them, "But what's the use, we don't have computers at home, and most of the schools don't have computers, ... so?"

4.4.2 The CECS teachers

Ms B is an English teacher and one of the senior members of CECS. She has been using computers since the very start of her teaching career. She was exposed to computers by CECS during her pre-service period at university and indicated that her experience in using computers had been rewarding in various ways. She claimed that her School pupils, coming from a socially disadvantaged background, "simply loved my personalised

computerised worksheets." However, she immediately warned that, "the computer can easily become just another toy for teachers to use to decorate their worksheets, unless you are committed to education for liberation." She emphasised the importance of the political context in which computers are to be used in education.

She pointed out that the use of the computer could be an empowering experience through "its ability to impress pupils and to place more control over the content of teaching material in the teacher's hands." She found that through a structure like CECS, the use of the computer managed to put her in touch with other teachers with whom she not only shared resources, but also engaged in debates about educational issues.

As part of this research project she handed a questionnaire to her matric students to fill in. It asked the following questions:

1. Do you prefer worksheets and question papers which are:
   (a) handwritten
   (b) typed on typewriter
   (c) done on computer
   Give reasons.

2. Do Computer-typed question papers affect the way you answer your question paper? Why/why not?

3. Do you think that I would be a different kind of teacher if I did not use a computer?

According to her, most pupils indicated that they preferred question papers done on computer, because they were better to read and they looked more attractive. However, some did indicate that sometimes they found handwritten ones less intimidating and more personalised.

Most pupils indicated that question papers done on computer had a better effect on them than did ones that were badly typed and looked "boring".

To the third question, she indicated that pupils gave varying answers, but these all boiled down to the fact that they did not believe the absence of the computer would change her as a teacher. One of her pupils had remarked, "We love you with or without the computer, Miss!" However, according to her, the availability of computer facilities enabled her to give fuller expression to her commitment to democratic and creative teaching practices.

She personally believed that "the computer cannot make you into a good teacher, but as a teacher, you can make good use of the computer." She insisted that computer skills ought not to be taught in isolation from the political and educational context.

Most of the findings of the other teachers concurred broadly with those of Ms B, although they all taught at different schools - all high schools. Mr D explained how the use of computers at his school assumed a threatening role. The pupils all liked his

worksheets, but the latter caused some envy among computer-illiterate teachers. The following statement from fellow teachers, according to him, was not uncommon, "Hey, hy gee hom net yt, man!" (He's simply trying to show off!). The fact is that Mr D has been assisting the Students Representative Council (SRC) to do the school magazines on computer - something which most teachers were not willing to do on a voluntary basis. In addition, it was mostly the "progressive" teachers who used the computer to produce "subversive"[37] worksheets. The computer, which is normally regarded as a status symbol by school authorities, thus assumed a negative status among the mostly conservative members of the school hierarchy. Mr D added his voice to the argument that the computer had transformative possibilities only if it was used within an emancipatory context.

Ms A, echoing Ms B's views in her own feedback, complained about the inappropriate use of computers. According to her, many politically conservative teachers, recognising the outward appeal of computer-aided worksheets, were clamouring to use the computer. In most cases these teachers were merely reproducing parts of the textbook, in a decorative way, without changing their authoritarian teaching methods. She commented, "I don't know why these teachers now suddenly want to jump onto the bandwagon, they're not interested in changing their teaching methods."

[37] A negative term used by conservative teachers and principals to refer to teachers who are committed to political transformation.

Mr G (one of the new CECS members) warned that the use of the computer can be limiting and that the teachers ought not to develop a dependency on the computer, but that they needed to supplement the use of the computer with other resources. Some of his pupils commented that sometimes they found the computer-assisted worksheets "boring", because he always used the same type of computer graphics and fonts.

In my interview with the group of teachers, I asked why the idea of CECS subject groups, within which teachers share and exchange computer-stored resources, as well as working collaboratively on syllabi, failed to grow in a significant way? Most of them agreed with their colleague who responded, "You know time is the teacher's biggest enemy." I reminded them that, according to their own claims about subject groups, the use of the computer to store and share teaching resources, was supposed to save them time. In reply, they claimed that there were not enough teachers in the various subject areas who were actively using the computer, in order to make subject groups a feasible exercise. Some of them were of the opinion that if computers on the one hand, became more accessible to teachers, and teachers on the other hand, became convinced that subject groups would have immediate and direct impact on their daily teaching practices, they would become more committed to these groups.

4.5 Making meaning

Based on the various questionnaires and the general observation

of teachers and HDE students, it appears as if there is a general feeling among certain pre-service and in-service teachers that computer technology, if used in an appropriate manner, can offer possibilities for emancipatory education. These teachers seem to suggest that the "appropriate" use of the computer, means using it in a wider social and political context. It needs to form part of a general democratic perspective on education in which teachers act as transformative intellectuals.

The response to the change in the course-programme appeared to underscore the view that the provision of technical skills are not enough to make teachers feel empowered. Teachers need to be in a position to make the connection between technology and its role within the educational process. They need to reflect upon and understand how the use of the new technology will influence the current relations of power within education, of which they form part. It is only in discovering how the computer can be used to change things around them and perhaps challenge the status quo, that teachers would feel empowered by the use of it.

It appears that Fullan's (1982: 30) three dimensions of change - the use of new technology, using new approaches and the change in pedagogical assumptions - were functional within the HDE course session where students were doing their group assignments. I am of the opinion that the quality of the group assignments would in some measure reflect the extent to which those students had been able to integrate the dimensions of change on the three levels, referred to by Fullan. The group assignments required

students to use new computer technology, attempt new teaching approaches and reflect critically upon their educational perspectives.

When I asked the HDE participants whether I could have left out the session on People's Education, one of them answered that although she was familiar with most of the People's Education concepts, the session "helped me to link the computer with my own ideas and other concepts which I got from my other courses." It appeared as if these students were acknowledging that conceptual frameworks help to capture the meaning of practices (technical), whereas the conceptual frameworks only become fully understood through actual practices (eg. through the practical use of the computer for lesson worksheets). It seemed as if the students were satisfied with the balance between political and technical content in the course.

In the next chapter I will attempt to draw together all the issues and loose strands which emerged throughout the mini-thesis. I will also examine the road ahead - the hope for and possibilities of a democratic and open education system.

CHAPTER 5

COMPUTERS FOR CHANGE - A CRITICAL REFLECTION

5.1 Reflecting on the process of change

In this chapter I will reflect upon the process of change as experienced during this action research project. I will consider to what extent my personal views and teaching practices have changed in the process. I need to examine whether the HDE computer course contributed or alternatively hampered the process of educational change. One needs to establish to what extent the use of computers in the context of teaching and learning, empowers or stifles the voice of students and teachers. Does the use of computer-supported education help to perpetuate the status quo or does it contribute meaningfully to social transformation? These are key issues underpinning this mini-thesis, and which I would like to address in this concluding chapter.

It is easy to underestimate the complexity of change. Many theorists speak glibly about change, but what does it mean in practice? When I read Fullan's work (1982) on the implementation of change in educational institutions, I start to grasp some of the reasons for the frustration one experiences in trying to bring about change in one's own teaching practices. It takes much more than merely identifying problems and proposing changes on a local level in order to bring about actual change. There are various inter-acting and overlapping layers of structures and

relationships which are affected by change processes. Fullan (1982: 26) suggests that it would be useful to ask what kind of changes are being proposed, who benefits from them, and how feasible the proposed changes are for actual implementation.

Implementing change affects people's beliefs, behaviour, skills and self-images. When the change process challenges these, it causes insecurity and anxiety. It affects inter-personal relations and is perceived as a threat to existing power relations in the institution. Depending on the nature and source of change, it could meet with varying degrees of resistance and or perhaps apathy.

Fullan (1982: 30) argues that

> change consists of a sophisticated and none too clear dynamic interrelationship of the three dimensions of change. **Beliefs** both guide and are themselves informed by **teaching strategies and activities**; the effective use of **materials** depends on their articulation with beliefs and teaching approaches (my emphasis)

Change involves as much personal-psychological transformation as it does challenging the vested interests of social hierarchies. Change in role relationships is the most difficult because it implies a shift in the balance of power, be it in the classroom or "higher up". Changes in the classroom can demand radical changes in the existing curriculum, which in turn have wider socio-cultural and political ramifications. I think about the negative reaction of the school principal to my role as a teacher-activist committed to "radical changes" in the education

system. I also remember the political victimisation of various teacher-activists by school inspectors and other education authorities.

In a divided and polarised society like South Africa, the prospect of change assumes an even greater threat to groups with vested interests in the status quo. In the South African context, the concept of change and its successful implementation constitute contested terrain in the struggle between hegemonic and counter-hegemonic forces. The demand for educational change has become an important part of a broader democratic struggle for socio-political transformation in South Africa. It is in this context that the emancipatory nature of action research becomes more important. Action research needs to define itself in terms of this struggle for democracy and social justice.

5.2 Has my research project promoted educational change?

Examining my project in the light of the above criteria I need to consider to what extent the broader social structures and power relations impact on my classroom practices and to what extent these practices in turn, are able to influence those broader social structures. Walker (1990: 61) cautions that

> Action research divorced both from an understanding of the structural features of one's society and links with political forces for democratic education must eventually be limited in its effects to improvement without change.

What are the implications of the above for my own project? I have been observing and reflecting upon practices in using the computer for materials development, but I need to consider how they promote change in a broader structural and political sense. I need to ask the questions, What has my project managed to change? What are the effects of such changes? In what respect has my research been emancipatory?

This project has been based on the assumption that education is inherently political. I agree with Freire (1972) that education is always political since education cannot be separated from power. Those who hold power define what education will be, its methods, programmes and curriculum.

I will now attempt to illustrate how the project has, in my opinion, started to address some of the above questions.

5.2.1 Democratising the development of teaching materials

The state's monopoly over educational resources and textbooks enables it to hold ideological sway over educational content and structure of the school curriculum. Developing independent democratically-oriented teaching materials could help to strengthen counter-hegemonic resistance in the schools. The project has essentially been aimed at addressing the need to open up emancipatory possibilities in education. The development of teaching materials is an important aspect of curriculum development. Under Apartheid, education has been determined and

shaped unilaterally by state-appointed "experts", who in most cases remained alienated from the community at whom education is aimed.

The Apartheid state defined education in such a way as to serve the interests of the racially-dominant group who imposes its own "regimes of truth" (Giroux, 1988) upon society. McLaren (1989: 174) explains this concept by showing how the politically dominant groups in society attempt to

> ... fix the meaning of signs, symbols and representations to provide a 'common' worldview, disguising the relations of power and privilege through the organs of mass media, state apparatus such as schools, government institutions, and state bureaucracies (McLaren, 1989: 174).

By engaging pre-service teachers in the process of developing teaching materials, the HDE computer course helped to democratise aspects of curriculum development. Teachers learnt to question the "power of the printed word", since their own ideas could now appear in printed form. The social consciousness of teachers was raised through questions such as, Whose knowledge?; What knowledge?; and Towards what end? These pre-service teachers started seeing themselves as producers of knowledge rather than mere implementers of knowledge. Teachers realised that they themselves could now define the meaning of text and the context of teaching materials.

Stubbs (1989: 15) refers to the benefits of publishing student (and teacher) writing. He (1989: 16) writes:

> Such forms of local writing publishing can be much more responsive to local diversity. It is not mainstream publishing, and therefore potentially more open to a range of different ideas and different viewpoints. Combined with computer-assisted production methods, it should lead to a more active view of writing.

Placing the provision of technical skills within a political context makes the potential for transformation greater. The research project helped to inject a measure of critical reflection into the course which made both the HDE students and CECS teachers, as well as myself, think more clearly about the role of technology within the wider process of social transformation.

5.2.2 Towards an understanding of power relations

The project identified various differences and tensions among students participating in the research process. These tensions are best understood within the context of power relations. Power relations are often publicly manifested through forms of cultural expression.

The varying degrees of technical success by the different HDE students in my class were invariably linked to the cultural home and cultural capital of each student. According to Lynch (1974: 73), Bordieu uses the concept of cultural capital to identify and explain different behaviourial patterns and responses among students. He argues that the cultural experiences and values based on the social class of students have a large influence on

the academic success of students. McLaren (1989) refers to the "lived experiences" of students as an important factor in determining how students relate to one another and to the schooling system.

I identified distinct behaviourial patterns and attitudes to the use of technology. In chapter four I illustrated the dominant roles of "Coloured" males, and the technological insecurity displayed by the "African" sector of the HDE class. The confidence about "political" issues expressed by the African students seem to have a link with the political experiences in their communities. This is contrasted with a clear lack of technological confidence within these same communities. The HDE course could possibly have an empowering effect if it succeeded to mediate successfully between the technology and the political culture of these students[38].

5.2.3 Gender relations

The research initiative highlighted the issue of gender relations in the HDE computer course. I found that female students appeared to work much harder at their assignments, but appeared less confident than their male counterparts with regard to the use of the technology and to related discussions in class. The issue of gender inequality is a worldwide phenomenon which is also

[38]Many of the African students who enroled at UWC were political "refugees" who fled from political repression and violence in other parts of the country.

reflected in the use of technology in education. Michael Apple (1989: 306) quotes a current analyst with regard to the use of computers in USA schools,

> While stories abound about students who will do just about anything to increase their access to computers, most youngsters working with school computers are (economically advantaged) white, and male. The ever-growing number of private computer camps, after-school and weekend programs serve middle-class white boys.

A lack of sensitivity to and understanding of existing power relations can help to entrench social inequities based on race, gender and class. The uncritical use of technology, as I argued in chapter three, can have the effect of not only masking these tensions, but also exacerbating them.

5.2.4 Placing computer skills within the paradigm of critical pedagogy

The research project set out to reflect critically on the use of computer technology as a means of developing more democratic forms of teaching. It examined possibilities of using the computer as a resource to develop progressive (People's Education) teaching resources. At the same time it was a reflection on how best to teach such a course without losing its socio-political context and purpose. This course was easily and often wrongly perceived as being a purely technical skills course and consequently invited inappropriate expectations by students. It was my aim to situate the teaching of this course firmly within the paradigm of critical pedagogy. The extent to which I have managed to do so, forms a central aspect of the research

exercise.

5.3 Macro - micro link

The concern expressed by the HDE students about the lack of adequate access to computers for teachers in the schools, emphasised, in my opinion, the need to make more apparent the link between the micro-level in the computer laboratory and the macro-level outside. If the skills learned in the HDE course must assume an emancipatory character, these pre-service teachers need to channel their energies through an appropriate liberatory organisation, such as the South African Democratic Teachers Union (SADTU), or CECS. Melanie Walker (1990: 60) argues that

> only such organisationally located pedagogical interventions can realise the emancipatory potential of classroom action research.

Change in the classroom must be aimed at wider social changes. The HDE students did express an interest in CECS as far as it would facilitate their continued use of computers for materials development. CECS could possibly be the vehicle for these new and other teachers to promote emancipatory materials development. Individual HDE students may find that they can, by virtue of what they experienced in this HDE computer course, eventually make a significant dent in the status quo. Learning to use computers in a socially relevant way could therefore be perceived as a transformative act in itself.

5.4 Research for social change

I would like to assert that any research which fails to take into account the issues arising out of the current struggle for socio-political transformation in South Africa, run the risk of being socially and educationally irrelevant. In considering the usefulness of this action research project, I need to comment on the transformative potential of action research as a process. Shirley Grundy (1987: 19) in distinguishing emancipatory action research from technical and practical ones, characterises it as being committed to social and political justice and freedom.

Melanie Walker (1990: 59) writes that

> Critical or emancipatory action research requires that one starts from the teachers' political understanding of how society is structured, how it is changing and how it can be changed, and related to such understanding, how one might act in the classroom so that one's pedagogical and political concerns intersect to generate transformative effects.

5.5 Conceptual issues in action research

Central to the debates on social change are conceptual issues such as the relationship between theory and practice, objectivity and subjectivity, the individual and society, and micro and macro levels of research. These issues have significant impact on how meaning is constructed and perceived on a common sense level.

5.5.1 Theory and practice

How does action research perceive the relationship between theory and practice? The issue of theory-practice lies at the heart of emancipatory action research and informs its cyclical critical self-reflection process. It rejects the conceptual separation between theory and practice and argues that within theory there are practices and in practices there is theory. Grundy (1987: 144) finds Paulo Freire's concept of praxis a useful way to overcome the tension between practice and theory. Freire (1972: 96) claims that

> "... mens activity consists of action and reflection: it is praxis ... and as praxis it requires theory to illuminate it. Men's activity is theory and practice; it is reflection and action.

Grundy (1987: 144) argues that praxis implies a reflexive relationship between theory and practice, in which each builds upon the other, rather than a linear relationship in which the one determines the other.

This challenges the notion of outside educational experts who "own" the theory and make policy while teacher-practitioners are expected merely to implement it. This separation between theory and practice has much to do with the ongoing political struggles involving school inspectors on the one hand and "progressive" teachers in Coloured and African schools, on the other. The separation between theory and practice forms the basis for the undemocratic educational views and practices of state-supported

structures.

Carr & Kemmis (1986: 183) refer to a dialectical relationship between pairs of terms which are normally regarded as being mutually exclusive - theory and practice, and individual and society. I find the following explanation of theirs illuminating:

> Action research recognises that thought and action arise from practices in particular situations, and that situations themselves can be transformed by transforming the practices that constitute them and the understandings that make them meaningful. This involves transformations in individual practices, understandings and situations which groups of people constitute through their interaction (Carr & Kemmis, 1986: 183).

5.5.2 The objectivity-subjectivity debate

The debate around the issue of objectivity versus subjectivity is closely associated with the tension between positivist research and qualitative research. Objectivity as a criterion for research stems from the positivists' insistence on placing educational research through similar "testing" methods , as they do with the natural sciences. It is an attempt to protect research findings from personal or "subjective" biases and distortions. This "test", according to them, would make the research more reliable and trustworthy.

Qualitative research, however, rejects the notion of objectivity and says that the reports of any researchers contain their own personal interpretations and bias of events. Research about human

lives is unlike that of the pure sciences, and needs human interpretation to extract meaning from events and social processes.

Positivist research emphasises the "objective" status of knowledge as that which exists independently of the observer while the qualitative interpretive researcher emphasises the subjective understandings of the participants as a basis for interpreting social reality. However, emancipatory action researchers adopt a dialectical approach which bring together the inherent contradictions of these relations (as described above) into a dynamic unity.

Richard Winter (1989: 49) explains that

> ... the dialectical approach suggests that in order to understand a phenomenon we treat it as a set of relations between elements which are different and in some sense, opposed (i.e. contradictory), and yet at the same time interdependent (i.e. form a unity). It is this instability in the structure of a phenomenon which provides it with a specific and inherent tendency to change.

Further emphasising the inter-dependence of theory and practice, Winter (1989: 65) explains that

> ... theory separated from practice slips into abstract speculation and the ramification of jargon; practice separated from theory slips into self-justificatory reaction or self-perpetuating routine.

5.5.3 Society and individual

Often teachers are unaware to what extent their actions are influenced by external societal factors. Most teachers are bearers of middle class values which they bring into the classroom often filled with working class students. These values are then transmitted to students who do not necessarily share those values. This process can cause a measure of alienation among students. It is important that teachers are made sensitive to the relationship between society and individual and its effect on the classroom situation.

While the individual is a product of society, the society is simultaneously made up of individuals' actions. Theory and practice are thus interdependent and exist in a social matrix within which meanings are constructed and actions can be given meaning. We need to recognise that there are social-structural constraints on social thought and action which are beyond the control of individuals or groups. At the same time we need to acknowledge that there are personal (subjective) constraints which they themselves can change, if they understood the world differently (Carr & Kemmis, 1986: 180).

5.5.4 Ideology-critique

How do we free our understanding from the distortions of "external" social constraints? Action research proposes a process of ideology-critique. Grundy (1978: 111) explains ideology as "a

set of ideas which ... distorts reality by making what is culturally constructed appear 'natural'." This serves to mask the real relationships of power and when these distorted meanings correspond with those of the dominant group in society, they constitute ideological hegemony.

Teachers often do not realise to what extent they promote these "invisible" hegemonic processes through their teaching practices. Many teachers teach the given curricula in an uncritical way, based on the assumption that education is politically neutral and universal. The appearance of schooling as being politically neutral is a powerful means of lulling teachers into roles of passive reproducers of knowledge.

Ideology-critique which offers a way of escaping from the distortions of ideology, cannot be enacted merely through a process of critical self-reflection or merely on a micro-classroom level. The process needs to operate dialectically on all levels of interaction which help to constitute meaning. The action researcher needs to understand how her practices are "socially constructed and historically-embedded" (Carr & Kemmis, 1986). It is not enough that teachers or students replace one dogma with another. I suspect that many of the political slogans demanding a "democratic People's Education" are ideologically tainted and also need to be subjected to the rigours of critical theory. Grundy (1987: 112) argues that the action researcher would need, what she calls, "critical theorems" to help the individual to uncover the ideological distortions. Critical

Pedagogy is one example of what would help educational action researchers in their attempt to escape from ideological hegemony.

The dialectical link between critical social theories and the self-reflective spirals of action research creates a dynamic balance between individual action researchers on the micro-level and the socio-political impact of the macro-societal structures.

5.6 Possibilities for transformation.

Melanie Walker (1990: 60) argues that emancipatory action research does offer possibilities for educational transformation in South Africa, because, as she points out, "the guiding ethic of such research is the social and political ideals of freedom."

Stephen Kemmis (1984: 78) agrees that:

> Unless it is engaging specific political movements in education, it runs the risk of treating the actors it is intended to influence or enlighten as reified ... When it does so, it becomes a species of interpretive research, lacking political commitment because it does not employ a self-subsuming theory of educational, social and political change.

Educational research has generally been regarded as an elitist affair, reserved for "academics". In South Africa, where education has emerged as one of the prime sites of political contestation, teachers and students tend to constitute the research fodder on which intellectuals grow fat. Historically there has been a clear separation, in South Africa, between

intellectuals and activists, despite the much popularised slogan of Gramsci's organic intellectuals.

Action research appears to propose the bridging of this historical gulf between academic "theorists" and non-academic "practitioners". It is easier to argue on the theoretical plain that "all teachers are researchers and all researchers need to be teachers", than it is to translate that into practical reality. It implies moving from the theoretical into the political and vice versa, but in a much messier way than stated here. The proposal of action research requires the bringing together dialectically, but very visibly, the political micro-level with the political macro-level. Teacher activists (those who are already committed to social transformation), and others need to be convinced that such research action will empower them and transform their situations.

Walker (1990) addresses my own concern for a closer link between classroom investigation and the macro political structures in the way that action research is often practised. She (1990: 59) argues that

> ... classroom studies must recognise that schools 'are not autonomous from the process of capital accumulation and the structure of class relations'(Sharp, 1986). To develop counter-hegemonic pedagogical strategies we need to identify the ways in which deeper structural features impact on patterns of interaction in the classroom so that we might 'hear the macro order tick ...

The current phase of political transition in South Africa,

presents the opportunity to explore fully the transformative and emancipatory potential of action research. Teachers have an important role to play in transforming schooling and in developing a critical pedagogy. It would, however, be naive to suggest that teachers alone can transform education; they need to form part of a broader political movement. It is equally naive to argue that educational change has to wait for political change. Action research, by empowering teachers through collective involvement in critical reflection and action on educational relations, engages in the act of democratisation and transformation. The process of transformation can be started by critical interventions on a local classroom or school level. These actions would help to erode the foundation upon which the status quo, with all its macro - educational and political - structures, rest.

Action research creates the opportunity for teachers and students to be involved as producers rather than mere implementers of knowledge. Teachers, as key actors in the educational situation, often display a tension between their political practice and their classroom practice. Not many teachers have been able to translate their political ideals into democratic classroom practices. In this respect the critical self-reflection of action research methods will help teachers to transform their daily classroom practices and thus effect some changes in the learning situation. It is hoped that the feeling of empowerment which the process will instil in the teachers, will make them use their new voices to wake up the sleeping giant of social and political

transformation.

5.7 A word of caution

While emancipatory action research has, in my opinion, the potential to empower teachers and other practitioners to bring about transformative changes within education, we need to caution against a simplistic notion of action research as a weapon of political struggle or as panacea for educational problems. Practice has shown that action research projects do not always realise their transformative objectives. It is important that we remain critically aware of the Western-European roots of action research and the cultural assumptions which influence many of the international writings on it. According to John Elliott (1988) action research developed organically from an existing teacher culture receptive to notions of innovation, reflective practice, and curriculum theorising. Walker (1922: 12) reminds us accordingly that

> The point is that action research in England was rooted both in the teachers' view of themselves as autonomous professionals, and a well-established movement for curriculum as a process.

As we know, no significant research culture among teachers presently exist within South African schools. The professional autonomy of South African teachers is in itself, a controversial issue. In fact, the issue of teachers' professional autonomy is one of the central demands of the ongoing democratic educational struggle. It is therefore inappropriate to simply import action

research uncritically into the South African context.

While remaining critical about it, emancipatory action research for me, is a commitment to bring about change on a grassroots level - something which many academics tend to merely theorise about on an abstract level.

5.8 Pedagogy of hope and possibility

Most teachers in South African schools experience high levels of despair and apathy, having to operate within an education bureaucracy which lacks any credibility, and one which is racially exclusive and undemocratic. I have taught in one of these schools where teachers are required to teach classes of 40 - 50 students each, and with half the required number of student desks available in the classroom. In most cases the classrooms are dilapidated, yet students have to write their examinations in such conditions, even with rain pouring through the broken window panes. Often the child in these schools, having an empty stomach to contend with, gets caned because she can't manage to concentrate. In most cases I found that the teacher has no recourse other than the apathetic and mostly incompetent education bureaucrats at school. Given such a scenario, it is difficult not to despair.

Giroux (1988: 111) argues that:

> The agony of the left in this case is that its language of critique offered no hope for teachers,

> parents or students to wage a political struggle within the schools themselves. Consequently, the language of critique is subsumed within the discourse of despair.

"Hope and possibility" is generated from the process of "making the pedagogical more political and the political more pedagogical" (Giroux, 1988: 127). Critical Pedagogy helps to discover, activate and harness, what Giroux (1981) calls, "popular voice". The idea of popular voice is an attempt to bring into the classroom the lived experiences and the popular culture of the community in order to extract the socio-political meanings from their lessons. Students and teachers must be made to feel that their personal experiences count in the process of knowledge production. They need to know that they can and do make a difference. They must assume collective ownership of educational change and not feel that they are mere research objects studied by academics. Giroux (1988: 127) suggests that "teachers should become transformative intellectuals if they are to educate students to be active, critical citizens."

When I think how well children learn through play, I wonder what has happened to the pleasure of learning at school. Traditional schooling has the effect of killing the love for learning and instilling fear as a necessary condition for learning. I often think about the analogy of the concentration camp controlled by sirens and jailers which I, as student, made about school. I believe that the discourse of pleasure and desire which critical theorists like Simon and Giroux (1989) propound, needs to be introduced into our schools.

There are so many ways in which one unwittingly helps to perpetuate the dominant hegemony. It is easy to fall into the trap of becoming part of new hegemonic forces which result from the counter-hegemonic struggle. We become guilty of silencing popular voice when it differs from the dominant mainstream of thought. We oppose any forms of resistance to our own ideas. We attempt to define the dominant discourse in terms of our own particular political or cultural group interests. How often do we not use popular democratic language as political capital to alienate the very people we claim to speak on behalf of?

However, by engaging in critical pedagogy and the discourse of hope and possibility, I hope to become and help produce some "intellectual guerillas for change" (WECTU, 1987). Giroux (1988: 128) offers some encouragement when he refers to teachers as transformative intellectuals who

> ... must work to create the conditions that give students the opportunity to become citizens who have the knowledge and courage to struggle in order to make despair unconvincing and hope practical.

5.9 The road ahead

What is the future of computer technology as a teaching-learning resource in our schools and tertiary educational institutions? If it is anything to go by, we may have a look at the latest edition of the South African government's education policy proposals called, Education Renewal Strategy, on the issue of

education technology. Interestingly enough, the latest version of these proposals seem to suggest a relatively progressive stance on education technology than what has been the case before,

> ... The simple fact is that the education process is far more than the mere transmission of knowledge through some technological medium. The relationship between teacher and learner is an integral element of education. Education technology can complement and support the teacher in the process, but it cannot replace the teacher, the teacher would still be necessary as a planner, motivator, guide and evaluator (Department of National Education, 1992: 66).

But why do we need the technology? I have attempted to illustrate within this mini-thesis that the teaching of large classes can be significantly enhanced through the effective use of computers. According to Morrow (1993: 8) it is unrealistic to expect the size of classes at schools and universities to shrink with the imminent change in government.

He (1993: 9) argues that

> ... we are probably going to have to settle on a class size of about 40, not 20 or 25, in our primary and secondary schools in the future South Africa; and it is likely that a university like UWC is much more typical, in respect to class-sizes, of what a university will be like in a future South Africa than are the historically white universities.

The challenge to make creative use of a potentially powerful teaching resource such as computers, remains ours. It is important that those committed to emancipatory praxis take hold

of the technology in order to promote their transformative objectives in education.

5.10 CONCLUSION

In my action research project I attempted to reflect critically on the aims and objectives of the computers-in-education course, and more generally on the idea of using the computer as a transformative resource in education. The project has helped to further problematise the concept of computers in education. The project helped me to think about the use of computers more carefully in terms of the socio-political contradictions and tensions around race, class and gender.

The action research project has managed to highlight various possibilities, as well as problems, in using computers to develop teaching resources. Politically, the project has shown that the critical use of computer-supported education can offer transformative possibilities. Equipping students from marginalised African and Coloured communities with computer skills, forms part of challenging the current power relations. The redistribution of access to computer skills and resources will help to lend greater voice and power to make possible the re-ordering of the status quo. I am hopeful that the use of computers-in-education can help to instil a culture of technological confidence into the historically "silenced" communities.

Did the project bring about changes within the HDE students and changes within me as teacher? I am of the opinion that by having made the students more sensitive to issues like gender, language and the political context in using the computer, the project had a transformative effect. Students involved in the project reflected more carefully and critically about the computer course than would have been the case otherwise.

As teacher, I benefited from the students' feedback and the process of my own critical self-reflection. The experience made me more sensitive to the social dynamics and contradictions among the students in class. I became aware of some of the weaknesses in both the course structure as well as in my teaching practices. Personally, the research project has helped to enrich my own understanding of this field of knowledge. Through this action research exercise I have experienced a degree of personal transformation. The action research M.Ed. course has been a source of valuable tension as well as strength. Before joining the course I always regarded myself as a progressive teacher and one who promoted transformative possibilities. In reflecting more seriously during this research project, I realised that my role as teacher-activist failed to challenge the status quo on a grassroots level. It became apparent that much of my liberatory rhetoric was not rooted in transformative everyday classroom practices.

The M.Ed. course helped to provide some enlightenment. The debates, the challenges, the insecurity, the despair, but more

importantly, the support and collaboration among colleagues helped me to emerge with new meaning, hope and confidence. The question now remains - where do I go from here? Will I continue to reflect on my practices beyond the completion of my M.Ed. mini-thesis? I realise that doing action research can be very demanding and not always convenient, but when I consider the threat of being absorbed into the rut of meaningless transmission teaching cycles, I cannot but think that every teacher needs to use some form of critical self-reflection to safeguard against becoming "dead wood". It is important to continue the ongoing spiral of critical self-reflection so that it may help us navigate the stormy waters of life's struggles.

The following statement by Melanie Walker appropriately sums up what I have attempted to convey through this mini-thesis:

> I do not think that emancipatory action research will on its own create a revolution, nor liberate participants in the grand sense. There is no inherent guarantee that the research will empower without shifts in the material base of power relations. Nonetheless, action research's effect lies in those local, particular moments of transformation which arguably contribute to the long haul to create a just world. The point is to understand empowerment on all levels (Walker, 1992: 29).

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