Chapter Three

METHODOLOGY
Qualitative Research Design
for Understanding Policy Change

3.1 Introduction

> *"Let's slow down our perception*
> *and invite our exploration."*
>
> Eisner, 1999

This chapter presents a description and analysis of the research design, the choice of a qualitative research design, the researcher as instrument, data collection and data processing procedures. I wish to present in this chapter the type of research, who were involved, and why I conducted this investigation.

Firstly, I present some thoughts pertaining to the continuing qualitative-quantitative debate in educational research and how this has influenced my choice for a qualitative research design. My rationale and justification for the methodology is described in addition to methodological criteria such as validity and reliability.

Secondly, I discuss sample selection and the unit of analysis, which links with the process of data gathering using focus group discussions, interviews, and questionnaires. Thirdly, I present the data analysis process, bringing together a configuration of findings, forming themes or categories, illustrated in some networks. I also describe the technology used for the analysis, Atlas.ti.

3.2   Qualitative and quantitative research: the continuing debate

Although not mutually exclusive, research methods are commonly divided into two streams of thought: quantitative research and qualitative research (cf. Denzin & Lincoln, 1994; Merriam, 1998). Quantitative methods are often associated with the positivist tradition, deductive and predictive in approach, which depends on experimental designs and statistical correlations. Qualitative methods are frequently inductive in approach, implying a naturalistic design and the emergence of important attributes through in-depth study of a few cases. Quantitative research frequently tests hypotheses while in qualitative research hypotheses are usually generated.

For many decades, positivism was the dominant research approach; it is characterised by an insistence that science can only deal with observable entities known directly to experience. This kind of approach is used where quantitative researchers seek causal determination, prediction, and generalisation of findings. Qualitative researchers seek instead illumination and understanding. McMillan and Schumacher (1993:14-15), as they focus on the assumptions, the purpose of the inquiry, the methods used, the role of the researcher and the context of the inquiry, classify the differences as follows:

- In quantitative research, the assumptions about the world are based on a logical positivist philosophy. This implies that social evidence is a single objective reality, which is separated from feelings and beliefs of individuals. Qualitative research is based on a naturalistic-phenomenological philosophy, assuming that multiple realities are

socially constructed by the individual and by society.

- The research purpose in quantitative research endeavours to establish relationships and to explain the causes of changes in measured social facts. This aim is in contrast with the purpose of understanding the social phenomenon from the respondents' and participants perspectives, as in qualitative research.

- Research methods and processes in quantitative research are set in procedures and steps that guide the researcher. Qualitative research methods and processes have greater flexibility. An emergent design (a constructivist design versus a positivistic design) is used which means that decisions about data collection strategies are made during the study. This type of design is in contrast to a pre-established design, which is applied, in quantitative research.

- The role of the researcher in qualitative research is of vital importance since s/he as a person is the research instrument. The researcher becomes immersed in the research project, whilst in quantitative research s/he remains detached.

- The context in the study is important in qualitative research, since it is believed that human actions are strongly influenced by the settings in which they occur. Human behaviour and responses can be better understood when the framework or the perspective within which the respondents interpret their thoughts, feelings, meanings and actions is known. The context or the framework is appropriate when collecting and analysing data. Qualitative research develops context-bound generalisations, contrary to universal context-free generalisations as in quantitative research.

Given the long debates with regard to the nature of qualitative and quantitative inquiry, it is difficult to find an unambiguous and definitive statement as to what qualitative research in education actually is. According to Lancy (1993:3), this is primarily because the "…topic, theory, and methodology are usually closely related in qualitative research." For instance, Bogdan and Biklen (1992:3) write that qualitative research in education draws from many sources, reflected by the use of terms such as "symbolic interactionist, inner perspective, the Chicago School,

phenomenology, case study, interpretive, ethno-methodological, ecological, and descriptive."

Briefly then, qualitative research takes an interpretive approach to its subject matter – that is to say, things are studied in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings that people bring to them. Qualitative research begins by accepting that there is a range of different ways of making sense of the world. The approach is concerned with discovering and understanding the meanings seen by those who are being researched and with comprehending their views and perspectives of the world rather than that of the researchers.

Historically, according to Bogdan and Biklen (1992:9-29), qualitative methods were first brought into education via the use of anthropological and sociological methods for the study of educational settings and systems. Qualitative research in education involved importing non-experimental and observational procedures and field-oriented and data-driven theories from other disciplines in social research. What followed was an expansion of qualitative research to include contemporary interpretive methods, the creation of textbooks and guidelines for qualitative research, and the development of a philosophical foundation for qualitative research *per se*.

One area of change in qualitative research was the inclusion of interpretive approaches, including critical theory, feminism, action research, cultural studies and postmodernism in general. The movement in this research direction was clearly a move away from gathering data and building theory *per se*, and towards critical theory using empirical inquiry not only to verify theoretical claims but also to understand and critically reflect on ideological dimensions.

Another area of change relates to the establishment of a philosophical foundation to characterise the work and thinking of qualitative researchers in education. Lincoln and Guba (1985) argue that qualitative research assumes a different ontological position than traditional quantitative research. They write that quantitative research espouses the idea that reality is outside the control of the researcher and that inquiry is thus essentially a spectator activity, whereas qualitative research is characterised by the assumption that the researcher constructs the "reality" that s/he sees. This includes the notion that persons involved as participants or respondents in an inquiry construct their reality as well.

Lincoln and Guba (1985: 160-186) also argue that the epistemological foundations of qualitative research are based on values and value judgements and not on facts. The researcher's values guide and shape the research conclusions because the researcher constructs the reality of the inquiry. At the same time, though, the researcher has to be sensitive to the realities created by the others involved and the consequent changes and differences in values. Therefore, findings and "truth" claims in a qualitative study are constructed.

In this context, Denzin and Lincoln (1994: ix) comment that

> Over the past two decades, a quiet methodological revolution has been taking place in the social sciences. A blurring of disciplinary boundaries has occurred. The social sciences and humanities have drawn closer together in a mutual force on an interpretive, qualitative approach to research and theory. Although these trends are not new ones, the extent to which the 'qualitative revolution' has overtaken the social sciences and related professional fields has been nothing short of amazing. Where only statistics, experimental designs, and survey research once stood, researchers have opened up to ethnology, unstructured and open-ended interviews, textual analysis, and historical studies.

They go on to explain that scholars in the past were "doing science", contrary to a

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more recent approach by scholars who experiment with the boundaries of interpretation as they try to link research to social change and delve into characteristics of race, ethnicity, gender, age, and culture. This type of inquiry is critical and takes into account how people's lives are mediated by systems of inequity such as classism, racism and sexism (cf. Lather, 1991:3). My inquiry, however, asked questions for a deeper, nuanced understanding, and not for emancipatory purposes.

Worthy of note is Lathers' (1991:7) vivid presentation of what she calls "a dizzying and an exciting time in which to do social inquiry", a time of "openness and questioning of established paradigms in intellectual thought". Contrary to the qualitative-quantitative split, Lather uses Habermas' theses of three categories to offer a different and useful classification:

> Orthodox consensus about what it means to do science has been displaced. A proliferation of contending paradigms is causing some diffusion of legitimacy and authority. Paradigms of disclosure rather than paradigms of prediction and/or prescription and advocacy paradigms versus 'neutral' paradigms are vying for attention. This proliferation of paradigms goes by many names ... which is grounded in Habermas' (1971) thesis of the three categories of human interest that underscore knowledge claims: prediction, understanding, emancipation   (Lather 1991:7).

Based on these three categories, a common classification of research perspectives discerns positivist, interpretive and critical approaches. Lather ((1991:7) adds the "non-Habermasian" category of "deconstruct". Each represents a distinct inquiry paradigm, which offers a different approach to the generation and legitimation of knowledge. This tentative classification is important because my research is based on the underlying assumptions of the qualitative design, also named "constructivist-hermeneutic-interpretist-qualitative paradigm". This paradigm reflects the belief that humans individually and collectively construct reality, which implies the human

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being as the primary research agency. It should be clear, though, that the word qualitative is not synonymous with interpretive.

Qualitative research may or may not be interpretive depending upon the underlying philosophical assumptions of the researcher. Interpretive researchers start out with the assumption that access to reality is through social constructions such as language, consciousness and shared meanings. Interpretive studies usually attempt to understand phenomena through the meanings that people assign to them and focus on the complexity of human sense making as the situation emerges.

In addition to Denzin and Lincoln (1994) and Lather (1991), various other authors – such as Carr and Kemmis (1983), Keeves (1988), Atkinson (1990), Cantrell (1995), Merriam (1998), Mertens (1998) and many more – have described different research approaches. This lively debate on quantitative and qualitative research warrants an explanation for my preference of a qualitative methodology. The classification of different approaches sets the boundaries and narrows the focus for my own philosophical orientation for this inquiry. I have chosen an interpretive or constructivist approach for this inquiry into teachers' experiences of education policy change.

Over and above the choice of a research perspective, I also had to grasp "the philosophical meaning of ontology, epistemology and the methodological meanings of validity, reliability and data…. Research originates from some view of reality, which means that there are different ways of gaining understanding of some aspect of the world and different ways of confirming our understanding (i.e. knowledge)" (Hart, 1998:51). I see reality as multiple and socially constructed. This implies that teachers' experiences and understandings of education policy change are varied and constructed in the educational realm. In this context, Eisner (1999) suggests how qualitative research can contribute to the field of education. I quote him at length:

In education, qualitative research has a great deal to offer, provided researchers seek a more complex understanding of education. There are multiple ways in which the world can be known, which is particularly relevant, since qualitative researchers pay attention to the nuanced quality of the particular, and not the general. Through the nuances and subtleties, qualitative researchers draw the attention to particulars and in so doing they slow down predisposed human perceptions, and invite human exploration. For good qualitative inquiry, the nuances, the particulars, the emotions, and the perceptual freshness of researchers are imperative. Assumptions of research are re-examined as scholars wish to get close to the practice and get a first hand experience of what really goes on in schools. This type of research does not offer to solve problems, it seeks only to cope with situations, which may be temporarily resolved, since conditions and contexts are in dynamic states. 'Reality' cannot be captured in a bag, and as such, research which is in some form of representation of 'reality', is always biased, through either omissions or commissions.

This explains another motivation for doing a qualitative inquiry – that which distinguishes humans from the natural world, the ability to talk (cf. Myers, 1997:2). My choice is thus appropriate because "qualitative inquiry focuses on meaning in context, and requires a data collection instrument that is sensitive to underlying meaning when gathering and interpreting data" (Merriam, 1998:1). My role of researcher as primary instrument therefore plays an important part in terms of interacting with participants' backgrounds, values and biases that may affect the data, which I describe in the following section.

3.3 Researcher's rationale: justification for the methodology

My justification for a qualitative inquiry emerged from inner struggles with what constitute the parameters of personal scholarship, its boundaries and forms. From the many readings on qualitative inquiry, I was profoundly touched by the following quote by Abraham Maslow (1962:202-203):

We are still forced by academic custom to talk about our own experiences in about the same way as we might talk about bacteria, or the moon or about white rats, assuming the subject-object cleavage, assuming that we are detached, distant and uninvolved, assuming that we (and the object of perception) are unmoved and unchanged by the act of observation, assuming that we split off the 'I' from the 'Thou', assuming that all observation, thinking, expression and communication must be cool, never warm, assuming that cognition can only be contaminated or distorted by emotion, etc.… We must make explicit what we all accept implicitly that our kind of work is often felt deeply and comes out of deep personal grounds, that we sometimes fuse with the objects of the study rather than splitting from them, that we are usually profoundly involved, and that we must be if our work is not to be fake…. Impersonal science can sometimes be a flight or defence against inner disorder and chaos, against the fear of loss of control. Or to put … it more generally, impersonal science can be … flight from or defence against the personal within oneself and within other human beings, a distaste for emotion and impulse, even sometimes a disgust with humanness or a fear of it.

This rationale is closely linked to what Merriam (1998:20-21) describes as personality characteristics for this type of research. She refers to personal, people skills such as tolerance for ambiguity, sensitivity, sound communication skills, empathy and good listening skills as essential for qualitative research. I have participated in a variety of experiential workshops and courses, both locally and internationally, to refine these personal or human relationship skills to heighten my awareness of both the overt research processes as well as the covert, less obvious or hidden dynamics in research. (Refer to Appendix G for courses and workshops attended.) I pursued this qualitative research as a reasonably finely-tuned instrument of discovery, through which data was collected and interpreted. This inquiry was indeed personal in nature, inasmuch as I too was a teacher for many years. That is why I aimed to relate to teachers with respect, sensitivity and authenticity, creating a conducive rapport (cf. Sternberg, 1994:706), ensuring feelings of trust to establish ease of communication with the teacher, which Wolter-Gustafson (1990:221-232)

discusses as crucial principles in qualitative research.

Furthermore, I thought it meaningful that the method of research was congruent with my commitment to such a respectful and sensitive approach. My interactiveness involved my whole being, including my intellect, intuition, feelings and spirit. This interaction with teachers was not just an unaffected conversation; on the contrary, it was at times intricate and involved.

Such intricacy and complexity of human interaction and the desirability of maximising the qualitative inquiry when collecting data, requires a sensitive awareness of the process as well as a long look at the relationship and the communication with the respondents, which are inseparable. On this score Spielhofer (1996) explains that an inquiry is influenced by how respondents *see* researchers. In itself, the ability to meta-communicate appropriately is not only indispensable for successful communication, but it is intimately linked with the enormous problem of awareness of self and other. Truly, my interactive role as the teacher respondent involved a great deal of such awareness. Furthermore, I realised that I can know another only to the extent that I know myself. This self-awareness included my emotional reaction, physical sensation, thoughts, habitual responses and reactions. Thus, I needed to listen to more than just the thoughts or the intellectual and linguistic processes.

In this context, Morse (1994:225-226) illustrates that qualitative research is only as good as the researcher. It is the researcher who through skill, patience and wisdom obtains the information necessary during data collection and fieldwork to produce a rich qualitative study. Good qualitative researchers must learn to be trusted in the setting, to be patient and tolerant, and to wait until their respondents accept them. Flexibility and resilience on the part of the researcher is also required. I learnt from both the literature inquiries as well as from the empirical data gathering that I needed

to rely on the quality of the relationship between myself and the teacher respondents.

Buber (1965:118-205) describes this quality of a relationship between the researcher and the respondent as a trusting and an accepting one. This means that the quality of the research depends largely on the quality of the relationship between those engaged in the research. Moreover, he maintains that the research process is facilitated to the degree that the researcher is able to bring oneself fully into a relationship, offering to that relationship genuineness, unconditional positive regard and empathy. Merriam (1998:23) describes empathy as "the foundation of rapport" – an atmosphere of trust conducive to good interviewing. To be in such a relationship allows direct interpersonal knowing and enables respondents to feel open to their rich uniqueness and complexity.

I experienced my attempt of being empathic as imperative during the interviews with the teachers. My openness to their experiences and my responsibility to be fully present was facilitated by my aptitude for congruence, genuineness, unconditional positive regard and empathy – these qualities enabled me to "be there" with them. Furthermore, I became finely tuned to my own inner working, through self-reflection of my thoughts and feelings throughout the inquiry, so that I would be unlikely to bring distortion to the interviews. I had to re-examine the authenticity of my own intentions during the open-ended non-directive interviews.[6] I needed to be aware of my personal limitations as researcher which could harm this inquiry.

Personal limitations such as my assumptions and viewpoints, beliefs and biases were available to the respondents. This implies not only my awareness, but also my acceptance that I did have assumptions and biases about this inquiry, for that could affect how I approached this study and how I might interpret the data. This way of being related to my congruence or realness in the interview relationship with the teachers. It meant that I would not moralise or judge the responses. On the contrary,

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[6] This non-directive stance or approach is derived from the humanistic approach (Rogers, 1980:114) – sometimes referred to as person-centered – which emphasises not only *what* is experienced but also *how* the experience is constructed.

I tried to show unconditional positive regard (Rogers, 1980:116). This unconditional positive respect is a vital interactive response of a researcher, which refers to the acceptance and respect of the teachers in such a way that they are free to "be whatever immediate feeling is going on – confusion, resentment, fear or anger" (Rogers, 1980:116).

As researcher, I allowed my level of understanding in the interview dialogue to be shaped to the degree of my empathy – that is, striving to understand the other "as if" I were the other, considering the fact I too had been a teacher for many years. Rogers (1980:153) describes this "as if" as the "highest expression of empathy as accepting and non-judgemental." To be skilfully perceptive of the other, I was non-judgemental in my approach. I needed to understand the factual content of what was said in addition to the emotional undertones. In this regard Rubin and Rubin (1995:132) explain that to show emotional understanding one can create some common ground by sharing similar backgrounds or similar experiences with the respondents. This was facilitated through a process of sharing information regarding my inquiry. I found this technique particularly helpful and facilitating. I also learned that interviewing encompasses far more dynamic or hidden processes than I had initially anticipated. Personal awareness and the changing awareness of the teachers contributed to the rich discussions which were elicited from our encounters.

Open-mindedness and dialogical openness – concepts described by Smaling (1993:4-7) – supported my empathy and emotional understanding. Open-mindedness encompassed a receptivity of being perceptive and sensitive. It also reflected awareness and a capability of readily perceiving sensory or emotional irritability. Open-mindedness assumes a need to learn to hearken, to listen with attention and respect, which is goal-free listening with an attitude of letting-be and letting-go. Open-mindedness is facilitated by open-heartedness, which is revealed by a sense of empathy and love, and can contribute positively to doing justice to the

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research interview. Dialogical openness calls for an open-mindedness of participation and responses during an interview. My openness towards my teacher respondents, without allowing my *emotional baggage* to interfere with the process, proved fruitful, presumably due to my sensitised awareness.

To conclude, in this context Kvale (1996:117) emphasises that "the person of the researcher is critical for the quality of scientific knowledge … by interviewing, the importance of the researcher as a person is magnified because the interviewer him- or herself is the main instrument for obtaining knowledge." The role of the researcher is unquestionably crucial, along with a sound and well-planned design, adhering to the criteria of validity and reliability.

3.4   Trustworthiness for the inquiry

3.4.1   Introduction

A variety of concepts of qualitative research exists, with competing claims as to what counts as good quality work. Seale (1999: 471) argues, for example, that "modernist headings of validity and reliability no longer seem adequate to encapsulate the range of issues that a concern for quality must raise." These methodological norms elicit diverse conceptions. Some authors prefer modernist terms while other have replaced these with newer terminology (cf. Schwandt, 1997). Authors such as Denzin and Lincoln (1994) and Silverman (2000) still use the modernist terms, and I have decided to present those as well as their equations, as used by Mertens (1998) and De Vos (1998).

According to Merriam (1998:198), validity and reliability in qualitative research involves conducting an investigation in an ethical manner. To ensure this, for the purpose of this inquiry, teacher respondents participated voluntarily, their anonymity was guaranteed, and they signed a letter of consent before the interviews. Teachers could leave this project at any stage and their confidentiality would be maintained. Also, I intend to share my final project with my teacher respondents and participants.

3.4.2   Validity and credibility

Criteria for judging the quality of research are described by Mertens (1998:180-181), and Crossley and Vulliamy (1995:14-15). Credibility is equated with internal validity, transferability with external validity, dependability with reliability, and confirmability with objectivity. Mertens (1998:181) maintains that "the credibility test asks if there is a correspondence between the way the respondents actually perceive social constructs and the way the researcher portrays their viewpoints."

Establishing credibility (internal validity) in my research was accomplished through summarising at the end of an interview what had been said, and checking the correctness of my understanding with the participants. The most important method of striving towards credibility is triangulation, which involves checking information that has been collected from different sources or methods for consistency of evidence across sources of data. I used different sources such as focus group discussions in the M-School project, interviews, and open-ended questionnaires. It is important to note that while data was gathered from diverse sources, the analysis of the raw data was done in a holistic manner, using one "hermeneutic unit" (cf. Atlas.ti, Addendum F). I had to review how congruent my findings were with "reality" – in other words, did my findings capture what was there? I needed to be aware that "data do not speak for themselves" (Merriam, 1998:201) and that there is

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always an interpreter or a translator of reality. What I was inquiring into, then, were respondents' "constructions of reality – how they understand the world" (Merriam, 1998:203). Lincoln and Guba (1985:295 cited by Merriam 1998:203) describe this reality as "a multiple set of mental constructions … made by humans; their constructions are in their minds, and they are, in the main, accessible to the humans that make them".

As argued earlier, my role as the researcher was human and the primary instrument of data gathering and data analysis; my interpretations of the data can be accessed directly through the interviews. My data has not been "treated" or interjected via another collection instrument, and interview data could therefore be closer to reality, which facilitates internal validity (cf. Merriam, 1998:202ff). Transferability as the qualitative parallel to external validity is described by Mertens (1998:183) in terms of thick descriptions, which I present in Chapter Four.

Again, I had to reflect on my initial research question and my qualitative research design. My line of thinking was supported by Merriam (1998:208) – "in qualitative research, a single case or small non-random sample is selected precisely *because* the researcher wishes to understand the particular in depth, not to find out what is generally true of the many." Transferability is the responsibility of the reader, who determines the degree of similarity between the study site and the receiving context. The researcher is responsible for providing sufficient detail through extensive and careful description of the time, place, context and culture, to enable the reader to make his or her own judgement. This description refers to the thick description, as discussed in the unit of analysis.

In addition to Mertens (1998) and Merriam (1998), authors such as Kvale (1996) and Smaling (1992) have also contributed a great deal to the validity debate. Kvale (1996:236) offers a description of validity as the truth and the correctness of a

statement. An argument is valid in lay terms if it is sound, well-grounded, strong and convincing. Validity in qualitative research pertains to the degree that a method investigates what it is intended to investigate. Put slightly differently, Smaling (1992) defines validity as a methodological requirement for procedures such as observation methods and measuring instruments, research processes and frameworks as well as to research results in terms of collected data, assessments and conclusion of the analyses. It is the absence of random and systematic errors, which may appear as prejudices or biases, in the sense that the researcher's beliefs may infringe on the research. He discerns validity as internal and external validity. The latter refers to the meaning and understanding that research results may have for persons, situations, or periods of time which have not been studied. This implies that more has been intended than what has been studied in that it refers to the degree to which findings can be transferred to other settings similar to the one in which the study occurred. Accordingly, Smaling refers to internal validity as the degree to which findings correctly map the phenomenon in question. This can be distinguished in three different forms.

content or substantive validity

Content validity applies to procedures, principally instruments. Questionnaires or observation charts or tests are valid with respect to the content, provided that they are suitable for investigating the intended aspects of the phenomenon under study. In simpler terms, my questions both in the interviews and in the open-ended questionnaire dealt with the broad research question.

concept validity (conceptual or construct validity)

Concept validity pertains to the quality of conceptualisation of applicable concepts,

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particularly where the object under study needs clarification in theoretical terms. This was accomplished during the interviews, ensuring that both the teachers and I used concepts consistently, in the sense that we both had a clear understanding of the terms and concepts used.

logical validity (narrower internal validity)

Logical validity refers to the research results as well as the research framework. The logic of the research framework must provide arguments that are substantiating in order to defend the research conclusion. In sum, this refers to the unit of analysis – that is, teachers' experiences of education policy change from an interpretive framework.

Briefly, validity or credibility in qualitative research has do to with description and explanation, and whether or not a given explanation fits a given description. This is largely determined by the extent to which the data represents the actual experiences of participants (cf. Seeman, 1996:53). The validity of information may also be enhanced by the respondent's willingness to freely communicate experiences to the researcher, particularly in an atmosphere of trust and comprehension.

3.4.3 Reliability and dependability

Reliability, or dependability as the qualitative parallel, is viewed as the fit between what is recorded as data and what has actually occurred in the setting under study, rather than literal consistency in results of observations made by different researchers across different observations. Put differently, it refers to the stability over time, the consistency through repetition, and to the extent to which findings can be replicated or reproduced by another inquirer. "This logic relies on repetition for the establishment of truth; but … measurements, observation and people can be

repeatedly wrong" (Merriam, 1998:205). This means that although measurements may be consistent, they may not be valid. The only way to enhance reliability of the human instrument is through training and practice. This suggests that the reliability of my data depended on who gave it and on how skilled I was at getting the information.

Since the emergent qualitative design precludes *a priori* controls, achieving reliability in the scientific sense is quite impossible (cf. Merriam, 1998:205ff). Moreover, data from interviews will be different when the questioning is done by another interviewer. My raw data can certainly be used again, but researchers working in a different paradigm will analyse the data differently and present alternative findings. This means that a variety of interpretations can be made from the same raw data.

That is why Lincoln and Guba (1985:288) suggest thinking about "dependability" and "consistency" of the findings. Instead of outsiders achieving the "same" results, the outsiders should be able to "concur" that given the data collected the results make sense, or the results are consistent and dependable. To ensure this, the assumptions and theories behind the study need to be explained. Multiple methods for data gathering also enhance the dependability of the inquiry. Section 3.6 in this chapter describes the multiple data gathering methods used in this study. In addition, I have left an *audit trail* (cf. Dey, 1993:251), explaining how I arrived at my findings through coding, categorising, and linking data using networks and CAQDAS. This implies that data can be traced to its original sources, which Yin (1994) cited by Mertens (1998:184) refers to as a "chain of evidence" or confirmability audit, which is discussed in the next section.

3.4.4   Objectivity and confirmability

McMillan and Schumacher (1993:10) describe objectivity both as a procedure and a characteristic. To be objective means one is unbiased and open-minded rather than subjective. As a procedure, objectivity refers to data collection and analysis procedures from which only one meaning or interpretation can be derived. Objectivity means that the influence of the researcher's judgment is minimised. Mertens (1998:184) describes objectivity or confirmability as the explicitness in the way that data (evidence) is collected, categorised, reconstructed and interpreted and refers to the quality of the data produced by the procedures for collecting and analysing data.

Although I attempted to adhere to these criteria, I know that my data may have limited predictive value and that it may not be saturated, (cf. Charmaz 2000:520) given additional methods and different settings. I do not claim to have identified all possible themes around the experience of change, neither do I claim to generalise that the themes are typically of all teachers. The following section shows the selected text segments from the interviews, their codes, and how they are linked in order to identify the themes.

3.4.5   Theme identification using quotations and codes

This section illustrates the data analysis. I have selected just a few examples and explain the various sections. The complete analysis is available on the CD ROM as an http file and in Addendum D. Note the following:

- HU stands for the *hermeneutic unit,* which is the complete project or inquiry.
- The *file reference* indicates the location where the project is saved.
- The word *Super* refers to the person who actually did the analysis.

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- The time and date are given for further reference.

- *Codes-quotations list* means that this particular information shows a particular code, with the relevant quotation – that is, the verbatim evidence given by the respondent.

- *Code-filter: PT* shows that this particular list was filtered by using all the primary text, referring to primary documents, which simply means all the interviews.

- *P1* represents the first interview. *1:7* stands for the first interview, 7th code, quotation in line *54-58*, coded by the Super, me.

- The *{1-1}* refers to the number of a specific code, and how often this code has been linked to another.

HU: PhD Education Policy Change
File: [C:\Program Files\Scientific Software\ATLASti\TEXTBANK\PhD Education policy Change]
Edited by: Super
Date/Time: 12/18/00 04:56:11 PM

Codes-quotations list
Code-Filter: PT

Code: effect: (discipline) loopholes for the lazy teacher {1-1}

P 1: INTerview1atlas.txt - 1:7 (54:58) (Super)
Codes: [effect: (discipline) loopholes for the lazy teacher] [effect:
    all will pass irrespective of knowledge levels]

       some loopholes for a lazy teacher, very much so,
because it does not go out of the work that is done, it goes about
.., and each child is on a different level and it does not matter if
this child only knows one thing about water and the other child
knows five things, they are both a pass.

Code: effect: all will pass irrespective of knowledge levels {1-2}

P 1: INTerview1atlas.txt - 1:7 (54:58) (Super)

Codes: [effect: (discipline) loopholes for the lazy teacher] [effect:
    all will pass irrespective of knowledge levels]

        some loopholes for a lazy teacher, very much so,
because it does not go out of the work that is done, it goes about
.., and each child is on a different level and it does not matter if
this child only knows one thing about water and the other child
knows five things, they are both a pass.

Code: effect: slack attitude {1-1}

P 1: INTerview1atlas.txt - 1:45 (273:277) (Super)
Codes: [effect: slack attitude] [emotional response: careful responses
    since it could cost my job] [emotional response: stress
    becomes visible through lack of enthusiasm] [emotional
    response: tp: do not more than I have to]

        It becomes visible in, well from what I
have actually seen, lack of enthusiasm. I am not going to do
more than what I have to do, attitude. Also almost an attitude of
well I better be careful here because this one could actually
determine my job, if you know what I am saying.

Code: effect: teacher can get away with a lot {1-1}

P 1: INTerview1atlas.txt - 1:8 (63:66) (Super)
Codes: [effect: teacher can get away with a lot] [tp: evaluation becomes
    easy] [tp: evaluation may be biased]

        Getting away with a lot of it, her
evaluation becomes so easy. It does not boil down necessarily to
a test. So the question is if I like you, you are going to be better
than the one that I do not like. So there is a lot ...

Code: effect: we do not know what is expected {1-0}

P 1: INTerview1atlas.txt - 1:44 (264:268) (Super)
Codes: [effect: we do not know what is expected] [emotional response:
    lots of stress] [information from other schools cause
    unconscious forms of stress] [information: teachers are
    uninformed]

        We do not know
what is going to be expected, you know it is because you are
uninformed. Also you are hearing again perceptions from other

schools of what is happening and that causes you know immense,
an unconscious form of stress that comes onto somebody but yes

----

Code: emotional response: teacher is under pressure. {1-0}

P 1: INTerview1atlas.txt - 1:48 (290:290) (Super)
Codes: [emotional response: teacher is under pressure.]

                teacher is under pressure.

Code: emotional response: teachers are overloaded {1-0}

P 1: INTerview1atlas.txt - 1:26 (188:190) (Super)
Codes: [emotional response: teachers are overloaded] [teachers do not
       have enough time]

                You cannot be, you know
loading them so much that they do not have the time to attend
something if you have got it.

Code: emotional response: teachers are uptight {1-0}

P 1: INTerview1atlas.txt - 1:49 (290:296) (Super)
Codes: [emotional response: teachers are uptight] [emotional response:
       breaks down the relationship between teachers and
       children] [tp: children: confusion amongst pupils]

                The
teacher also then tends to be not nasty, but you know a little bit
more uptight with the group and then they do not understand, you
know they cannot understand why this one is so rude today, you
know normally or whatever. So it causes a bit of confusion there
as well and it also breaks down on the relationship between the
teacher and the children.

Code: emotional response: breaks down the relationship between teachers and children {1-1}

P 1: INTerview1atlas.txt - 1:49 (290:296) (Super)
Codes: [emotional response: teachers are uptight] [emotional response:
       breaks down the relationship between teachers and

3.5   Purposeful sampling and unit of analysis

3.5.1   Introduction

As already argued, any research design is concerned with ontological, epistemological and methodological issues. The research problem of this inquiry called for qualitative data, which is dependent on interpretation for its meaning. Denzin and Lincoln (1994), Tesch (1990) and Lancy (1993) depict a variety of strategies for inquiries. Merriam (1998:11) mentions five types commonly used in the field of education: basic or generic qualitative study, ethnography, phenomenology, grounded theory, and case study. Although these types are discernible, they do share essential characteristics of qualitative research – "the goal of eliciting understanding and meaning, the researcher as primary instrument of data collection and analysis, the use of fieldwork, an inductive orientation to analysis, and findings that are richly descriptive."

3.5.2   Unit of analysis and network sampling

I chose a basic or generic qualitative study (cf. Hart, 1998:46), collected qualitative data through in-depth, non-directive interviews and focus groups as well as open-ended questionnaires. Responses were described, analysed and inductively compared, seeking similarities and contrasts.

Merriam (1998:60ff) describes the two types of selection of the unit of analysis (the sample) as probability and nonprobability sampling. The nonprobababilty sampling is mostly used in qualitative research; the most common is called "purposive or purposeful" sampling. (Patton, 1990 cited by Merriam, 1998:61). Other authors (LeCompte & Preissle, 1993:63) prefer the term criterion-based selection. Merriam

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(1998:61) explains that "purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned." According to Merriam (1998:63), the most common form of purposeful sampling is snowball sampling, sometimes referred to as chain or network sampling.

I chose primary school teachers on the ground of practicality and purpose (cf. Punch 1998:193-195), a process called network or snowball sampling. This worked well, since access to schools was not always easy. Scepticism, reluctance and overall unwillingness to be interviewed restricted my access. I had to negotiate and renegotiate well in advance, and there were several cancellations and postponements of interview appointments. In the following section, I describe my respondents in some detail:

- The first group of participants, were teachers from the M-School, where I conducted three focus group discussions with a group of about nine teachers. I need to say about nine, because the number varied during the course of the inquiry. These teachers were from a less privileged community, working in an under-resourced educational context. I established that their knowledge about education policy change was rather limited, and then decided to extend the investigation into more privileged areas.
- The second group of participants was from a semi-private Catholic primary school, in the eastern suburbs of Pretoria. These are senior staff members teaching Grade 1 to Grade 7. I chose these female teachers because they had many years of teaching experience at primary levels.
- The third group of participants was two experienced teachers from an Afrikaans primary school also from the eastern suburbs of Pretoria.

- The last group of participants was a selection of primary school teachers, who were twenty-four B.Ed. students from the University of Pretoria and twenty-eight B.Ed. students from University of Natal, who responded to an open-ended questionnaire.

In addition to these four groups of participant respondents, I contended the issue of how many people I would interview. My sampling was guided by the recommendations of Lincoln and Guba (1985), until a point of saturation or redundancy was reached. This meant that my sampling depended on informational considerations – if no new information concerning my inquiry came to the fore, then the sampling was considered complete. In order to assure that the data was reasonably complete or saturated, I distributed the open-ended questionnaires mentioned earlier to B.Ed. students. These questionnaires also served to complement and triangulate the data – that is, I used multiple sources of data to ensure internal validity. The triangulation of the data was not done separately; instead, the two sets of open-ended questionnaires were created into two primary documents in addition to the five interview primary documents. While the analysis is separate in view, the description is in the *hermeneutic unit* as a whole (cf. Addendum F and CD-ROM for data). I could of course also triangulate at a theoretical level, or at the data analysis level, or employ another researcher for this inquiry, as described by Mouton (1996:156-157). I chose, however, methodological triangulation using two methods of data collection procedures – the in-depth non-directive interviews and open-ended questionnaires.

3.6   Data collection and data analysis

3.6.1   Introduction to the M-School project: focus groups

As I have suggested earlier, this inquiry originated in my involvement with a

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research project conducted by the Department of Orthopedagogics at the University of Pretoria. I will refer to this project as School-M. One subdivision of the broader investigation was titled "Putting New Education Policy into Practice". With the help of three workshops, we investigated teachers' experiences and understandings of education policy change. We conducted focus group discussions as part of these workshops, which lead the co-researcher and myself to understand that these teachers lacked knowledge about education policy change. Conducting these focus groups had its problematic moments, which are detailed in journal entries (cf. Addenda I and L). We attempted to establish what policy meant to them, whether policy influenced what they were doing in schools, which policy changes they were aware of, and how they felt about these changes. Responses varied greatly and we discovered that very different issues needed to be addressed, mostly relating to the lack of resources in the school. An atmosphere of expectancy developed from the teachers, who hoped that the university would provide for their resource needs. In addition, they felt that they were exploited and hence our initial inquiry into education policy change was diverted into different discussions.

While it may appear as if the inquiry was going off track, particularly in the context of doing research in a disadvantaged community, those diversions prompted me to investigate this issue in much more detail on an individual basis, conducting individual interviews and distributing open-ended questionnaires.

3.6.2   Interviews

I used in-depth non-directive interviews, which according to Heyink and Tymstra (1993:294-295) are frequently used in qualitative data collection and are well documented in qualitative research. The degree of structure in an interview may vary along a continuum. At one end of the continuum interviews may be strictly structured and concrete questions are laid down. A limited number of responses are

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presented and conversation is restricted to a minimum. I found this unstructured approach unsuitable for my particular inquiry. I avoided closed questions and fixed sequences of questions. I played an active and personal role during the course of the interview, which had the flavour of a conversation. The objective was to elicit the respondent's subjective experience and understanding of education policy change. The focus was thus on the concepts of the interviewee and not on those of the interviewer. As such, the teacher respondent had the opportunity to raise issues deemed essential for my inquiry.

Misunderstandings about questions asked and answered were clarified there and then. This flexibility of the interview situation allowed for involvement of the respondents through stimulating and building "rapport", a relationship based on confidence, trust, security and the establishment of mutuality of purpose. This type of interview is considered pre-eminently appropriate for research into feelings, attitudes, intentions and motivations of behaviour, and proved fruitful for my particular inquiry.

Further, my interactive manner of interviewing enabled an in-depth and intimate understanding of teachers' experiences of education policy change. Morse (1994:228-229) accentuates the influential importance of communicative processes and a collaborative approach in which the interviewer and respondents are engaged in a joint sense-making endeavour. At first, the interview "conversations" with respondents were kept broad, offering appropriate information so that teachers understood what the inquiry was all about.

These interviews took place during the period February to July 1999, and were conducted at my home and at the respondents' homes, at their personal choice. Each interview-conversation was audio-taped throughout, and then transcribed verbatim. Prior to the interview, teachers completed a brief questionnaire, on which basic

biographical information was recorded as well as a declaration of consent (see Addendum H). All interviews began with a short explanation of the purpose of the project and some general guidelines for the interview process.

These interviews focused specifically on teachers' experiences and understandings of education policy change. The in-depth non-directive interviews were guided by an initial question, "What are your experiences and understandings of education policy change?" Each teacher had the freedom to answer this question in her own way and I only directed the conversation when respondents drifted away from the relevant topic.

The complete, transcribed interviews – 82 pages in total – which are labelled as Primary Documents (PD) 1 to 5 are available as "numbered files" saved in "ScientificSoftware\ Atlasti\Textbank\PhD\Education Policy Change". This can be accessed via documents-output-numbered files, either in the editor, printer or via file. The hard copy is available in Addendum A. Addendum F details an exposition of Atlas.ti.

The profiles of the teachers who participated in this inquiry are illustrated in Table 3.1.

Table 3.1   **Profiles of participating teachers**

	Qualification	Experience	Gender
P1	B.Prim ED(SP)	10 years	female
P2	THOD, FDE	14 years	female
P3	T.T.H.D.BA, BA (HONS) M.Ed. t.b.c.	23 years	female
P4	BA, HED, FDE	12 years	female
P5	BA, HED, POD, B Ed t.b.c.	24 years	female

3.6.3 Open-ended questionnaires

In addition to the interviews with teachers, open-ended questionnaires were used to collect data from a wider group of teachers. A selection of primary school teachers, twenty-four B.Ed. students from the University of Pretoria and twenty-eight B.Ed. teacher students from the University of Natal responded to this questionnaire. (Completed questionnaires with coded responses may be accessed on Atlas.ti or in Addendum B.) Their responses served to complement and triangulate the interview data. These data were analysed in the form of a document analysis, which was added to the interview data. I employed another data collection strategy in order to establish if or whether some new themes emerged, i.e. if the data were saturated. That is why this questionnaire data was captured as a *primary document P6 and P7,* which I included in the *'hermeneutic unit'.*

3.6.4 Data process and analysis

This section deals with the theoretical grounding, which has informed my data analysis. A variety of authors and their views on qualitative data analyses are cited in

this section, followed by my own data analysis description. To analyse qualitative data is an important act in the research process – to make sense of, interpret and theorise that data. This is done by organising, reducing and describing the data. Schwandt (1997:4) argues that an analysis ought to be rigorous, systematic, disciplined, and carefully methodologically documented. According to Alasuutari (1995:7) data analysis in qualitative research refers to "reasoning and argumentation that is not based simply on statistical relations between 'variables', by which certain objects or observation units are described." In other words, when using qualitative analysis as a means to explain or make sense of the inquiry, we do not use as evidence the frequencies or the quantities with which something occurs, but rather elicit meaning from the data.

Qualitative data analysis is an ongoing and emerging process; it does not happen only at the end of the study, as is the case in quantitative research. Various authors have described these analysis processes – Tesch (1990), Dey (1993), Miles and Huberman (1994), and Silverman (1997). Tesch (1990:95ff) has identified some principles appropriate for most types of qualitative research analysis, which have guided this particular inquiry:

- Qualitative analysis takes place throughout the data collection process. As such the researcher will reflect continuously on impressions, relationships and connections while collecting the data. The search for similarities, differences, categories, themes, concepts and ideas forms part of the continuous process.
- An analysis commences with reading all the data and then dividing the data into smaller more meaningful units.
- Data segments or units are organised into a system that is predominantly derived from the data, which implies that the analysis is inductive.
- The researcher uses comparisons to build and refine categories, to define conceptual similarities, and to discover patterns.

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- Categories are flexible and may be modified during the analysis.

- Importantly, the analysis should truly reflect the respondents' perceptions.

- The result of an analysis is a kind of higher-order synthesis in the form of a descriptive picture, patterns or themes, or emerging or substantive theory.

Mouton (1996:168ff) adds another focus to qualitative analysis, emphasising the understanding rather than the explaining of social action and events within particular settings and contexts. Thus, an analysis also focuses on

> constructing, with regard to the social world, stories, accounts and theories that retain the internal meaning and coherence of the social phenomenon rather than breaking it up into its constituent components…. This emphasis is on the integrated, meaningful and contextual nature of social phenomenon.

This process of qualitative data analysis is described by Dey (1993:10) firstly in terms of meanings, which are mediated through language and action and tied to a particular context. This is contrary to quantitative data, which deals with numbers that may appear powerful. They do, however, mean little if they are not based on meaningful conceptualisations. Dey argues that data, which is collected, is "produced" by the researcher. It is collected, which involves selecting data, the techniques of data collection and the transcriptions through note taking and tape recordings. This will affect what in the end constitutes data for the purpose of research.

To analyse literally means to break into bits and pieces, or to break down the data. Miles and Huberman (1994) use the term "coding" whereas Dey (1993) refers to "categorising". Dey (1993:30) describes the analysis as "a process of resolving data into its constituent components, to reveal its characteristic elements and structure." One of the aims of an analysis is to describe the data as well as to describe the

objects or events to which the data refer. Sometimes more than descriptions are needed, and interpretations, explanations, or predictions are required. The how, why and what needs to be answered and that is done through the analysis, moving beyond the initial description, transforming the data into something it was not.

Descriptions form the basis for the analysis, and the analysis forms the basis for further description. Data is broken up in order to classify it. Concepts are created in classifying the data; the connections are made between the concepts, which in turn provide the basis for a fresh description. To describe means to set forth in words, to recite the characteristics of a person, object or event. The primary steps in the qualitative analysis are the so-called "thick" (or information rich) description which includes information about the context of an act – the intentions and meanings that organise action.

These descriptions are the basis for the analysis and are done by the researcher. The role of the researcher in the qualitative analysis refers particularly to awareness of bias and preconceived ideas, since assumptions may blind the evidence of the data. Significantly, as Dey (1993:64) argues, "…the danger lies not in having assumptions but in not being aware of them." Dey (1993:36) also refers to the fact that "…qualitative analysis is usually concerned with how actors define situations, and explain the motives which govern their actions". In analysing these actions, the researcher wants to ensure that this relates to intentions of the actors involved.

Meaning cannot be reduced entirely to a personal matter. Meaning is inherently ambivalent and context-dependent; hence, one cannot rely on the subjects' intentions as an incontestable guide to interpretation. Subjects/participants perceive and define situations – including the researcher's intentions – according to their understanding of their own motivations and of the contexts in which they act. Neither motivations nor contexts are self-evident, and allowance has to be made for

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the usual mix of ignorance and self-deception, delusions, fantasies and even lies. Inconsistencies and contradictions in humans do exist. In addition, social forces such as obsequiousness (obedience) towards power, pressures for conformity, and fears of embarrassment and conflict can also distort behaviour and motivations. Pure rational accounts of respondents' intentions cannot be expected or even hoped for.

As researcher, I had to be aware and extremely sensitive to whatever reactions and responses I encountered from teacher respondents. There was a tremendous volume of raw data from interviews and questionnaires; this had to be processed, analysed, and of course reduced to manageable proportions for a concise presentation. The following sections clarify the process of data reduction.

3.6.5   Data reduction

Once the audio interview recordings were transcribed into text, the reduction and analysis began. In essence, I read the transcriptions while listening again, edited where necessary, and loaded text into the Atlas.ti computer software. This data was then classified, a process that involved breaking up data into bits and bringing it together again in a new way. This was a process of assigning data to categories or classes and identifying formal connections between them (Dey, 1993:275ff). It is an important step in the analysis, for without classifying data there is no way of knowing what is actually analysed and no meaningful comparisons can be made. Classifying data is an integral part of the analysis, which lays the conceptual foundations upon which interpretations – which make action meaningful to others – and explanations are based. Classification is not neutral and it is done for a purpose, guided by the research objectives.

Once the data were classified, regularities, variations and peculiarities were examined and patterns were identified. Dey (1993:227) defines this as the process of

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identifying substantive connections by associating categories or linking data. Correlations or relations between different categories can be studied and a picture of the data can be built, which will both be clearer and more complex than the initial impressions. (In other words, the different parts of the puzzle can be fitted together.) Dey (1993:94ff) writes that although people usually think in generalities, they live in detail. As such, words are employed by people to convey ideas, but when the ideas are grasped they forget the words.

As already argued, before data can be interpreted it needs to be analysed. To do that categories must be created from the data itself, despite the fact that the researcher enters the research with prior conceptions. Categories are also created from the implicit data – that is, data that is not recognised by respondents themselves. To classify means to sort into "belonging" to a particular group. Data can be labeled and categories can become "labels" or units of meaning. To sum up, the core of qualitative analysis is a twofold task – firstly to select a bit of data and secondly to assign it to a category, a process called coding (Dey, 1993:57).

In essence, any research is an exercise in selection processes, and the researcher needs to realise that the analysis is ultimately concerned with human situations and social processes. The so-called facts are produced through conceptualisation and "facts" *per se* have been merely manufactured. Facts, therefore, depend on the researcher's perceptions, which are shaped by his/her thinking. The final account must honour the criteria of reliability, validity and representation, which can be facilitated by triangulation.

In this inquiry I worked with 7 primary documents, highlighted some 541 quotations, which yielded 684 codes, which I grouped into 16 families. (See section 3.4.5 for an explanation of code labels.) Many links were established and a variety of networks was created. See Figure 3.1 for an example of one such network. In this

figure there are 11 nodes, representing the following codes:

Codes (11):

emotional response: anxiety {0-5}

emotions and feelings are attached to change {1-10}

fear of failure {0-1}

fears of retrenchment, {0-1}

feeling frustrated {0-2}

feeling incompetent {0-2}

feeling insecure {0-2}

feeling insufficient {1-2}

feelings of threat and personality of the teacher are related {1-1}

feelings: fear of failure {1-1}

feelings: fears of retrenchment, {1-1}

The information within brackets refer to the number of a specific code, and how often this code has been linked to another.
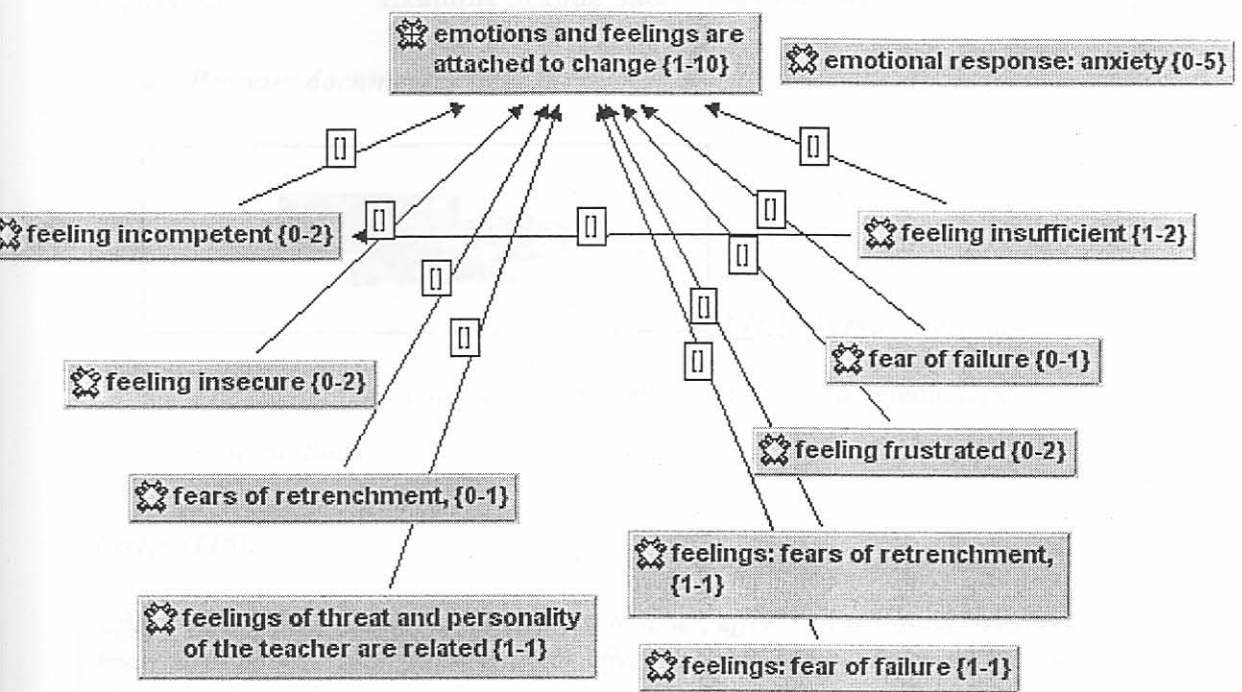
Figure 3.1   View of a focused network on *emotions and feelings are attached to change*

Although I do not claim a grounded theory inquiry, the process of identifying codes and categories certainly embodied elements of a grounded theory approach, where I aspired to stay as close as possible to the data – that is, shaping an "emic" character of the inquiry (cf. Henning, 2000a, 2000b). This data is also available on CD-ROM. Figure 3.2 illustrates such code data from the first interview.

Figure 3.2   **Example of code data from first interview**

- *Primary documents: ONE*
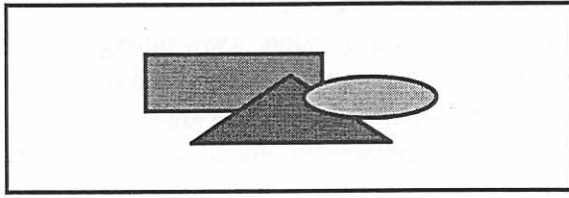
P 1: INTerview1atlas.txt

- *File name:* file://c:/my documents/interview1atlas.txt *(media type:* text)

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Codes (116):

effect: (discipline) loopholes for the lazy teacher, effect: all will pass irrespective of knowledge levels, effect: slack attitude, effect: teacher can get away with a lot, effect: we do not know what is expected, emotional response: teacher is under pressure., emotional response: teachers are overloaded, emotional response: teachers are uptight, emotional response: breaks down the relationship between teachers and children, emotional response: careful responses since it could cost my job, emotional response: classroom is a nightmare, emotional response: despondency: do less, because I cannot win, emotional response: gets your back up a little bit, emotional response: I have a definite problem with it, emotional response: I have never felt this before, emotional response: imposing, emotional response: insecure of what will happen to our jobs, emotional response: it makes me uncomfortable, emotional response: job: will I have one next year, emotional response: little information is coming through, emotional response: lots of stress, emotional response: my rebellion, don't impose the structure at the cost of teacher uniqueness, emotional response: older staff feel threatened, emotional response: some older staff are keen to get new ideas, emotional response: stress becomes visible through lack of enthusiasm, emotional response: teachers do not feel professional, emotional response: teacher uniqueness is ignored, emotional response: teachers are under pressure, emotional response: tension and pressure, emotional response: told not to worry; yet still fear, emotional response: tp: do not do more than I have to, emotional response: unsure of what is to happen to their school, emotional response: we are not very sure about our situation, emotional response: what does the future hold for us in 5 years, emotional response: will I be able to cope?, feeling insufficient, ft: representative to workshop, ft: teachers are not well equipped, ft: the representative workshops with staff, ft: workshop had some good ideas, ft: workshop on 2005 is only information, ft: workshop on 2005 was attended, ft: workshop was brief, ft: workshop was one day only, ft: workshopped

the workshop with staff, further training: I had good training in group work, further training: no communication after the workshop, government to pay salaries, group work is okay, group work: before or after something new, group work: brainstorming, group work: difficult, group work: independent work in different groups, group work: individual is still important, group work: never in the middle of something, group work: noisy, group work: older staff perceive this as play, group work: research activities, group work: sharing, group work: we see brainstorming in our groups,, information comes via other schools, information from Gauteng Department of Education, information from other schools cause unconscious forms of stress, information late: frustrating, information: teachers are uninformed, mismanagement of change: workshop information received after the actual meeting, morale is low also in private education where jobs are secure, morale is low due to fear of the unknown, morale is low in education, policy change: continuous assessment, policy change: knowledge: no clear understanding, policy change: questioning structures, policy has to be in writing ready for inspection by government, private school allowed more freedom, private school: space to be your own personality, restrictiveness in rules, school to be handed over to government, teacher as a person: code of conduct is essential for unprofessional teachers, teacher perception: I am going to loose my job, teacher perception: I am going to loose my job if I don't do what I am told, teacher perception: I am going to loose my job irrespective of how good I teach, teacher perception: I am too busy, teacher perception: OBE is too wishy washy, teacher perception: you are not entitled to be your person, teacher: transition: teacher behaviour is scrutinised, teachers do not have enough time, teachers give no information, teachers perception: no privacy, teachers refuse to co-operate, teachers teach merely to keep their post, teaching practice: classes are getting bigger, teaching practice: invading privacy, teaching practice: need criteria for lessons, teaching practice: new homework policy in writing, teaching practice: new maths does not work, teaching practice: old recipes work, tp:, tp: children become confused, tp: children bring information, tp: children: confusion amongst pupils, tp: code of conduct: all in writing, tp: effect in group work; stronger child carries weaker child, tp: effect: duck-and-divers will do even less, tp: everything in teaching is predetermined, tp: experienced teachers are forced to follow the code of conduct, tp: following protocol, tp: one must be allowed your professionalism, tp: professionalism and freedom to choose, tp: pupils feel the pressure, tp: school life regulates personal life, tp: time is problematic, tp: too much preparation, tp: younger staff are quite keen, tp: evaluation becomes easy, tp: evaluation is too wishy-washy, tp: evaluation may be biased

3.6.6   Computer Aided Qualitative Data Analysis Software (CAQDAS)

I worked with a large amount of unstructured textual data – namely interviews and questionnaires – and was faced with what Kelle (1995:1-17) describes as serious data management problems which could not easily be solved by the use of standard database systems. Although such programmes can be used to fulfil one of the central tasks of qualitative data management – the retrieval of relevant segments of text – they nevertheless impose serious limitations. They require that text segments and coding schemes be defined before the data are entered, which contravenes the inductive categorisation strategy preferred by most qualitative researchers.

Since the mid-eighties a variety of non-formatted textual database systems have been developed for qualitative research. Programmes like THE ETHNOGRAPH, HYPERQUAL, WINMAX, ATLAS/TI, NUD•IST, KWALITAN or HYPERRESEARCH all use similar data structures to assist the organisation and management of textual data: the addresses (e.g. in terms of line numbers) of text segments (which the researcher can define freely) are stored as pointers together with the names of the codes allocated to these segments. With such software, unstructured textual material can be organised by attaching codes to certain text passages.

Richards and Richards (1994: 447ff) write that computer-aided qualitative data analysis software (CAQDAS) is now widely applied in the qualitative community. The first generation of "code-and-retrieve programmes" only mechanised widely used cut-and-paste or indexing techniques but did not change their underlying logic or offer analytic features, which could not be employed using manual methods. This situation changed as more and more complex coding and retrieval facilities were added to these programmes, which were promoted by their developers as a means of

qualitative "theory building" and "hypothesis testing".

Kelle (1995:62ff) indicates that the first code-and-retrieve programmes linked codes to text segments by using pointers. Similar data structures can be used to define linkages between codes themselves. Since theoretical categories, such as super codes, can be more or less closely related to the codes used to organise the data material, the idea emerged that the structure of a theory developed in a qualitative project could be represented through a "network" of codes. Code-based theory-builder programmes – for instance NUD.IST, NVivo, or ATLAS.ti – contain features which support the construction of networks of code categories.

Lee and Fielding (1995:29-40) comment that some qualitative researchers seem to be reluctant to fully exploit the new possibilities offered by complex coding and retrieval, as investigations among users of CAQDAS show. I found the computer aided data analysis extremely helpful. Incidents, which are marked text segments in the data, were coded. In simpler terms, code words were attached to particular segments or units of meaning and relationships.

The essence of what was said in the interviews was analysed in such a way that another researcher would be able to use the analysis. CAQDAS contains strategies for complex retrieval of codes, which can be applied in two different ways: The search for co-occurring codes can be used as a heuristic device. Here the objective is to retrieve the original text to which the co-occurring codes have been attached. The meaning of a certain co-occurrence was investigated by a thorough analysis of the original text. I utilised Atlas.ti "The Knowledge Workbench" (Muhr, 1994, 1997a, 1997b), which offered the support needed, facilitating activities involved in text analysis and interpretation, particularly selecting, coding, annotating and comparing noteworthy segments. Atlas.ti renders a code-and-retrieve function and provides support for theory building by facilitating connections between codes to develop

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higher-order classifications and categories, formulating propositions that imply a conceptual structure that fits the data. Although the underlying logic of coding and searching for coded segments differed little from the manual techniques, such as cut–and-paste or colour coding or discourse analysis (in a critical paradigm), the speed and the comprehensiveness of these searches was an undoubted benefit. Furthermore, the software could cope with multiple and overlapping codes without losing the context. Codes were also combined using Boolean logic forming super codes with operators such as 'and, or, not'.

3.6.7   Grounded theory in CAQDAS

Coding played an important part in my analysis, and I needed to establish where and how it originated. Coding as a grounded theory strategy has been incorporated within software applications. This is evident in the close relationship between the processes of coding and the use of computers. According to Lonkila (1995:42ff), at the heart of grounded theory is a very detailed and explicit coding of texts. In computer assisted qualitative data analysis, coding is conceived as attaching keywords to text segments. The development of Atlas.ti has been strongly influenced by grounded theory (cf. Muhr, 1994, 1997a, 1997b). This does not imply that this software may only be used in an analysis that uses a grounded theory approach. Acquaintance with grounded theory did, however, facilitate my analysis. According to Coffey, Holbrook and Atkinson (1996), coding should not be overemphasised, considering that a large part of the qualitative research consists of interpretation and hermeneutic analysis. On the one hand, grounded theorising entails far more than only the process of coding; on the other hand, computer aided analysis software can offer far more than a code-and-retrieve function. Facilities such as attaching analytic memoranda to specific points in the text are also offered.

Coding of data is central both to grounded theory and to most of the programmes

developed specifically for qualitative analysis. Coding in grounded theory is, however, more complex than just attaching labels to text segments, and isolating and naming categories. In fact, coding means "how to dimensionalise them and discover their conditions, consequences, and associated interactions and strategies. The distinctive feature of coding in grounded theory is striving towards theory building" (cf. Lonkila, 1995:42ff). Although this inquiry does not claim all the tenets of grounded theory – that is, aiming toward theory development – it was important for me to become acquainted with the same theory, particularly since the data analysis was conducted with the computer. Using a programme such as Atlas.ti to conduct the analysis does not necessarily have to be in line with grounded theory methodology, but the theory does explicate detailed procedures for coding and memo writing, facilitating a way of working with the data (cf. Lonkila, 1995:50).

In this data analysis, I used open coding, axial coding and selective coding grounded theory strategies, as described by Strauss and Corbin (1998:55-143):

open coding

Open coding refers to naming and categorising phenomena through close examination of the data. Data is broken down into discrete parts, which are compared and questioned with "what, where, who, when and how". In other words, open coding fractures data into concepts and categories. Then data are compared and similar incidents are grouped together and given the same conceptual label. The process of grouping concepts at a higher, more abstract level is termed categorising. Labels are then attached to the segments of texts. Put more accurately, coding "represents the operations by which data are broken down, conceptualised, and put back together in new ways. It is the central process by which theories are built from data" (Strauss & Corbin, 1990:57). The product of labelling and categorising are concepts, which form the basic building blocks in grounded theory construction.

Strauss and Corbin (1998:120-121) suggest that open coding can be done line-by-line, which is time consuming but most generative; this is the manner in which I coded. Particularly at the beginning of the research, categories can be quickly generated. Coding can also be done by sentence or paragraph or by perusing the entire document, depending on personal preferences.

axial coding

Axial coding is the part of the analytic process where the researcher puts the parts of the data identified and separated in open coding back together in new ways to make connections between categories or the codes. In this way, the complexity of the context is brought back into the picture. The focus lies with the relationship between categories or codes. In Atlas.ti, this is referred to as linking codes. According to Strauss and Corbin (1998:124), axial coding looks at how categories crosscut and link. Categories are related to their subcategories to form more precise and complete explanations of the phenomena. In coding, a category stands for a phenomenon, such as a problem or an issue or an event that has been defined by respondents as being significant. Texts do give clues as to how categories do or do not relate. The actual linking of categories does not take place descriptively but on a conceptual level, which implies that text is converted into concepts. The analysis here takes place on two levels – the actual words used by the respondents and the conceptualisation of these words by the researcher. Through questions such as where, how, when, why and who, relationships can be uncovered among categories. Working with the actual data, relationships may not always be so evident. Linkages between categories may be subtle and implicit or hidden. Therefore, it is helpful to use some scheme, a paradigm to sort out and organise emerging connections.

selective coding

Strauss and Corbin (1998:143ff) write that selective coding involves the process of selecting a main core category and relating the other categories to it. It implies the process of integrating and refining categories. In Atlas.ti, I was able to create *code families* and also to *rename codes*, redefining codes in other words.

memos

Pandit (1996) explains that memos assist the researcher to think, to make decisions or to interpret while analysing the data. Code memos, theoretical memos and operational memos can be distinguished. Code memos relate to open coding, whereas theoretical memos relate to axial and selective coding. Operational memos contain directions relating to the evolving research design. One of the helpful *objects* in Atlas.ti is called memos.

3.6.8   Atlas.ti and the "VISE" principle: textual and conceptual analysis

As explained in the previous section, grounded theory has exerted a particularly strong influence on the qualitative analysis programmes Atlas.ti, Nud.ist, and NVivo, which can be seen in the structure of the programmes. According to Pandit (1996), there are two modes of data analysis within Atlas.ti, namely on the textual level and on the conceptual level. The textual level focuses on the raw data and includes activities such as text segmentation, coding and memo writing. The conceptual level focuses on framework-building activities such as interrelating codes, concepts and categories to form theoretical networks.

The methodological details regarding the analysis can be read in Addenda A-F in order to facilitate access to the raw data, which is often difficult to trace after the transformation process into a final presentation. Coded interview data, code lists, networks, code families and memos of textual and conceptual levels may be

accessed via the assigned CD-ROM. A demo version of Atlas.ti can be accessed via the web browser at <http://www.atlasti.de> in order to explore the data.

Since very little qualitative research in South Africa in education that I am currently aware of has been supported by Atlas.ti, some background of its philosophy and reasoning for implementation appears relevant in order to grasp my rationale for its usage in this data analysis. Using computer aided text analysis, the researcher needs to appreciate that computers are not capable of comprehending or discerning meaning of words or constructs. Their real strength and contribution lies in ordering, structuring, retrieving and visualising tasks. The computer can create order out of a mass of field notes, interviews, codes, concepts and memos. It is possible to visualise networks of concepts and their relationships in an emerging theory (cf. Muhr, 1994, 1997a, 1997b).

According to Muhr (1997a:1-2), Atlas.ti is a powerful workbench for qualitative analysis, which facilitates uncovering complex phenomena hidden in data in an exploratory way. The main principles of the Atlas.ti methodology are termed "VISE", which stands for "Visualisation, Integration, Serendipity and Exploration".

Visualisation in Atlas.ti refers to the directly supportive role of the way humans think or plan. Complex properties and relations between objects are visual and keep the researcher focused on the data. Although the researcher works with the detail, the integrated whole of the project is always within direct reach, in the "hermeneutic unit". Serendipity stands for an intuitive approach to the data, browsing through the data as the researcher makes relevant discoveries, but without a forceful search. The process of getting acquainted with the data uses an exploratory, discovery-oriented approach.

Transcribed texts are opened in a "hermeneutic unit" where all the data, codes,

memos and diagrams that belong to the analysis are stored. An analysis commences on the "textual level", which implies that the researcher works mainly with the texts or documents. In open coding text segments are marked, codes are assigned and memos written. Explanatory commentaries may also be written. Lists of codes and memos may be sorted in a variety of ways. One way to sort codes or memos may be according to *groundedness,* which means according to the series of text passages assigned to a code or memo. Another way to sort codes may be according to the conceptual density, which relates to the number of other codes connected with or linked to a particular code.

The researcher who works mainly on the conceptual level – that means mainly with concepts – uses axial and selective coding. In Atlas.ti, this indicates that codes and memos are joined to families. For theory building the researcher defines concepts consisting of codes of higher order – cf. Atlas.ti "super codes" – which are not connected to particular text passages, but to codes. Relations between codes may be represented graphically and can be defined or redefined according to standard logic relations (cf. Muhr, 1997a).

3.7   Some concluding remarks

As stated earlier in the study, the purpose of this inquiry was to describe teachers' understanding and experiences of education policy change, using qualitative data gathering or collection. I discussed the continuing qualitative and quantitative debate in order to situate this inquiry in an interpretive perspective. My rationale for the chosen methodology was also presented in order to do justice to the epistemological, ontological and methodological dimensions of the inquiry. The debate regarding methodological criteria to ensure trustworthiness was discussed, and the parallel concepts outlined. I described in some detail the data collection and analysis procedures and elaborated on the computer aided qualitative analysis software,

Atlas.ti, including examples, because to my knowledge this new technology has not yet been used in education policy work.

In the following chapter a variety of themes and subthemes which emerged from the empirical data are discussed and interpreted.