CHAPTER THREE
Research Methodology and Design

3.1   INTRODUCTION

The intention of this chapter is to orientate the reader to the research methodologies and approaches used in the study, to outline the research design, and describe the data collection and analysis methods. Additionally this chapter will deal with research validity within a post-positivist framework.

3.2   RESEARCH APPROACH AND METHODOLOGY

This research follows a qualitative approach and is thus a naturalistic inquiry (McMillan & Schumacher 1997:391). Naturalistic inquiries strive to collect data in a non-interfering manner, to study real-world situations as they unfold naturally and to be open to whatever emerges without predetermined constraints on outcomes (Fraenkel & Wallen 1996:444). In accordance, the purpose of the study is to investigate without manipulation the process of tutoring in the NEEC as it unfolds in real world Namibian situations. Additionally the focus is on the multiple participants' meanings of events and processes in tutoring and the researcher's understanding of these. The qualitative research is based on a number of beliefs explained below.

3.2.1   Use of the interpretivist methodology

Disclosure of the research paradigm is considered important because, as Lather (1986a: 259) believes, "Research paradigms inherently reflect our beliefs about the world we live in and want to live in." In this study the post-positivist paradigm, and hence a related methodology of interpretivism is used as this paradigm promotes reality as relatively stable but external to the person. The paradigm also adheres to the view that reality can only be approximated and that people will not always have the same view of this reality. Interpretivist researchers are therefore interested in the meaning that people have of phenomena and thus context becomes an important influence in meaning making (Janse van Rensburg 2001: 16). When taking this into account, the use of descriptive case studies such as found here are important for capturing the essence of the meaning making and in the process, approximate social realities.

This investigation focuses on tutoring as it is experienced by a particular group of people i.e. the tutors and support tutors, in the specific context of the NEEC. The interpretive methodology was used to "understand the subjective world of human experience" (Cohen & Manion 1994: 36) and as such try to understand the phenomenon under study through the eyes of the subject. To do so the phenomenon is "recontextualised" i.e. placed back into its context, and only then are attempts made to understand (Terre Blanche & Durrheim 1999: 125). Additionally interpretative approaches to research were chosen

to gather data on the multiple realities of tutoring within the NEEC course. From these multiple realities it is hoped that challenges experienced by the research subjects will emerge from the study and that further analysis of these realities will uncover common challenges.

The meanings people make of the phenomena rather than the resulting outward behaviours become the focus for the interpretative researcher (Janse van Rensburg 2001: 16). For example, how a person tutors is based on their thoughts of what 'knowledge' is and how learning takes place. However, the tutoring model undertaken (see Section 2.3.4.1) may differ to these thoughts because of various contextualised and influencing factors. In this case the meanings of why tutoring has occurred in the way it has is more important than the tutoring style actually taken. Therefore the researcher in this study has attempted not only to make observations of the tutoring process but also to investigate the meanings behind the actions to assist in understanding individual tutoring processes. This is especially important when the subject of the research perceives reality differently due to the ever-changing way in which phenomena are experienced (Gerber 1996: 14). Therefore the context in which the phenomena are experienced can greatly affect the way they are perceived and therefore in a study such as this the context must be taken into account. In this research the context of the development and implementation of the NEEC, and the conditions under which the tutors work have been researched to anchor the research findings and consequently support suggestions made. Such suggestions may provide information that could be used as a starting point for investigations in similar contexts.

The use of the information under these conditions is called transferability. Transferability relates to how results of one study can be transferred to another under similar contexts i.e. if there are enough similarities between the research situations, it can be inferred that the results of one research would be similar to the other. To do so the "research report must contain an accurate description of the research process, and secondly an explication of the arguments for the different choices of the methods… and thirdly a detailed description (thick description) of the research situation and context" (Smalling cited in Terre Blanche & Durrheim 1999: 431). Hence in order to allow other researchers to make this decision, a detailed picture of the research situation and methods employed will be made.

Furthermore, in interpretative studies theory is not imposed on the phenomenon but allowed to emerge. This study has involved several interviews, questionnaires observations and document review, which have been analysed in such a way as to generate grounded theory being generated (see Section 3.2.2) (Cohen & Manion 1994: 37.). Interpretive research searches for such emergencies and embraces the opportunity of investigating issues of which little is known with certainty (Gerber 1996: 14). In this case little is known on how to better support tutoring especially as each tutor works in different regions, with different participants and under differing circumstances. The hope is that a theory for supporting the tutoring process will emerge from the experiencing of the tutoring process.

Finally the interpretive methodology recognises knowledge as "socially constituted [and] historically embedded" (Lather 1986a: 259), with values playing an important role in knowledge production. This orientation to knowledge is also promoted by the NEEC and hence the research methodology is attuned to this orientation. "Theory in this study thus serves an agentic function, and research illustrates (vivifies) rather than provides a truth set" (Lather 1986a: 259). Thus the role of the researcher is to represent experiences and understandings. In the NEEC, the interpretivist methodology is believed to be an appropriate choice because of the nature of the study, that is the involvement of a range of people as tutors and their experiencing of the tutoring process in a variety of contexts. Furthermore, because it was desired that theory emerge from the data collection (in this case how tutoring processes could be better supported as indicated by the tutors and support tutors) the use of grounded theory within a post-positivist framework is viewed as appropriate to the task.

3.2.2   Grounded Theory

This research has been based on a post-positivist (qualitative) paradigm, with theory built on data generated *through* the research process. Such a process is called grounded theory. In this research grounded theory is seen as especially appropriate since the issue under study is complex, especially as there is seemingly little other documented research on the support of tutoring in semi-distance modes. Accordingly the use of grounded theory is to develop theor(ies) directly from the collected data (Taylor & Brogdan 1998:137). However in generating theories, post-positivist researchers do not want to prove theories but rather show reasonable evidence to support them (ibid.). Therefore these theories may be considered appropriate to the NEEC as data collected and subsequent analysis is linked closely with this course and its origins.

Tutoring processes are also viewed holistically within this research as this issue is intimately tied with "the complexities and realities of the education system" thus locating "environmental education issues in a wider context" (Tilbury & Walford 1996: 55). This holistic viewpoint is believed to contribute to truer representation of findings because the realities of the tutors are not distanced from their contexts. In the case of the NEEC, tutors are employed within a number of different educational organisations such as the Ministry of Basic Education Sport and Culture (MBESC) and the Ministry of Higher Education, Vocational Education and Employment Creation (MHEVEEC), and with a non-governmental organisation. Also, each tutor has individual characteristics (e.g. gender, personality, age, culture). Each of these factors, when related to the NEEC, has their own particular influencing elements on tutoring processes. The individual tutoring experience is therefore not necessarily fully representative of a combined tutoring experience. Rather the point is to accept all experiences but to suggest *common* understandings of how tutoring can be better supported.

As a last point in this section, this study attempts to represent tutoring processes as they occur naturally and thus the researcher has tried not to influence tutors in how they tutor (Tilbury & Walford 1996: 54, Terre Blanche & Durrheim 1999: 43) and how they think about issues central to the study. However grounded theory acknowledges the advantage of becoming immersed in the context of the phenomenon under study as well as the advantage of enabling the researcher's personal interpretations when collecting and analysing data (ibid.). This principle is particularly useful in this study as the NEEC is the researcher's main form of employment (as the National NEEC course co-ordinator) and hence she is intimately involved with all aspects of the course. However, because of this intimate involvement in the NEEC, attempts have been made to reduce researcher bias by being sensitive to such a situation and by validating data (see Section 3.6).

3.3   THE RESEARCH DESIGN

The following section outlines the research design and in doing so describes the use of a case study approach and the research sample.

3.3.1   Use of a case study method

This research is based on a case study of the NEEC course. A case study is an intensive investigation of a particular entity (in this case the tutoring process) and those individuals involved with it. Particularly a case study aims to understand one phenomenon in depth (McMillan & Schumacher 1997:394). This method has been chosen because it focuses on the totality of the subject and thus holistically considers the interrelationships among people, institutions, events and beliefs (Weiss 1998: 261). Again, such an all-encompassing view of the phenomenon under study is considered appropriate, as it is believed that tutoring could not be distanced from the context of the subjects. Instead it is believed that context has tremendous influence over the tutoring process in the NEEC.

In addition a case study aims to provide understanding rather than knowledge (Thomas d.u: 4). This view merges nicely with the interpretive methodology used with regard to the want of understanding the process of tutoring from the tutors' perspectives rather than attempting to define generalised knowledge. Furthermore, McMillan and Schumacher (1997: 395) believe that case studies work well when there has been little previous research on a topic as exploration within the case can lead to further inquiry. This in turn is linked with grounded theory (see Section 3.2.2) and can lead to the development of a theory related to the issue under study.

Case studies may use a variety of data collection techniques and methods at the discretion of the researcher. This allowed the researcher some degree of flexibility, especially in the beginning of the study when the focus was undecided.

As for the criticism that the subjectivity of case studies gives reason for questioning the generalisability of the research, the researcher took the view of Eisner (in Thomas d.u: 4-5) who doubted that anyone could achieve objectivity, as "the empty mind sees nothing". Instead the researcher employed various strategies to ensure validity (see Section 3.6).

3.3.2   The Research Sample

The focus of the study i.e. tutoring in the NEEC, determined the sample chosen as research structure and Namibian context, a predetermined group of NEEC tutors and support personnel were chosen. To compliment the use of grounded theory development, it was "attempted to minimise comparability and maximise similarity in data generated by the [people in the study]" (Tilbury & Walford 1996: 59). This allowed the categories that emerged from the data analysis to be more accurately defined. Terre Blanche & Durrheim (1999: 381) support the use of six to eight "data sources or sampling units" where there is "not much variation in the sample or when protocols are based on several hours of interviewing". As this study was constrained in both time and funds available, the sampling number was limited, but contained the majority of those intimately involved in the course.

Additionally as the NEEC is based on the RUGF course, various other people closely related to the latter were also included in the study to help recontextualise the NEEC to its original context i.e. the RUGF course and thus to explain the origin of the RUGF course. This ensured that the original course structure and related context was not distanced from the context from which it arose and to simply justify changes to the NEEC as related to differing contexts.

Therefore the research sample consisted primarily of:
- The original six tutors who began with the 2002 NEEC course. All but one of these tutors were Teacher Educators or Advisory Teachers. The other tutor was an environmental education practitioner within an NGO.
- Three Support tutors' and one tutor, all SEEN project TAs operating throughout the Ondangwa East, Ondangwa West, Khomas and Caprivi regions of Namibia.

Additionally two other people were involved in the scoping of the research, for researching more about the RUGF course and for relating changes in the NEEC back to the original RUGF contexts. These people consisted of:
- The Rhodes University Gold Fields Environmental Education Chairperson, as the head of all RUGF courses, and
- A WESSA support person to the NEEC, who was a tutor on the RUGF course and who also supported the development and implementation of the 2002 NEEC.

3.4 DATA COLLECTION TOOLS, TECHNIQUES AND LIMITATIONS

As is often the case in interpretive studies, the researcher becomes the primary instrument for collecting and analysing data (Terre Blanche & Durrheim 1999: 126). Data collection, analysing, interpretation and presentation of findings can be greatly influenced by the researcher. This may be seen as both a disadvantage to the 'objectivity' of findings (if coming from a positivist standpoint) or in contrast an advantageous position. Advantages to the study include the possible explicit revealing of any influences the researcher may have had on the research process and thus make the often implicit influences apparent. Issues of validity based on using the researcher as the collector and interpreter of data is covered in more detail in Section 3.6.

As has been explained in previous sections, the research is primarily concerned with tutoring as it occurs in its natural context. Data collection (with NEEC tutors and support tutors) occurred in context i.e. during, or after the NEEC contact sessions.

The research was carried out from February to September 2003. A number of data collection tools were used as suited the research methodology. These were:

- unstructured and semi structured interviews used in focus group and personal interview situations
- structured questionnaires
- participant observation
- investigation and analysis of documents.
- documentation by use of photographs.

These tools, their uses within this study and the limitations of each will be briefly described.

3.4.1 Use of interviews

Interviews are defined by Cannell and Kahn (in Cohen & Manion 1994: 271) as "a two–person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by *him (sic)* on content specified by research objectives of systematic description, prediction, or explanation". Put simply, it is a way of "collecting talk" (Powney and Watts in Wiegand 1996: 112), however with the acknowledgement that as soon as it is collected, it looses some of its essence. In the case of this study the interviews have been used to gather data "through direct verbal interaction between individuals" (Cohen & Manion 1994: 272), both within a one-to-one personal interview and in a group situation, in particular focus group interviews.

Interviews were chosen for data collection because of the feeling of closeness that people within this process can create. With this closeness comes an opportunity for discussing thoughts, feelings and understandings in a more natural setting than for example using questionnaires (Terre Blanche & Durrheim 1999: 128).

3.4.1.1 Logistics and commonalities of interviews used in the study

The first attempt at data collection involved unstructured interviews conducted with the RUGF Chairperson, the WESSA support person and the Swaziland RUGF Course Coordinator. These were used as scoping interviews to refine and focus the research question. Several semi-structured focus group interviews were used with both support tutors and tutors of NEEC during the first National workshop in May 2003. Two of the four support tutors were present for their focus group (National workshop in May 2003). At the additional focus group interview scheduled for the regional tutorial in June 2003, only one of the two remaining support tutors was available. This interview therefore became a personal interview. A focus group interview was also conducted with all tutors at the National Workshop in May. Interviews typically lasted between twenty minutes (for the individual interview with the support tutor) to one hour (the individual interview with the RUGF Chairperson, WESSA Support person, and the focus group interviews with support tutors and tutors).

The researcher employed a semi-structured interview schedule at the focus group interview and the personalised interview with one of the support tutors. This allowed the interviewer opportunity to change wording, sequence and add or leave out questions when the need arose. This was felt to be an important aspect to the interview as it allowed the interviewer to explore topics of interest brought up by the interviewees. Open ended questions were used in the interviews with the hope that the flexibility they allowed would enable the researcher to probe deeper or clear up misunderstandings where necessary, or to allow for unanticipated yet significant answers (Cohen & Manion 1994: 277). This again was in line with the use of grounded theory within a post-positivist paradigm employed in this study.

When setting up all interviews the researcher ensured that the interview was conducted where there would be little disturbance and where participants of personal interviews could be certain of privacy. All interviewees were invited to participate well ahead of time by either email or verbally (telephonically or face-to-face) and adequate time limits for the interview were negotiated with participants. When the interviews of tutors and support tutors began, the researcher explained the purpose of the research, the interview and in the case of support tutors and tutors, the promise of anonymity. Participants of the interviews were also given a choice of being part of the research and the opportunity of seeing the research document before it becoming public domain.

During the initial interviews with the support tutors the researcher took notes but soon abandoned these, as she believed that such a process inhibited the smooth flow, and ease of the conversation. Thereafter the researcher was able to concentrate fully on the participants and follow up on discussions with minimal distraction.

In all interview situations a tape recorder was used with the permission and willingness of all participants. At most times the recordings were adequate, with the exception of one focus group interview where the recording was of such poor quality that the transcription was abandoned. In its place a final questionnaire was given to the tutors and support tutors to substantiate the brief notes taken during and after this particular interview.

Fortunately, because the researcher knew all interview participants it was relatively easy to establish some form of rapport. This rapport was strengthened when the purpose of the study was explained, mentioning that the research was being conducted as a way of suggesting support mechanisms for the tutoring process rather than as individual and personal criticism.

3.4.1.2 *Unstructured and semi-structured personal interviews*

Initial unstructured interviews were conducted with the RUGF Gold Fields Chair, the WESSA support person and the Course Coordinator for Swaziland (2002), as the interviewer wanted more flexibility to explore the interviewee's initial ideas. These one-to-one unstructured interviews were undertaken as a means of opening up the subject of tutoring within the family of RUGF courses and for exploring this topic in-depth. It was hoped that such discussion would provide insight into the history of tutoring within the RUGF course, and tutoring as it is experienced currently within the Southern African courses. These resulted in a number of ideas that the researcher could then draw on when deciding on the focus, that is support of tutoring, within this study. These discussions were then used as an orientating baseline from which to initially formulate the study's problem statement and objectives of this study (see Section 1.3). However within this refining process, further involvement of the Swaziland Course Co-ordinator was no longer needed as the research was demarcated to represent the experiences of the NEEC tutors and support tutors only.

A focus group interview was planned for all support tutors, however as mentioned earlier the interview changed to a personal interview with only one support tutor. The support tutor was interviewed using the same focus group questions (see Appendix 1 for the interview schedule). The other support tutor was not interviewed because of his prior commitments and due to the researcher's limited time for collecting data. This was not considered a problem for this study as this particular support tutor worked closely with another support tutor from a neighbouring region who was interviewed and whose experience was considered sufficient in terms of similarity (transferability) of findings.

3.4.1.3 Semi-structured focus group interviews

Focus group interviews allowed the researcher to collect relatively large amounts of information in a short period of time, especially as they combine elements of participant observation and individual interviewing (Van Harmelen *et. al.* 2001: 26). Focus group interviews were also used to investigate participants' intersubjective experience of the tutoring process. "Intersubjective experience is experience shared by a community of people" (Terre Blanche & Durrheim 1999: 388). Focus group interviews were chosen as they enabled the researcher to experience the interactions between the participants, their agreements and disagreements on points made, in other words their intersubjective experiences. They also helped in illuminating the commonalties as well as the differences of experiences and opinions and added detail to certain subjects.

Focus group interviews were also used because of the advantage of allowing discussions to develop amongst people who are working together on a common purpose i.e. the NEEC. By doing so, not only did the researcher gain a number of responses from many people in a short period of time, but also allowed the tutors to discuss a number of issues which they could all add to, or comment about. Such opportunities were regarded as highly favourable by the tutors for their own professional development (Paulick personal communication 2003). These interviews were also to further focus the research and generate a questionnaire which was informed by the responses of the interviewees (see Section 3.4.2)

The semi-structured focus group interview method of data collection enabled the researcher to focus on the collective issue of tutoring within the NEEC as viewed by the tutors themselves. Thus an interview guide (see Appendices 1 & 2) related to the issue of tutoring was drawn up, circulated beforehand and the interview conducted roughly within the boundaries of this guide (see semi-structured interviews below).

The interview questions were handed out at least the day before the interview to enable participants to reflect on the questions and prepare their answers. This tip was gained when reading Molose's research (2001:35), which determined that such an approach minimises the risk of participants' failure to recall events or course processes relevant to the research focus. This interview schedule was also made available to participants during the interview so that they could refer to it when needed and could see the general flow of questions. However the interview schedule was explained as being a 'guide' only so that participants did not feel constrained by the questions.

A round table arrangement was used in all focus group interviews so as to imitate that which is followed in the NEEC contact sessions and to promote a relaxed informal setting. The researcher believed that this ambience was achieved because the tutors knew each other as they had all been on the

same course in 2002. The researcher also noticed that most tutors participated in the focus group interview with equal contributions .

3.4.1.4 *Limitations of interviews*

According to both Cohen & Manion (1994: 281) and Wiegand (1996: 112) the most common limitation to interviews are related to bias caused by the interaction between the interviewer and interviewee. This bias involves the "possible misconception of the questions by the respondent and misunderstanding of the answers by the interviewer" (ibid.), the characteristics of both the interviewer and the respondent, and the substantive content of the questions (Cohen & Manion 1994: 282). Race, religion, age and social class can also be a source of bias. In response Cohen & Manion (ibid.) suggest that the questions be made clear, that the interviewer is thoroughly trained so as to be aware of bias and possible problems in an interview, and by matching interviewer characteristics with those of the people being interviewed. Although the researcher could work on getting interview questions clear by trialing them with colleagues, the other suggestions were not feasible for this study given the time constraints and financial obligations each would imply. Instead, the researcher attempted to remain aware of possible problems with bias within the interview and between the interviewer and respondents and try to minimise them, as well as to allow research subjects to provide their input and comment into the research findings by circulating the document to all tutors.

3.4.2 Use of structured questionnaires

Irwin (2001: 4) notes that a "questionnaire is a series of questions set out on paper" that are usually "related to a single topic, focus or area of interest". Thus, a questionnaire is used to gather information from respondents (Terre Blanche & Durrheim 1999: 293). Within the qualitative framework of this study, open-ended questions were used in the questionnaires. Open-ended questions are "where the respondent has control over what they wish to say and how they wish to say it" (Irwin 2001: 9) [italics removed]. Open-ended questions were also used because of the belief that they would elicit the respondents' subjective experience of complex issues in a less imposing situation than in interviews (Bailey in Irwin 2001: 9). Such responses were felt to be important as it was the 'why' and 'how' questions that were seen as most important to this study, allowing the researcher to gain some understanding of the process of tutoring as perceived by the tutors.

3.4.2.1 *Logistics of questionnaires*

When developing the questionnaire the researcher was careful not to use leading, complex, or ambiguous questions. The questionnaire was also given to colleagues for their comments before being passed on to respondents. In order to avoid misunderstanding of the questionnaire the researcher sat with the respondents and explained why the study was being done, and went through the questionnaire

with them. If this was not possible, the questionnaire was explained by an email accompanying the questionnaire.

During a regional tutorial in June 2003, four of the six tutors were personally given an initial questionnaire which was developed after the focus group interview, (see Appendix 3 for the questionnaire schedule). The questionnaire was explained to them by the researcher beforehand and the tutors were given time to fill it in. Two of the tutors were emailed the questionnaire and the purpose thereof explained. All six of the questionnaires were returned. A second and final tutor questionnaire was developed and given to tutors (those four who remained with the course) at the beginning of the second national workshop in August 2003 (see Appendix 4 for the questionnaire schedule). They were asked to complete the questionnaire and return it by the end of the workshop. All support tutors' were also given an adaptation of this questionnaire (Appendix 5), which was emailed to them because they were not at the second national workshop. These were also all returned. All questionnaires were analysed immediately after being received using methods as set out in Section 3.5 below.

3.4.2.2 Limitations of questionnaires

It is recognised that questionnaires do have limitations. Apart from the fact that some respondents may misinterpret questions or the researcher misinterprets their responses, there is also little opportunity for further probing or clarifying of responses or for the respondent to ask questions about the questions asked (Irwin 2001: 7). It is also difficult to determine whether respondents answered the questions honestly. However it is hoped that most of these limitations were reduced through the use of other research tools (triangulation) and through following validation methods as set out in Section 3.6. This was one reason for using multiple data tools in this research.

3.4.3   Use of participant observation

Participant observation was chosen as a part of the suite of research methods employed in this study to focus the phenomenon in the study in a naturalistic way (Terre Blanche & Durrheim 1999: 134) i.e. to experience tutoring in real life situations. Cohen & Manion (1994: 107) define participant observation as the observer who engages in the activities that they set out to observe. In the case of this research, the researcher, whilst observing, engaged with the tutors and support tutors who in turn knew of the research being undertaken and their part in that research. Participant observation was thus seen as a means of getting close to the real life situation of the subjects and a feeling for what things mean for these subjects (Weiss 1998: 257). The researcher saw observation periods as an opportunity to experience 'first hand' what it is like being in a tutorial.

Observation was primarily used as a research tool to compare what was being done in tutorials to the tutor responses in questionnaires and interviews and to generally gauge (through observation) how

tutoring was dealt with. Observation was also used to triangulate evidence from various sources; for example to substantiate assumptions made by the researcher after analysing questionnaires or through information gained from documents. However observation was only used once a focus to the study had been established as it was believed that without this focus, observation notes would be too 'diluted' and not specific enough to provide necessary detailed data.

3.4.3.1 Participant observation logistics

The researcher attended a number of tutorials to observe how such tutorials were being implemented and to experience interactions occurring between tutors and participants, tutors and tutors, and tutors and support tutors. Three tutorial sessions were observed in two of the regions (two sessions for one regional group and one for the other regional group). Of these tutorials, one was only partly attended (approximately three hours) due to time constraints. However one region was attended for the entire length of each tutorial the region was the one the researcher was jointly responsible for. This limited time observing tutors is recognised, however due to the researcher's time constraints and the long distances between the researcher and tutorial groups, restrictions were placed on this method of data collection. Notes were taken throughout the tutorial observation period, as the researcher believed that the subjects under study were used to this in every contact session and at no time looked uncomfortable it. However for the other regional group, no notes were taken until after the observation time as the group was not used to the researcher being part of the group and could have been wary of such notes. This group was also the group in which the researcher only spent approximately three hours observing.

During observation and note taking the researcher specifically focused on the interactions between the tutor and her/his participants, and the way in which the session was conducted by the responsible tutor. This focus was determined by boundaries that were set on such observation periods and in direct line with an interpretive study (see Section 3.2.1). The boundaries were determined by the research aim (see 1.4.1) and by the limited time that the researcher had in committing to the study and were thus limited to tutoring processes (i.e. tutor actions and interactions with support tutors and participants). Such observations are called "focussed" (Terre Blanche & Durrheim 1999: 393). This allowed the researcher to remain focussed on the research aim. However the researcher also tried to remain open to unexpected information and thus not be overly selective in what was being observed.

During the period of observation, an overview of what was taking place was noted and a diagram of the tutorial classroom developed to facilitate the analysing of the data. It is recognised that more thorough notes could have been taken but as the researcher was a 'first time' research observer, and also acting as a participant (as her role was both as a tutor and course co-ordinator) notes were summarised rather than being overly detailed. More detailed notes may have added to the research. However, since participant

observation was not the main source of data in this study, it was decided that the data be used for triangulation purposes.

3.4.4   Use of documents

Documents that had relevance to the study and were analysed included: the 2002 and 2003 course evaluations completed by participants, the Gold Fields Participatory Course in Environmental Education evaluation report (Janse van Rensburg & Le Roux 1999), the 2002 and 2003 NEEC national post workshop minutes, pre-course planning notes of the NEEC 2002, SEEN six monthly reports and the SEEN six monthly Formative Monitoring and Evaluation Team reports. These were used as sources of either support of, or as an alternate view to, data collected. These types of documents could be considered mainly as primary sources of information as they have "direct physical relationship with the events being reconstructed" and thus "capable of transmitting a first-hand account of an event" (Cohen & Manion 1994: 50). However in some cases secondary document sources were used as they detail various other reports and events as outlined by consultants or the SEEN project staff. These were mainly used as a way of triangulating data.

3.4.4.1 Limitations of documents

Limitations of document analysis can be attributed to such things as authenticity, sampling problems, and inference and interpretation problems (Cohen & Manion 1994: 51). The researcher was aware of these limitations and tried to reduce their effect as much as possible, mainly by using documents as a way of triangulating results rather than as the main source of data.

3.4.4.2 Use of photographs

Photographs were taken throughout three regional tutorials. These photos were used as a way of supporting data gathered in participant observation periods. The researcher randomly took photos of the tutors' actions within the tutorials. As photographs were previously taken throughout all the NEEC workshops and tutorials it is believed that minimal disturbance of participants' and tutors' actions occurred. Such photographs were not used as the main data source but rather for support of observations and also for triangulation purposes.

3.5   DATA ANALYSIS TOOLS

When analysing data, the study followed Tilbury & Walford's (1996: 55) and Terre Blanch & Durrheim's guides to grounded theory (1999: 139). Much of what is described below is drawn from their work as the researcher found it to be relatively easy to apply to this study.

From the beginning, data were made familiar by repeated reading of notes and transcripts, and by referring to photographs taken (Terre Blanche & Durrheim 1999: 141). From this familiarisation approach, categories began to emerge 'naturally'. In this way theory was not superimposed on the data but rather was allowed to emerge from such data. Data were collected and analysed simultaneously throughout the study so that they were never left to accumulate and become too overwhelming. The aim of analysing the data was to find common, re-occurring categories (core category or variable) within the data that would then enable the researcher to zoom in on this category. Tilbury and Walford (1996: 57) describe a core category as one that reoccurs frequently in the data, links data together and explains much of the variation. In doing so the data (observation and interviews) were recorded onto data sheets, and coded broadly. This coding initially entailed marking different Sections of interview transcripts, questionnaires and certain photos as relevant to identified themes.

Once all data were collected the broad categories were then categorised into more focussed groups, or sub themes. The sub themed categories contained data not only from the interviews and observations but also from the document analysis and from comments from the project staff, course tutors or participants. Once the data were categorised the researcher looked for links. Major groups pertaining to challenges experienced by tutors and support tutors were identified and relationships between them explored. Ideally at this stage the researcher would look for a point where there were no additional data to develop the properties of the categories but because of limitations of time for this limited scope dissertation, this was not completely possible. Instead the researcher worked with what data she had and developed possible theories related to the available data. However by the end of the study the researcher was quietly confident that most challenges to tutoring had emerged. At this stage the themed categories were analysed and interpreted. Written accounts of these interpretations are given in Chapter Four.

3.6   VALIDITY

Different research frameworks use different ways of validating their findings (Janse van Rensburg 2001b: 1), or as Guba & Lincoln (in Lather 1986b: 67) put it "specific techniques of validity are tied to paradigmatic assumptions". In accordance with qualitative research within a post-positivist paradigm, this study has used the following criteria for establishing validity (Janse van Rensburg 2001b, Lynch 1996, Lather 1986b):

- Credibility: refers to the truth value of the research. In this case questions asked include 'do the findings make sense? Are they credible to the research subjects and to those who are interested in the subject?'
- Transferability: refers to the applicability of this research to others, i.e. how well can results be transferred to other contexts?

- Dependability: refers to the consistency of the research i.e. is the process of the research consistent and have things been done with reasonable care?
- Conformability: refers to the neutrality of the research i.e. is the research reasonably free of researcher biases?

Table 6 below outlines the strategies used associated with each criterion to establish validity within this research. Additionally, although the researcher was the main tool for collecting information, measures were taken to ensure that any bias was kept to a minimum.

Table 6 Strategies for establishing validity (Adapted from Janse van Rensburg 2001b & Lynch 1996)

Criterion	Strategies employed in this study
Credibility	- Prolonged and varied field experience (however within limits of study as outlined in 3.4). - Triangulation through the use of several data sources on the same phenomenon e.g. questionnaires, photographs and document analysis. - Member checking - research subjects were given the research data and asked to comment on the contents. - Peer examination of procedures - the research was given to colleagues involved in the NEEC who were invited to comment on the research report, including methods and procedures.
Transferability	- Nominated sample of subjects (to compliment research paradigm) (see Section 3.3.2). - Thick description of the subjects' location, context, culture, methods and roles. This was employed when using observation, and when outlining methods used. However as this is a dissertation of limited scope, some limitations to the amount of information offered had to be enforced.
Criterion	**Strategies employed in this study**
Dependability	- Dense description of methods as outlined in this chapter. - Triangulation of data through comparison and analysis of all data collected and through analysis of documents. - Peer examination of the research report.
Conformability	- Triangulation of data through comparison and analysis of all data collected and through analysis of documents.

3.7   CONCLUSION

This chapter has attempted to outline the research paradigm, methodology and approaches subscribed to, and the research design, data collection tools, techniques and validity issues. Throughout this chapter mention of the post-positivist paradigm has been made and the underlying assumptions the methodology has on the researcher's view of the world. The reason why a post-positivist view has been taken is thus directly related to the researcher's belief that there are multiple realities as experienced by different individuals in different contexts. Accordingly this research is based on understanding the meaning tutors make of their tutoring processes and how these can be best put to use when suggesting support for tutoring. Such suggestions are made in Chapter Five, based on the results contained in Chapter Four.