CHAPTER 3: RESEACH DESIGN AND METHODOLOGY

This chapter discusses the research design, the study sample, and the methodologies and procedures used to collect and analyse the data in order to assess the relationship between cluster-based school management reform and improving teaching. The chapter concludes with the discussion of the limitations and gaps in the data.

3.1 Research Design

The theoretical basis of the research design

There are different theoretical orientations, which have different claims about reality and how knowledge is acquired. The positivist orientation claims that reality can only be understood through scientific method and valid knowledge is acquired through direct observation and enhanced by measurement (Connole, 1998; Scot and Usher, 1996). The other orientations such as interpretive and critical paradigms claim that reality is understood through language, knowledge is acquired through discovery, and there are 'multiple realities which require multiple methods for understanding them, (Scot and Usher, 1996:18). Each of these theoretical orientations has its own justifiable basis and made significant contributions towards understanding reality and knowledge acquisition.

The study conducted here used research methods informed by both positivist and interpretive paradigms. The quantitative methods, which originated from the positivist paradigm emphasise clear conceptualisation of concepts, the precise measurement of observable behaviour, prediction of events and control of context, and the relationships between variables using experimental and statistical techniques' (Foster, 1996:6). Data collected through quantitative methods are believed to yield objective and accurate

information and that they can be replicated (Tashakkori and Teddlie, 1998). The researcher enters the field with predetermined categories in which behaviour and experiences are coded and described in numerical terms.

The qualitative methods originated from the interpretive paradigm with their emphasis on exploration of meaning (through language) and understanding of the context in which events occur (Foster, 1996: 6). The key feature of qualitative research is that the researcher does not enter the field with predetermined categories in which behaviour and experiences are coded. The researcher enters the field 'with a relatively open mind, to minimize the influence of preconceptions and to avoid imposing existing preconceived categories' (Foster, 1996:6).

The study adopted survey research and case study methodologies. In the survey research, the study used predetermined categories derived from the assumptions of cluster-based school management reform to examine the extent to which the Namibian primary schools implement the decentralisation reform (cluster-based school management reform). The researcher recognised the limitations of quantitative methods especially relying on survey data, which may be distorted by participants' opinions. The researcher used qualitative methods to gain in-depth understanding of the views and experiences of key implementers of the decentralisation reform. In the case study research, the researcher did not use predetermined categories, but was guided by the key research questions of the study. The key research questions were used as broad frameworks to 'minimise the influence of preconceptions and avoid imposing existing preconceived categories' (Foster, 1996:6).

3.2 The research strategy

As mentioned in the previous section, the study combined survey research and case study methods in order to: (1) obtain first hand data on the implementation of cluster-based school management reform; (2) gain in-depth understanding of the implementation of the reform in the Namibian primary schools, and (3) assess the extent to which the reform relates to improvement in the quality of the teaching practices of teachers.

The survey method collected information on how school managers and lower primary teachers perceived the implementation of cluster-based school management reform and whether in their experiences the reform had brought improvements in the quality of teaching. Surveys, however are flawed in relying too much on opinion-based data such as user perspectives which, while they may be useful in gaining first-hand accounts of 'what works', are also limiting by not providing the depth of inquiry available through other methods.

The case study methods were used to enable the researcher to gain in-depth understanding of important issues involved in the implementation of cluster-based school management reform and the subtle aspects of its effects on the quality of teaching. Punch (2005) emphasises the ability of case study methods in providing in-depth understanding of a case. Punch (2005:144) argues that 'a case study aims to understand the case in depth, and in its natural setting, recognising its complexity and its context'. Yin (2003:13) stresses that a case study is an empirical inquiry that: '*investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used'.* The key features of case study research are that a case study aims to investigate a

phenomenon in a 'holistic' manner, with a specific focus using multiple sources of data and multiple data collection methods. Case study research includes both single-and multiple-case studies (Ibid). A single case study focuses within a case, while multiple-case studies involve multiple cases, where the focus is both within and across cases (Punch, 2005).

A multiple-case study design was adopted in which three clusters examined: (1) how Namibian primary schools respond to the introduction of cluster-based school management reform, (2) cluster contextual features and dynamics, (3) teachers' perceptions of the change process and (4) whether cluster-based school management reform relates to improvements in teaching practices of teachers. The multiple-case study design was adopted to understand different contexts in which the implementation of cluster-based school management reform had occurred and to examine the extent to which cluster-based school management reform relates to teaching. Each case study was selected carefully to capture diversities and contrasts that had emerged as a result of the implementation of cluster-based school management reform. The goal of the inquiry was to determine how each case would predict similar results or contrasting results of the implementation of cluster-based school management reform as well as to determine how cross-case conclusions could be drawn.

In order to gain in-depth understanding of how, circuit inspectors, school principals and teachers experienced, viewed and interpreted the implementation of cluster-based school management reform, the researcher adopted qualitative data collection techniques such as direct observations and interviews. In addition, the researcher combined the data from the interviews and observations with information from documents produced during the design and the implementation of cluster-based school management reform. By using a combination of data gathering techniques, the researcher hoped to capture the essence of

the implementation of cluster-based school management reform in Namibian primary schools.

3.3 Research Instruments

To collect data for the study the following instruments were used: a questionnaire, interview guides, observation of cluster subject meetings, classroom observation, focus group discussion and document analysis guides.

Questionnaire

A structured questionnaire was designed to collect information from school managers and lower primary teachers on the implementation of cluster-based school management reform in Namibian primary schools. In other words, the questionnaire was designed to collect information on how school principals and teachers perceived the implementation of cluster-based school management reform and whether in their experiences cluster-based school management reform had brought improvements in the quality of teaching.

The questionnaire was selected as the appropriate data collection tool in assessing the extent to which participants hold similar beliefs and opinions on the implementation of cluster-based school management reform. The questionnaire consists of three sections: (1) general and demographic information of the participants; (2) descriptions of dimensions; and (3) organisation of cluster-based school management reform. Each dimension consists of three items. Within each dimension, items were written, grouped and checked to ensure a comprehensive coverage of the dimension. Each item has a four-point rating scale with responses of ‘to large extent’ (with a rating score of 3), ‘to some extent’ (with a rating score of 2), ‘to very limited extent (with a rating score of 1) and ‘never’ (with a zero rating) (*See Appendices A & B*). Three items were formulated for each

dimension in order to assess the levels of implementation of each of dimensions of cluster-based school management reform. Three items for each construct (dimension) were used as indicators for measuring the construct and a pre-test of the survey questionnaire was conducted in order to enhance its validity and reliability. The rating score of 3 indicates a high level of implementation of a dimension, the rating score of 2 indicates a moderate level of implementation of a dimension and a rating score of 1 indicates a low level of implementation of a dimension. The descriptions of the items on the questionnaire were derived from decentralisation literature and the policy document of cluster-based school management reform in Namibia. The items served as indicators for measuring the dimensions. The dimensions were as follows: shared and collaborative leadership (stakeholders' involvement); competent leadership; resource sharing; teacher involvement, teacher collective planning; teacher collegiality; school supervision and support and localised teacher development. These dimensions were derived from the goals of cluster-based school management. The goals include: fostering stakeholder collaboration through shared and collaborative leadership; promoting improve school management through competent leadership; improving cost-effectiveness; fostering teacher involvement in decision-making; breaking the isolation of teachers; fostering professional collaboration and learning; promoting local pedagogical supervision and support and promoting local teacher development and training. The eight dimensions were referred to as dependent variables, while the background items (sex, gender, educational qualifications, job status, years of school management or teaching experience, school geographical location, cluster condition, years of implementation of the reform and teacher support) were referred to as independent variables. The independent variables were categorised (*see Appendices A & B*).

Cluster Subject Meeting Observation Guide

Cluster subject meeting observation guide was designed to gather firsthand data on the activities carried out during cluster subject meetings in order to understand the nature of activities which teachers engaged in, which were assumed to contribute to the improvement in the quality of teaching. The cluster subject meeting observation guide consists of guiding questions for observing cluster subject meetings (*See Appendix C*). The purpose of the guiding questions was to establish a consistent line of inquiry as well as to allow events to unfold in order to document activities carried out during cluster subject meetings. The guiding questions were adapted from LeCompte and Preissle, 1993).

Interview Guides

A semi-structured interview protocol was designed to elicit information on teachers' perceptions of the implementation of cluster-based school management reform and whether from their experiences the change in school management had brought change in the quality of teaching. The questions were formulated to provide the researcher with insight into how teachers experienced, viewed and interpreted the implementation of cluster-based school management reform (*See Appendix D*).

Another semi-structured interview guide was designed to elicit information on the perceptions of circuit inspectors about the implementation of cluster-based school management reform; especially the role they played as the key facilitators of the reform. The questions were formulated to provide the researcher with insight on how circuit inspectors viewed and interpreted the change in school management and whether from their experiences the change in school management had brought improvement in the management of weak schools and the quality of teaching (*see Appendix H).*

A semi-structured interview guide was also designed to elicit information on the perceptions of school principals on the implementation of cluster-based school management reform; especially the role they played as the key implementers of the school management reform. The questions were formulated to provide the researcher with insight into: (1) how cluster-centre principals and satellite school principals viewed and interpreted the change in school management; (2) how they plan and organise cluster activities; (3) the support they receive during the implementation of the reform; and (4) whether from their experiences the change in school management had brought improvement in the management of their schools and the quality of teaching *(see Appendices I & J).*

Classroom Observation Guide

The classroom observation guide was designed to provide data on the actual teaching methodologies employed by the lower primary teachers in the three primary school clusters.

In particular, the classroom observation guide was designed to collect information on how teachers teach literacy, environmental studies and mathematics lessons and the extent to which teachers are confident in using thematic teaching approaches[4]. The focus of the teaching of literacy, environmental studies, mathematics and thematic teaching was prompted by the survey data and the observations of the cluster subject meetings during the piloting of the instruments. The discussions and the sharing of ideas about how to teach reading and the use of thematic teaching approaches came out strongly in the survey data. It was also observed that teachers were keen to learn more about how to use thematic teaching approaches and teaching strategies for reading especially in grades 1

[4] Environmental Studies, Literacy and Mathematics are considered as subjects in the lower primary school curriculum phase, where teachers can facilitate learners' understanding of the interrelationship between learning areas.

and 2 in bilingual classrooms. The classroom observation guide consists of questions which focus on: (1) teacher interaction with learners; (2) learners' responses to teacher instruction; (3) the use of teaching materials and resource to support learning; (4) what teaching strategies teachers use to enhance learning; (5) teachers' skills in responding to learners with different learning difficulties; (6) teachers' skills in assisting learners to make connections between what they know and new material; (7) teachers' skills in engaging learners in higher order thinking; and (8) teachers' skills in assisting learners to see the relationship between learning areas (*See Appendix E*).

Document Analysis Guide

The document analysis guide was designed to gather information about policy issues that underpin the design of cluster-based school management reform intervention and its actual implementation; in order to compare and corroborate data obtained through survey, direct observations and interviews. The document analysis guide consists of guiding questions to guide the researcher analyse policy documents; and documents (such as minutes from cluster meetings, cluster annual reports, cluster action plans) collected during the field work in order to gain insight into the contexts in which the reform was designed and implemented to enable the researcher make inferences on the link between cluster-based school management reform and improved teaching (*See Appendix F*).

Focus Group Discussion Guide

A guide consists of a list of question areas was designed to gain insights into the strengths and weaknesses of cluster-based school management reform, the teachers' expectations of the reform and suggestions on how to improve the reform. The purpose of the group discussion was to generate data and insights that could not be gained without group interactions with teachers as well as to corroborate data gathered from the interviews and

cluster subject meeting observations. A group discussion guide was designed to be conducted with lower primary teachers (who completed the lower primary questionnaire) from well-resourced and under-resourced schools (*see Appendix G*).

3. 4 The sample for the study

The management of the Ministry of Education in Namibia is decentralised into 13 education regions. There are 47 circuits (districts) and 280 clusters in Namibia, each region consists of about five to seven circuits, and there are five to seven clusters per circuit. Out of thirteen regions, five regions had implemented cluster-based school management reform for a longer period. In the five regions, there are 14 circuits and 64 clusters. The study focuses on the five education regions, which have implemented cluster-based school management reform for four years or more. The study was conducted into two phases. The phase one of the study focused on survey research and phase two focused on case study research.

Selection of the sample

The study targeted primary school principals and lower primary teachers. The reasons for targeting primary schools are as follows: (1) formal management structures were set up in support of the implementation of the cluster-based school management reform; (2) subject support groups for lower primary teachers were set up in most of the cluster centres, and (3) the lower primary teachers are likely to remain in the same grade or phase for a longer period. It was assumed that targeting primary schools which have in place structures for supporting the implementation of cluster-based school management reform would yield valuable data which could be used to assess the extent to: (1) which cluster-based school management reform was implemented in schools, and (2) whether the change in school management related to improvements in the quality of teaching.

However, it is recognised that excluding other school phases from the study, would limit the understanding of the implementation of cluster-based school management reform to primary schools only, leaving gaps in understanding how other school phases respond to the change in school management.

In order to establish the sample for the study, a total number of 173 primary schools (excluding combined, junior and senior secondary schools) in the five regions, was obtained from the 2003 Education Statistics of the Ministry of Education. The sample for the study was selected using a simple random sampling (SRS) method (*see Appendix K)*. In order to establish a sampling frame for the study a list of all primary schools was drawn up. Each school was given a unique number starting from one. In other words, each school was given a number ranging from 001 to 173. Since the highest number on the sampling frame is a three-digit number (173), each number assigned to each school should be a three-digit number. A sample size of 60 primary schools out of 173 primary schools was drawn.

A sample size was determined using published tables which present samples sizes that would be necessary for 10% precision levels where the confidence level is 95% and p=.5. In order to draw a sample of 60 schools, 60 numbers were selected from the table of random numbers.[1] In the table of random numbers, all numbers are five-digits. In order to create three-digit numbers out of five-digit numbers, the researcher decided to pick the third number on the first column for example, 42130 and then considered the left-most three digits, thus the 421. To progress through the table, the researcher moved down the column to the bottom of the table, then continued at the top of the next column up to the bottom, and then followed the same procedure until 60 random numbers were selected.

[1] A table of random numbers was obtained from Babbie (1998), Appendix E, abridged from Handbook of Tables of Probability and Statistics, 2nd Ed, edited by William H. Beyer (Cleveland: The Chemical Rubber Company, 1968).

Numbers that appear twice or those that are larger than the population number were ignored. The sample consists of primary schools, which corresponded to those random numbers. A sample size of 230 lower primary teachers was selected from the population of 660 primary teachers in the 60 sampled schools. A sample size was determined using published tables which present samples sizes that would be necessary for 5% precision levels where the confidence level is 95% and p=.5.

Selection of Case Studies

As indicated earlier, the case study research was carried out in three primary school clusters. Each case was selected carefully to capture unique diversities and contrasts that had emerged because of the implementation of cluster-based school management reform. The three primary school clusters were selected based on four criteria: (1) geographical location of the school clusters; (2) socio-economic and cultural backgrounds of teachers and learners in the primary school clusters (3) unique characteristics of clusters as revealed in the survey data and (4) the geographical proximity of clusters in relation to the researcher's workplace. To ensure *anonymity* of each cluster, the researcher assigned a different name to each cluster. In other words, the names of the clusters indicated in this study are not real names. Table 1 below outlines the rationale for selecting each of the three case studies.

Case Study	Rationale for selection
Makalani cluster consists of eight primary schools, located in an urban area	An urban cluster was selected because it represents a rich cluster with resourced schools, strong leadership, qualified and experienced teachers in the study. Teachers and learners come from mixed ethnic backgrounds. The socio-economic background of teachers and learners in some schools ranges from middle income groups to low income groups. The case study was selected to bring to the study an in-depth understanding of how a rich cluster receives and delivers cluster-based school management reform. The cluster was also selected to assess the

	extent to which resourced schools support under-resourced schools as per intentions of the reform as well as the extent to which cluster-based school management reform within the context of a rich cluster of schools with strong leadership, qualified and experienced teachers relate to improvements in the teaching practices of teachers.
Hendrich cluster consists of five primary schools, located in a semi-urban area	An urban cluster was selected because it represents a poor urban cluster with only one school which is resourced, has strong leadership, and qualified and experienced teachers, while other schools do not have strong leadership, some teachers are qualified and experienced, while other are less qualified and experienced. Teachers and learners come from socio-economic backgrounds ranging from middle to very low income groups. Teachers and learners come from mixed ethnic backgrounds. This case study was selected to bring to the study an in-depth understanding of how schools in a cluster with only one resourced school receive and deliver cluster-based school management reform. The cluster was also selected to bring an in-depth understanding of the extent to which cluster-based school management reform within the context of a poor cluster with weak schools under the leadership of a strong school relates to improvements in the teaching practices of teachers.
Otjimue cluster, consists of five primary schools, located in a rural and remote area	A rural cluster was selected because it is located in remote, isolated and impoverished communities with all schools not having strong leadership, teachers are less qualified, but some teachers are reasonable experienced. Teachers and learners come from predominantly one ethnic background. This case study was selected to bring to the study an in-depth understanding of how schools located in remote, isolated and impoverished communities receive and deliver cluster-based school management reform. The case study was also selected to bring to the study an in-depth understanding of the extent to which cluster-based school management reform implemented in context of a rural cluster with weak schools, allocated in an isolated and impoverished communities relate to improvements in teaching.

Table 1: Rationale for selecting the three case studies

3.5 Data Collection Procedures

Access to schools, cluster meetings and classrooms was negotiated with the regional offices, cluster-centre principals and school principals. Prior to the research study, letters for permission to conduct research in primary schools were sent to the directors of the five education regions. A pilot study with twenty lower primary teachers and five school principals drawn from five different schools, trying out the *questionnaire* (for both lower primary teachers and school principals), was conducted prior to the survey research and then modified accordingly. Another pilot study with three teachers, trying out *the interview guide; the cluster subject meeting observation guide; the classroom observation guide and the document analysis guide,* was conducted prior to the case study research. The interview and classroom observation guides were administered to all three teachers. Two cluster subject meetings were observed and documents from the two cluster centres were analysed using the cluster subject meeting observation guide and document analysis guide respectively. The document analysis guide was modified slightly, while major changes were made to the interview guide, classroom observation and cluster subject meeting observation guides to ensure consistency in the instruments.

The research study took place in two phases. The first phase focused on the survey research and the second phase on the case study research. As soon as the permission to conduct research in the five regions was granted, data collection for the survey research began.

3.5.1 Survey Research Data Collection

The survey research data collection focused on gathering information about the perceptions of both school principals and lower primary teachers on the implementation of cluster-based school management reform and whether in their experiences the change in

school management had brought about improvements in the quality of teaching. The survey data were collected through a structured questionnaire, one for school principals and another one for lower primary teachers.

Data collection for the survey research took place from middle of September 2005 up to the end of April 2006. 260 questionnaires (for lower primary teachers) and 65 questionnaires (for school principals) were sent to 60 schools in the five regions by mail. A list of schools to which questionnaires were sent was drawn up to enable the researcher to monitor the return of questionnaires and record the questionnaires as they were returned.

Respondents were required to provide demographic information; information about the nature of their cluster centres, availability of resources in the cluster centres, number of years of the implementation of cluster-based school management reform, the structures in place to support the implementation of cluster-based school management reform and to state whether they had received professional support under the cluster-based school management arrangement. Respondents were also asked to rate their perceptions about the levels of implementation of the eight dimensions of cluster-based school management reform and whether in their experiences cluster-based school management reform had improved the quality of teaching.

To ensure anonymity of the respondents, as each questionnaire was received, an identification number was assigned to it; and the raw data were entered into the computer using Microsoft Excel program. Data about respondents' particulars and information about the delivery of cluster-based school management reform were entered separately from the data on the ratings of the items of the eight dimensions of cluster-based school management reform.

The first follow-up letters were sent to non-respondents together with additional questionnaires between January 2006 and February 2006.

The second follow up letters were sent to non-respondents together with additional questionnaires between March 2006 and April 2006. This period was also used to cross-check and refine data. The survey data collection was completed by the end of April 2006. The response rate was 61% for the school principal questionnaire and 57% for the lower primary teachers' questionnaire. The reason for low response rate could be attributed to the fact that mailed surveys, are subjected to the preferences of respondents.

3.5.2 Case study research data collection

As shown in section 2.2, the collective case study research was adopted and carried out in three primary school clusters with different contexts. Case study research was conducted in a total of *ten* primary schools in the three clusters. *Four* primary schools were selected from Makalani cluster (two resourced schools and two under-resourced schools); *three* primary schools from Hendrich cluster (one resourced school and two under-resourced schools)[5]; *three* primary schools from Otjimue cluster (three under-resourced schools)[6]. The case study research focused on collecting rich data on how the implementation of cluster-based school management reform had occurred in different contexts and to examine whether the change in school management relates to improvement in teaching practices.

The case study research data collection took place from February 2006 to mid-September 2006. Access to schools, cluster meetings and classrooms were negotiated with the cluster-centre principals and satellite school principals. The purpose and the benefits of

[5] There is only one resourced school in Hendrich cluster.
[6] All schools in Otjimue cluster are under-resourced.

the study were explained to the school principals. It was also explained to the principals that the study would require the involvement of the teachers, and they have the rights to refuse to participate in the research. The researcher ensured the principals that the confidential information obtained from the participants would not be disclosed.

Observation of cluster subject meetings

Observation of cluster subject meetings focused on collecting data about the activities carried out during cluster-subject meetings. The observations of cluster-subject meetings were guided by the cluster subject meeting observation guide. The observations of cluster subject meetings focused on the following: how the activities were organised; what resources were used in the activities; what was discussed and what meanings teachers attributed to what they did.

Before the actual observations of cluster subject meetings began, the researcher visited the three cluster centres to obtain schedules for cluster activities for each of the three primary school clusters. A letter to get consent from teachers to attend cluster-based subject meetings was written to the chairpersons of the cluster-based subject groups. The researcher ensured that permission was granted to attend cluster meetings before observations began.

The researcher carried out repeated observations of cluster subject meetings. *Six* cluster subject meetings observations were carried out. *Three* observations of cluster subject meetings were carried out at Hendrich cluster; *two* observations of cluster subject meetings at Makalani cluster; and *one* observation of cluster subject meeting at Otjimue cluster.

Cluster subject meeting observations were carried out between February and September 2006. The first cluster subject meeting observations were carried out between 21 February and 10 March 2006. During the first cluster subject meeting observations, the researcher observed meetings at the two of three cluster centres. These two cluster centres are both urban clusters. The researcher was not able to reach the rural cluster centre because of the heavy rainfall experienced during that period. The cluster subject meetings were held in the afternoons after classes at the cluster centres. However, teachers in one cluster preferred to hold cluster subject meetings not only at a cluster centre, but at different schools within the cluster. Each cluster subject meetings was conducted for three hours.

The second cluster subject meeting observations were carried out between 30 May and 9 June 2006. During the second cluster subject meeting observations, the researcher observed cluster subject meetings at the three cluster centres. All three cluster subject meetings took place in the afternoon. Two cluster subject meetings were conducted for three hours, while one cluster subject meeting was conducted in one hour.

The third cluster subject meeting observations took place between 12 and 19 September 2006. During this period only one cluster (Hendrich cluster) held the cluster-subject meeting, the other two clusters cancelled the meetings.

The presence of the researcher in the meetings did not appear to have any significant influence on how the meetings were conducted and what transpired at the meetings. This is not to say that the presence of the researcher had no influence on the way in which the meetings were conducted. The chairpersons of the two meetings seemed to be anxious in the way in which they chaired the meetings. In order to minimise the influence of the researcher's presence on the way in which the meetings were conducted, the researcher

spent most of the time listening to what teachers discussed and jotted down key phrases to help remember afterwards what was discussed. When the observation ended, the researcher went to a quiet place and wrote as much as she could remember and then reviewed the field notes using the nine guiding questions on the cluster subject meeting observation guide.

During the visits to schools, the researcher also took descriptive and detailed notes of the case study sites: the condition of buildings, the facilities available at the cluster centres and the immediate physical environment around the cluster centres.

Interviews

Prior to the visit to schools, the researcher contacted the school principals to make appointments for interviews with teachers who completed the questionnaires. The identification of teachers interviewed was done during the informal visits to the selected schools in the clusters. The researcher met who the teachers, explained the purpose of the research and why their participation was important. However, it was explained to the teachers that they had they rights to refuse to participate in the research. The researcher also explained that their information would be coded and used, but their anonymity would be protected.

Face-to-face interviews were conducted with eighteen teachers in ten schools. The first set of interviews took place between 21 February and 10 March 2006; the second set of interviews were conducted between 30 May and 9 June 2006; the third set of interviews took place on the 12 and 13 July 2006 and the fourth set of interviews were conducted between 10 and 19 September 2006.

Initially, it was planned that interviews would be conducted after classroom observations in order to compare what the teachers said and what were taking place in their classrooms. In some cases, this could not be carried out easily, because of time constraints and the long distances between some schools.

At the beginning of each interview session, the researcher spent a few minutes establishing rapport to reduce tension and anxiety during the interviews. Interviews were conducted in classrooms and staffrooms during the class sessions or during breaks. Generally, there were few interruptions because in most cases learners were sent out into the playgrounds during breaks, though occasionally some learners entered the classrooms to pick up things. In a few cases teachers entered the staffrooms in the middle of the interviews. The interview processes were conducted as follows: (1) the researcher engaged in guided conversations with teachers in which the researcher asked specific questions as outlined in the interview guide, the researcher asked probing questions on issues that emerged as the interviews progressed; (2) the researcher also engaged in unguided conversations with teachers in which the researcher asked them to talk about their opinions about cluster-based school management reform: what they regarded as important about the reform; their understanding of the reform; its strengths and weaknesses; their expectations; what the reform meant to them as teachers; suggestions on how cluster subject meetings could be improved; what encouraged or discouraged them to attend cluster subject meetings; and questions on issues that emerged as the interviews progressed. Interviews took approximately 1 hour to 1½ hour. All interviews were tape recorded and the researcher also took field notes.

Face-to-face interviews were also conducted with *ten* principals who had completed the school principal questionnaire. At the beginning of each interview session, the researcher

spent a few minutes establishing rapport to reduce tension and anxiety during the interviews. Confidentiality and anonymity were ensured for all participants. Interviews were conducted in principals' offices during class sessions or breaks. The interviews were conducted as follows: (1) the researcher engaged in guided conversations with school principals in which the researcher asked specific questions as outlined in the interview guide, but the questions for the cluster-centre principals were different from the one for satellite school principals. The researcher asked probing questions on issues that emerged as the interviews progressed; (2) the researcher also engaged in unguided conversations with school principals in which the researcher asked school principals to talk about cluster-based school management reform: what they regarded as important about the reform; their understanding of the reform; what the reform meant to them as school principals; its strengths and weaknesses; their expectations; their suggestions on how to improve the reform; the importance of the reform to teachers and their classroom practices. Interviews took approximately 1 hour to 1½ hours. All interviews were tape recorded and the researcher also took field notes.

Because of time and resource constraints, telephonic interviews were conducted with two circuit inspectors responsible for the three primary school clusters. The researcher followed the same procedures; the researcher asked the inspectors specific questions as reflected in the interview guide, engaged in extensive probing on issues that emerged during the interviews as well as with the inspectors about their opinions about cluster-based school management reform: what they regarded as important; their understanding of the reform; what the reform meant to them as circuit inspectors; its strengths and weaknesses; their expectations; their suggestions on how to improve the reform; the importance of the reform to school principals and teachers. Interviews took place

approximately 1 hour to 1½ hours. The researcher took detailed notes during the telephonic interviews.

After interviews were completed, data were transcribed, checked and confirmed by participants and corrected. Data collected through face-to face interviews and observations were checked and confirmed with participants during the last round visits to cluster centres, while data collected through telephonic interviews were confirmed telephonically.

Focus Groups Discussions

Focus group discussions were conducted with teachers who had completed the lower primary questionnaires. The researcher requested permission from the principals and the teachers to hold group discussions. Group discussions were conducted with a group of 8 to 11 teachers from the same school (under-resourced or resourced school) in the afternoons after school periods. It was ensured that no information was shared from one focus-group session to another session. The teachers were informed that their information would be used, but their anonymity would be protected.

The focus group discussions were based on: the teachers' understanding of the reform; the importance of the reform to them; what they regard as strengths and weaknesses of the reform, their expectations of the reform, the benefits of the reform to their classroom practice and their suggestions on how to improve the reform. The researcher served as a moderator for the discussions. The views of the teachers from resourced and under-resourced were compared and contrasted. The researcher listened carefully to the different views, while trying to probe on certain issues. No attempt was made to interpret

the views of the different groups. The discussions were tape recorded and the field notes were also taken. These focus group discussions lasted for 1 to 1½ hours.

Classroom observations

Before classroom observations began the researcher requested permission from the principals and the teachers to access the classrooms. The teachers were informed that information from classroom observations would be coded and used, but their anonymity would be protected. Eighteen classroom observations were conducted between February and September 2006. The first set of classroom observations took place between 21 February and 10 March 2006; the second set of classroom observations were conducted between 30 May and 9 June 2006; the third set of classroom observations took place on 12 and 13 July 2006 and the fourth set of observations were conducted between 10 and 19 September 2006.

Classroom observations began after the first set of cluster subject meeting observations had been completed. It was planned that classroom observations would take place after the observations of cluster subject meetings in order to collect data on what teachers actually practiced in classrooms in relation to what they discussed during cluster subject meetings. This could not be carried out easily because some cluster subject meetings were cancelled without the knowledge of the researcher.

Classroom observations were carried out in Environmental Studies, Mathematics and Literacy lessons. The focus on the Environmental Studies, Mathematics and Literacy lessons was prompted by survey data and the discussions during cluster subject meetings. The discussions during the first cluster subject observations centred on the teaching of Mathematics, Environmental Studies and Literacy using thematic teaching approaches.

Teachers were keen to learn more about how to teach Mathematics, Environmental Studies and Literacy using thematic teaching approaches. The focus on the three subjects during cluster subject meetings was also highlighted in the survey data.

In order to determine the extent to which teachers' teaching practices related to what teachers discussed during the cluster subject meetings, the classroom observations focused on lessons in the above-mentioned subjects. In particular, classroom observations focused on: 1) teacher interaction with learners; (2) learners' responses to teacher instruction; (3) the use of teaching materials and resources to support learning; (4) teaching strategies teachers use; (5) teachers' skills in responding to learners with different learning difficulties; (6) teachers' skills in assisting learners to make connections between what they know and new material; (7) teachers' skills in engaging learners in higher order thinking; and (8) teachers' skills in assisting learners to see the relationships between different learning areas.

The presence of the researcher in the classrooms did not appear to have any significant influence on teacher behaviour. This is not to say that the presence of the researcher had no influence on teacher behaviour in the classroom. Some teachers observed appeared to be anxious. During classroom observations found herself a place from which she could observe, watched carefully what had happened in the classrooms and jotted down key phrases to help remember afterwards what happened during the class period. When the observation ended, she went to a quiet place and wrote as much as she could remember during the class periods and then reviewed the lesson observation notes using the eight guiding questions in the classroom observation guide.

The influence of the researcher on teacher behaviour in the classrooms was also minimised to a great extent by the researcher's repeated visits to schools. Teachers become familiar with the researcher and felt comfortable with her presence in the classrooms. Observations were conducted in lower primary grades taking forty minutes in single lessons and 1 hour and twenty minutes in double periods. In order to enhance the reliability and validity of the data, repeated classroom observations were carried out, involving eighteen lower primary teachers teaching in six primary schools in the three primary school clusters.

Document Analysis

Document analysis involved analysing policy documents underpinning the design of cluster-based school management reform and the documents produced during the implementation of cluster-based school management reform in schools. Documents were collected from the GTZ offices in the Ministry of Education and during visits to the cluster centres. Permission was requested to use the data in the documents as well as to cite information from them. The documents include the school clustering program document, the Ministry of Education national policy on school clustering, minutes of the meetings of cluster management committees and cluster subject groups, and the training manuals for cluster-centre principals. The researcher reviewed and wrote a summary of each document collected from each site, summarising the importance and the contents of each of document, taking detailed notes of what was documented about the actual implementation of cluster-based school management reform as well as problems and successes recorded during the implementation.

3.6 Data Analysis

The analysis of the data was based on quantitative and qualitative approaches. Quantitative data analysis involved coding of the numerical and non-numerical responses on the data from survey research; and using SPSS software to run frequency procedures for checking data entry errors and making summary statistics of the data and to compute the analysis of variance (ANOVA), a statistical technique for investigating the difference between groups on some dependent variables (Punch, 2005). A one-way analysis of variance examines the relationship between one independent variable and one dependent variable. Therefore one-way ANOVA was used to determine the relationship between background independent variables and dependent variables as well as to establish the significance of the differences between the group means.

Qualitative data analysis was informed by the Miles and Huberman (1994) framework for qualitative data analysis. The framework involves three interactive components: data reduction, data display, and drawing and verifying conclusions. In each of the three components, the following two operations: coding and developing propositions were used concurrently (Punch, 2005:199).

During the initial data analysis the researcher focused on summing up a set of field notes drawn from cluster-based subject group meetings observations; lesson observations; informal discussions and preliminary summaries from document analysis, transcribed data from interviews with lower primary teachers; school principals and circuit inspectors, and transcribed data from focus group interviews with lower primary teachers. This was the first-level coding to enable the researcher to summarise segments of data. The following *ten* questions below, which are linked to the study research questions, were used as a

general framework for coding the field notes and transcribed data from each of the three primary school clusters.

What are the characteristics of this primary school cluster? What are the strengths and weaknesses of this primary school cluster? What are the beliefs and views of school principals, circuit inspectors and teachers about the school management reform in this cluster? What explains the degree or absence of the implementation of the school management reform in this cluster? What are teachers' perceptions of change in this cluster? What changes did the cluster-based teacher support strategies bring into the teaching practices of teachers? What are the characteristics of the teaching methodologies of teachers in this cluster?

The analysis of data was based on three levels of coding. The first-level coding (open coding) involved assigning labels against pieces of data in order to attach meaning to the pieces of data and conceptualise the data. The initial data analysis resulted into the *summaries of data* from each of the *three primary school clusters* on: (1) the key characteristics of each cluster, including strengths and problems; (2) the views and beliefs held by different key implementers including strains and difficulties created by the implementation of the school management reform in the cluster; (3) types of teacher support strategies provided to teachers by the school management reform in the cluster and evidence of any change in the teaching practices of teachers; and (4) the characteristics of the teaching methodologies of teachers in the cluster. These summaries guided the researcher to sort and identify similar phrases; patterns and themes that emerged across the three primary school clusters. The first-level coding aimed to identify first-order categories.

The second-level coding (axial coding) focused on developing the first-order categories further into higher-order categories, discovering the connections between the categories in order to produce core categories (Punch, 2005). Thus, the second-level coding involved the researcher sorting and sifting the summaries to identify similar and different phrases; patterns and themes that emerged across the three primary school clusters. The researcher then isolated the tentative patterns, commonalities and differences across the three primary school clusters. These tentative patterns, commonalities and differences were reviewed during each subsequent field visit.

The *first* matrix was created to display a summary of data on how Namibian primary schools responded to the introduction of cluster-based school management reform. It was created to display data on the contextual features and dynamics of each primary school cluster. The matrix was developed to enable the researcher to illuminate the contextual features and dynamics of each cluster, and to make contrasts and cross-case comparisons as well as inferences on how primary school clusters responded to the introduction of cluster-based school management reform and the factors affecting its implementation. A summary of data was entered on the following matrix: the cluster contextual features and dynamics (*see Matrix 1*).

The *second* matrix was created to display a summary of data on teachers' views about the support provided by the school management reform in the three primary school clusters. The summary data on the matrix was compared and contrasted with the data from qualitative evaluation of the classroom observations to enable the researcher makes inferences on the extent to which the school management reform relates to improvements in the teaching practices of teachers. A summary of data was entered on the following matrix: the teachers' perceptions of cluster-based school management teacher support (*see Matrix 2*).

The third level coding (selective coding) focused on finding out the key concepts in the data in order to 'pull out' the central theme(s) in the data. The major themes that emerged from the subsequent reviews of the tentative patterns, commonalities and differences across the three primary school clusters include: (1) cluster contextual features and dynamics, (2) ideology of key role players and (3) teachers' theory of the reform.

In order to draw conclusions on the relationship between cluster-based school management reform and improving teaching, the researcher re-checked the recurring patterns and themes, compared and contrasted data on the major *three* themes. The tentative conclusions were verified through the following two sources of corroboration: triangulation and getting feedback from the informants. The use of different sources of information and methods has an advantage of increasing the credibility of data. In other words, the use of different data collection strategies enables a researcher to: (1) build on the strength of each type of data collection method; (2) use multiple source of evidence; (3) establish a chain of evidence; and (4) promote rigorous inquiry. The use of different data collection strategies during the data collection phase of this study enabled the researcher to obtain data from a multiple sources of information, establish a chain of evidence and engage in a rigorous inquiry, in assessing the relationship between cluster-based school management reform and improving teaching. In sum, triangulation enhances the validity of data and therefore enables the researcher to corroborate data from different sources of evidence.

The conclusions drawn from the interview data were corroborated with the conclusions drawn from observations and document analysis. The researcher also made sure that the summary of conclusions were checked and confirmed by key informants.

3.7 Limitations of the data

The study focused only on primary schools and lower primary teachers; excluding other phases of schooling and limiting the understanding of the implementation of cluster-based school management reform to the primary phase.

The design of this study was not based on experimental design in order to establish a clear cause and effect relationship between cluster-based school management reform and teaching. The study did not have baseline data on the teaching skills of teachers in the three primary school clusters before the implementation of cluster-based school management reform in order to make strong inferences on the extent to which cluster-based school management reform relates to improvements in teaching practices of teachers.

The researcher could not isolate variables/factors such as initiatives and program activities which took place at the same time as the implementation of cluster-based school management reform.

The other shortcoming in the data is that the study could not track changes in teachers' teaching practices systematically due to lack of baseline data, time and resource constraints and intervening variables that could not be controlled.

Classroom observations could not take place after the observations of cluster-based subject groups meetings in order to establish the link between what teachers discussed during cluster-based subject group meetings and what they actually practiced in classrooms, because cluster-based subject meetings were cancelled without the knowledge of the researcher. Insufficient data were collected on cluster-based subject

group meetings because meetings were cancelled or did not take place at all during the time of the study.