

CHAPTER 5

RESEARCH DESIGN AND METHODOLOGY

5.1 INTRODUCTION

The theoretical overview of Chapters 2, 3 and 4 dealt with the concepts career and career development, aspects influencing the career development of female educators and the role of the principal to address their career needs, as well as career ladders and career development programmes in education. Chapter 5, a research report representing the empirical section of the investigation, is based on the contextual and theoretical frameworks set in the previous chapters. In Chapter 5 the outline of a systematic and focused investigation of the empirical research process are described.

The aim of this research is to develop and design a management strategy that can be used by school principals to enhance the career development of the female teacher in primary schools. Therefore in this chapter regarding research design, the focus is on research aim 4, namely to empirically determine the extent to which principals are involved in the career development of female educators in primary schools, i.e. to empirically determine the extent of career development practices implemented by the principal and the education department in terms of the career development of female educators in primary schools (cf. Par. 1.3).

Research aim 4 is made operational in terms of the following research sub-aims (objectives):

- Sub-aim 4.1: To determine whether significant differences exist between the extent to which principals view themselves to be involved in the career development of female educators on the one hand and how it is perceived by female educators on the other.
- Sub aim 4.2: To determine whether there are aspects in which principals are not involved to a reasonable extent, and whether female educators perceive their involvement (the principals') to the same extent.
- Sub aim 4.3. To determine whether specific biographical variables provide a relationship between principals' involvement in the career development of female educators, on the one hand, in relation to the extent female educators perceive their (the principals') involvement in career development, on the other.

The research design requires a specific research methodology. In this chapter, different epistemological points of departure are assessed to determine a specific epistemological point of departure for the researcher, informing research design and research method. In the research design, descriptive detail is provided in terms of the questions what to investigate and how to investigate it. In response to the why question, in accordance with the research problem, the rationale behind the selection of a specific research design and accompanying research methodologies is provided on a continuous basis. The following topics deal with the probing questions, namely the purpose of the empirical research, the research design, study population, quantitative and qualitative research, ethical aspects and statistical and administrative procedure.

In the following table an overview of the research design method is provided. In this research study questionnaires as part of quantitative research will be used as well as focus group discussions as part of qualitative research.

Table 5.1: Overview of research design methods

	QUESTIONNAIRE (Quantitative)	FOCUS GROUPS (Qualitative)
Tools/Strategy	Self-administered questionnaire	3 focus groups; discussion
Sampling	Random cluster; systematic sampling of schools from all five districts in the Free State province	Convenience (from Lejweleputswa district)
Participants	376 (336 female educators + 40 principals)	10
Nature of data	Short questions: Quantitative	Open-ended questions: Qualitative
Data analysis	Descriptive statistics (means; standard deviations; frequencies)	Thematic data analysis
Procedures	Two-sample t-tests; ANOVA	Coding; categorisation etc
Software	SAS-program: Statistica, SPSS	

Although both qualitative and quantitative research methods will be used, focus group discussions, representing a small portion of the study population used for qualitative research will be employed as a method to gain complementary information regarding the

degree of involvement of the primary schools' principals in the career development of female educators in the Free State Province. In this chapter, reference is made to ethical aspects to be adhered to during this research study.

5.2 RESEARCH DESIGN

5.2.1 Context

The research of a question (Jansen, 2007a:2-13) in research studies entails a research design plan (purposeful and systematic), representing different distinct models and procedures to investigate a specific research problem/question in a scientific manner (Henning *et al.*, 2004:30). In this study, relevant data are collected, analysed and interpreted. A research design is a functional plan, entailing specific research procedures and methods, linked to obtain valid and reliable data, forming the basis for empirically grounded analyses, conclusions and theory formulation. A research design provides a clear research framework guiding the choice of applicable methods and sets the scene for logical interpretations. The sophistication level of the research problem, research question and related research aims lead to a purposeful research design by means of quantitative research, design to conduct the research and to meet the requirements and intentions of the research. Research design refers to the link between philosophy, strategies and specific methods (Creswell, 2009:5).

The practice of research will be enhanced by selecting a certain research approach, based on a theoretical paradigm (Creswell, 2003:6 & 18). The quantitative research design is rooted in *post-positivism* (Neuman, 1997:63-67) and will provide the answer to the question as to which approach to follow in this research. In the next paragraph different theoretical paradigms in education are described.

The three main theoretical paradigms used in education research derived from Jurgen Habermas' thesis (1971) as indicated in Van der Westhuizen (2009:1) and Onwuegbuzie *et al.* (2009:30-37) based on the three basic categories of human interest underscoring knowledge, i.e. prediction, understanding and emancipation. Paradigms are classified according to ontology (the nature of reality); on epistemology (theoretical paradigm for knowledge except methodology) and methodology (how to gain knowledge) (Van der Westhuizen, 2009:2; Onwuegbuzie *et al.*, 2009:9-16). A summary of the basic research design classification follows in Figure 5.1.

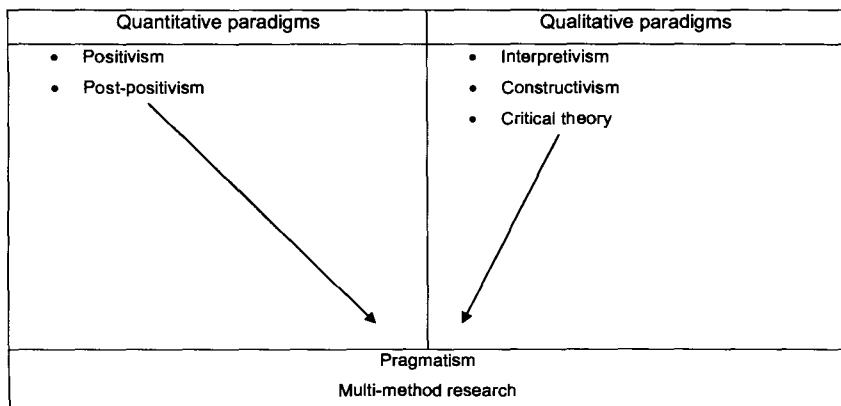


Figure 5.1: Research paradigms (based on Onwuegbuzie *et al.*, 2009:9-16)

Quantitative research paradigms refer to positivism and post-positivism. Qualitative research paradigms refer to, for example, interpretivism, constructivism and the critical theory. Pragmatism (multi-method research) entails aspects of both qualitative and quantitative research.

This research takes place within two paradigms, namely the post-positivistic paradigm (quantitative research) and interpretivism (qualitative research). Focus group discussions form part of this research; therefore a brief discussion on interpretivism is included.

5.2.2 The Qualitative Research Paradigm

In Interpretivism the point of departure is the understanding of human behaviour by means of subjective interpretation. According to Girod-Sève and Perret (2007:19), within the interpretivism, the nature of how knowledge is produced is subjective and contextual whilst reality is parallel to hermeneutics and phenomenology (Jansen, 2007b:21). In the interpretivism, reality includes many possibilities meaning that people may understand reality in different ways, i.e. for individuals reality consists of subjective experiences of the outside/external world (Coleman & Briggs, 2002:18; Nieuwenhuis, 2007a:59-60; Terreblanche *et al.*, 2008:7). Nieuwenhuis (2007a:60-61) points out that the interpretivism

reality is multifaceted and socially constructed, whilst a multiple of realities exist. The phenomenon is interpretive in nature and to find meaning, a holistic view is needed (Girod-Séville & Perret, 2007:19; Jansen, 2007b:21).

Reality depends on the observer (Coleman & Briggs 2002:18; Thietart, 2007:16) whilst the subject-object relationship is one of interdependence, and Jansen (2007b:21) notes that there is no distance between the subject (researcher) and the object (event). The norms and standards within a social context are crucial to individual behaviour whilst the vision of the social world is intentional. Norms and standards are crucial within a social context (Girod-Séville & Perret, 2007:19; Jansen, 2007b:21). Interpretivism as a qualitative paradigm is rooted in the hermeneutics, i.e. of practical interest referring to the study of theory and the practice of interpretation concentrating on the circular relationship between the parts and the whole (Neuman, 1997:68; Nieuwenhuis, 2007a:58-59; Gall *et al.*, 2007:520). In essence, the relationship enlightens the researcher regarding the relationship between the whole and the parts and between the parts themselves. Interpretation is central to qualitative research.

Methods for interpretive research will be naturalistic, subjective, interpretive and descriptive whilst the final product will enhance understanding within context; will not be generalizable but will be rich in meaning and content (Girod-Séville & Perret 2007:19; Jansen, 2007b:21). In interpretivism, research is done by means of qualitative methods, for example phenomenological studies in which interviews, observations and focus group discussions form part of data collection methods (De Vos *et al.*, 2005:75; Terreblanche, 2008:7; McMillan, 2008:33-50; Creswell, 2009:145-171). Focus group discussions (cf. Pars. 5.41-5.45) form part of this research; therefore part of the research fell within interpretivism as a paradigm.

Seen from an ontological perspective, interpretivism refers to subjective interpretation of reality and human behaviour whilst seen from an epistemological viewpoint, human behaviour is seen to mean understanding by interpreting the behaviour. Seen from a methodological perspective, qualitative methods are used to gather data and for this research it will be done by means of focus group discussions (cf. Pars. 5.4.1-5.4.5). The value of focus group discussions centred on the principle that all stakeholders have different perceptions and experiences which will enhance the stance of information regarding research aims, i.e. it will add to the richness and depth to understand the complexity of

career development of female educators. Information is gathered during focus group discussions whilst subjective interpretations of social behaviour/experiences are evident (cf. Par. 6.7.2). Quantitative research paradigms are discussed in the next paragraph.

5.2.3 Quantitative research

During the late nineteenth and early twentieth century a positivist approach, i.e. an approach distinguished by quantitative research, was favoured by researchers (Trochim, 2006a:1-3; Gall *et al.*, 2007:26; Thietart, 2007:80). Positivism as a quantitative research paradigm, stereotypes the way in which knowledge is gained (Gall *et al.*, 2007:15; Nieuwenhuis, 2007a:65) and refers to knowledge deriving from an objective, scientific source (Gall *et al.*, 2007:15; Nieuwenhuis, 2007a:65). Positivism, as an epistemological doctrine, views the observer as independent from the physical and social reality, i.e. a scientific approach to structure unbiased knowledge (*ibid.*).

Quantitative research methods, associated with the positivist tradition, deductive and prescriptive in approach, depend on statistical correlations and experimental designs (Trochim, 2006a:1-3; Maree & Pietersen, 2008a:145-152). Assumptions regarding the world, based on logical positivist philosophy, imply that social evidence is separated from feelings and beliefs, indicating the world as a single objective reality. Knowledge, independent of feelings and experience implies neutrality for the researcher (Trochim, 2006a:1-3; Maree & Pietersen, 2008a:145-152; Onwuegbuzie *et al.*, 2009:9).

In quantitative research there is a difference between experimental and non-experimental design (Ellis & Levy, 2009: 325; Wiersma & Jurs, 2009:13; Creswell, 2009:12). Experimental design focuses on cause and effect questions to indicate the relationship between a specific action and an independent variable (Maree & Pietersen, 2007a:149; Wiersma & Jurs, 2009:13). In experimental design, the effect of the action, i.e. the dependent variable in relation to the independent variable, is researched. Experimental design is not applicable to this specific investigation because variables were not manipulated by the researcher to determine the effect of the action. On the other hand, in non-experimental research, designs are descriptive, comparative, correlative and causal-comparative (Ellis & Levy, 2009:324-326). Non-experimental research, suitable for and used in this investigation, describes something and also indicates the relationship between two or more variables.

Recently post-positivism was widely accepted as a paradigm more applicable to quantitative research than positivism (Onwuegbuzie *et al.*, 2009:9). The post-positivistic point of departure on which this research is based is discussed in the subsequent paragraph.

In contrast to positivism, the post-positivistic paradigm recognises the relationship between variables and certain independent factors (uncontrollable by the researcher) and the influence thereof on the research (Onwuegbuzie *et al.*, 2009:9; Wiersma & Jurs, 2009:10). For this research, the fact that relationships between variables will be influenced by contextual and situational factors which the researcher cannot control, is recognized. Although reality is determined by and dependent on contextual and situational factors, reality does not exist in a vacuum and will therefore never be known in totality (Nieuwenhuis, 2007a:65; Onwuegbuzie *et al.*, 2009:9). In this research the effect of situational and contextual factors is minimized by including biographical variables, for example age, qualifications, years of experience and race in questionnaires i.e. these variables are included in the data collecting instrument. In terms of this study, the view that an objective reality can only be known partially but never in totality (Gall *et al.*, 2007:15; Onwuegbuzie *et al.*, 2009:9) is acknowledged.

From an ontological point of departure the post-positivistic paradigm allows for the determination of reality, emphasizing the logical, with evidence tested by means of statistical analyses (McMillan, 2008:33-50). Being a post-positivist researcher, she is allowed by means of a structured questionnaire, to analyse and verify facts regarding the extent of the involvement of primary school principals in the career development of female educators in the Free State, within the parameters of the epistemological approach. As part of the quantitative research approach, data are gathered from different respondents at a specific time by means of structured questionnaires to primary school principals and female educators in the Free State. The collected data for this study are analysed and interpreted to enable the researcher to scientifically determine the extent of the research problem. Contextual and situational factors will differ from school to school; therefore biographical information gathered during this research will make it possible to gather and interpret information regarding the extent of the involvement of principals in the career development of female educators in primary schools in the Free State.

Determinants, to classify research as quantitative and post-positivistic are outlined by different authors (Gall *et al.*, 2007:18-20; Onwuegbuzie *et al.*, 2009:9; Creswell, 2009:7), by for instance stating that

- the aim of research is to obtain valid and reliable results.
- the researcher will remain objective and will not subjectively influence respondents partaking in this research.
- the chosen research design and methodology will eliminate subjectivity and biases.
- the use of a valid and reliable measuring instrument, i.e. a questionnaire for this research, ensures minimizing mistakes.
- respondents are chosen by applicable and acceptable sampling methods.
- data is analysed by means of sound scientific procedures.
- the researcher must restrain from making generalisations not based on sound scientific research.
- the researcher has to acknowledge that no research is absolute.

Reasons why this research can be classified as quantitative and post-positivistic are discussed in the subsequent paragraph.

5.3 RESEARCH METHODOLOGY

5.3.1 Classification of research as quantitative and post-positivistic

For this specific study to be classified as quantitative and post-positivistic the characteristics of interest (Maree & Pietersen, 2008a:145-153; McMillan, 2008:33-50; Creswell, 2009:145-171) will be discussed in short.

The research must be valid and credible: The methodological approach in the post-positivism paradigm entails an objective approach to obtain data pertaining to the extent of principals' involvement in the career development of female educators, followed by statistical analyses of data. Based on an in-depth literature study (cf. Chapters 2-4) regarding the career development and career needs of female educators and the role of the principal, researcher sequenced and verified facts and concepts from literature to develop a questionnaire. The aim was to study the full extent of the research problem in practice. The degree of reliability indicated by the Cronbach Alpha coefficient (where all constructs have a

value of 0.8 and larger than 0, 8) is high; therefore it is possible that more researchers would use the questionnaire for further research (cf. Pars. 6.3.1.1 - 6.3.1.3).

People who partake in this research could not be subjectively influenced by the researcher because there is no direct contact between the researcher and the respondents. Quantitative research is an approach in which knowledge, gathered in a logical positivist manner, i.e. from a realistic objective information source, is based on how people view certain questions/statements, facts and information. Responses are based on how people view certain questions and are not influenced by the feelings of respondents. In this study responses are obtained from principals and female educators (post levels 1 & 2) of primary schools with more than 300 learners in the Free State Province. The questionnaires were distributed by different people throughout the province, delivered at schools and collected a few days later by means of a mailing system used by the FSDoBE (Free State Department of Basic Education). As it is impossible to identify respondents, they were able to respond without any pressure or fear of identification. The researcher tries to be as objective as possible regarding the research process. The researcher can only interpret the data, since it was impossible to influence the respondents; there was no contact between the researcher and the respondents.

The chosen research design and methodology minimize biases and subjectivity because responses cannot be influenced by the researcher because there was no direct contact between researcher and the respondents. Quantitative research is used in this study to ensure that the research is inclusive of the entire study population without any form of discrimination. In this study, based on the information provided by the FSDoBE (FSDoBE, 2010:1-15) schools partaking in this study were identified by the Statistical Consultation Services of North-West University (Potchefstroom Campus) from all primary schools in the Free State Province with 300 and more learners. In this research the understanding of respondents (principals and female educators) of certain aspects of career development are tested by means of specific questions. The possibility of biases and mistakes are acknowledged by the researcher; therefore a valid and credible data collection instrument, a structured questionnaire was used. In this study responses regarding the extent of involvement of principals in the career development of female educators were obtained from both principals and female educators in terms of the same concepts of career development by means of questionnaires.

To ensure a valid study population, sampling and selection of schools was done by means of scientifically acceptable sampling procedures. The schools were systematically sampled by the Statistical Consultation Services of the North-West University (Potchefstroom Campus) from the EMIS (Education Management and Information System) database of the FSDoBE (FSDoBE, 2010:1-15) to ensure a valid study population. Systematic sampling differs slightly from random sampling (Creswell, 2012:143) as every n^{th} school is chosen to reach the desired sample size.

Scientific statistical techniques are used to analyse data in the post-positivism paradigm and quantitative research. Meaningful information, obtained by means of numeric analysis based on statistical analyses by means of statistical procedures enable a researcher to reach sound empirical findings, to draw conclusions and formulate generalisations. In this research the researcher is able to make correlations based on findings and formulate tendencies and possible changes regarding the career development of female educators. Reliability and validity in this research is based on statistical procedures. Validity is for instance measured by means of factor analysis (cf. Par. 6.3.1.2). The researcher in this study is, according to the post-positivistic approach, able to make meaningful and responsible analyses, draw conclusions and formulate generalisations regarding the involvement of primary school principals in the career development of female educators. Due to the fact that all findings and conclusions flow directly from the research and are backed by scientifically sound procedures and data, generalisations can be made in a responsible manner, based on research.

The standardisation process of the research design allows quantitative research to be duplicated (Coleman & Briggs, 2002:16; Gall *et al.*, 2007:32; Creswell, 2009:12). This research can be repeated or duplicated, based on reliability and construct validity, i.e. other researchers may repeat this research to establish whether similar findings are made. They may even use the questionnaires developed by the researcher or they may adapt them to suit their research needs.

This research has a moral commitment towards progressive discussions and discourses, i.e. all critique made by any given person at any given time will be accommodated, if it has any merit according to the study leaders and the researcher.

Quantitative research as a rational linear process (Coleman & Briggs, 2002:6), where data are gathered in a systematic manner, in numerical form and statistically interpreted, ensures greater objectivity than qualitative approaches (De Vos *et al.*, 2005:75; Gall *et al.*, 2007:32; Baumard & Ibert, 2007:80). In this research the data collected from the questionnaires are statistically interpreted whilst the interpretation of the numerical data as received from the Statistical Consultation Services of North-West University (Potchefstroom Campus) enhanced the objectivity of the research. Questionnaires received from respondents were sent to the Statistical Consultation Services of North-West University (Potchefstroom Campus) for statistical analysis.

5.3.2 Research instruments

Quantitative research (dealing with statistical analysis and descriptions of numerical data providing quantitative information) always involves numerical data gathered in a structured manner (Partington, 2003:101). Quantitative research, as a rational linear process influenced by a scientific method, is aimed at making sense in situations where researchers already know about variables and possibilities to manage those variables (Coleman & Briggs, 2002:6; Terreblanche *et al.*, 2008:272). Systematically gathered numerical data reported as statistics enhances objectivity, compared to qualitative research, say Baumard and Ibert (2007:80). The selected research method for the quantitative study of this research in terms of the related research aims is an empirical survey, and a structured questionnaire specifically for this research, was used as a research tool.

5.3.2.1 The survey as research method

The survey is a valued method for qualitative research to enable the researcher to make numerical comparisons and to establish statistical relationships (Ibert *et al.*, 2007:173). The following explanation will constitute the rationale and purpose to use a survey as a quantitative research method in this specific research. In this research, the focus will be on the extent of principals' involvement in the career development of female educators in primary schools within the Free State, indicating the defined study population by means of sound sampling. Therefore, an empirical survey, as a cross-section investigation (Creswell, 2012:377-379), is suitable for this research study. A survey is suitable in quantitative research to collect data from respondents regarding views, judgements and experience (Ibert *et al.*, 2007:173). A survey is an applicable method for determining the stance and status of a phenomenon related to this research problem and related research aims. A survey is

descriptive; the same questions are posed to a number of people, enabling the researcher to gather more information pertaining to a population of people through a sample of the population (Fraenkel & Wallen, 2008:12). Research done by means of surveys to gather information is the approach that will give the best description (Maree & Pietersen, 2007b:155) of the research problem. Information regarding the extent of the principals' involvement in the career development of female educators is gathered by posing the same questions (same meaning but from different angles) to both female educators and principals. Their responses are then tabulated. In this research, questionnaires were distributed to principals of 50 systematically strategically sampled primary schools – ten from each school district in the Free State – and to ten female educators per school. This research method will enable the researcher to describe the extent of involvement of principals in the career development of female educators and will also indicate changes and comparisons based on the responses of principals (how they perceive their level of involvement) and how female educators perceive the extent of the principals' involvement in the different items. In this research study, based on surveys and specifically structured questionnaires to gather information regarding the career development of groups of people (principals and female educators on post levels 1 and 2) their responses on questions posed are tabulated.

Although the high measurement reliability and construct validity may be regarded as strengths of the survey (particular quantitative research method) the lack of depth of information obtained by means of a constructed questionnaire may lead to surface-level data analysis which is superficially context specific (Mouton, 2002:153). To address this problem and possible shortcomings, the following procedures can be followed, namely clear and uniform instructions to complete questionnaires; by scrutinising content that may promote biases and by recognising observational factors describing the contextual factors situation and by means of regular follow-ups to non-respondents (Creswell, 2012:390). In this research pilot tests were executed and the inputs made by different education management and statistical experts were taken into account to minimize the above-mentioned shortcomings. Questionnaires (to both principals and female educators) were sent to study leaders as well as to the Statistical Consultation Services of North-West University (Potchefstroom Campus). Information and feedback in terms of the understanding of questions by these experts was accommodated by the researcher and some questions were refined, for example, to ensure a better understanding of the questions and also not to address more than one concept per question.

A structured questionnaire is used to obtain data from primary schools in the five educational districts in the Free State. Using questionnaires as data collecting instruments is a practical method for obtaining data within a relatively short period of time and it is not too expensive.

A number of authors (Thomas, 2004:14; Leedy & Ormrod, 2005:85-245; Maree and Pietersen, 2007b:157) outlined the benefits of a questionnaire as data collecting instrument used in surveys, for example

- questionnaires can be sent to a large number of respondents.
- it is an economical procedure for gathering information.
- respondents can complete the questionnaire in their own time based on own experience.
- the total absence of the researcher ensures that the respondents are not subjectively influenced and enhances the level of objectivity.

In terms of this research the benefits of using questionnaires as part of surveys are for example that

- a large number of female educators and principals in primary schools in the Free State could be reached within a relatively short time frame in an economical way, whilst interviews would take long, are unpractical due to time frames and are costly. In the letter of permission granted by the FSDoE to undertake the research it was stipulated that questionnaires could be distributed to sampled schools within the Free State Province.
- anonymity of all respondents are ensured and therefore the possibility of receiving more honest responses was improved due to the fact that questionnaires were distributed and collected by researcher's colleagues from the deep Southern Free State, through Qua-Qua to the industrial northern part. Some of the responses reached the researcher by mail. The names of respondents do not appear anywhere on the questionnaires.
- as explained in the previous statement, no personal contact between the researcher and the respondents took place; therefore the possibility of the researcher influencing the responses was minimized.

- educators and principals were allowed to complete the questionnaires in their own time.

Disadvantages of a structured questionnaire are indicated by different writers (Thomas, 2004:14; Leedy & Ormrod, 2005:185; Maree & Pietersen, 2007b:157; Fraenkel & Wallen, 2008:12) for example

- the long time to collect responses.
- low responses.

Next, a short a description of some of the disadvantages and how it was addressed during this research is given.

- It could take time to collect the questionnaires; therefore researcher depended on colleagues working in other districts. Questionnaires were distributed to Subject Advisors in different districts who in turn distributed it by means of a postal network to schools in their districts or handed it out personally during school visits or cluster meetings. These colleagues assisted researcher by means of continuous follow-ups to chosen schools. These colleagues, "responsible" for collecting questionnaires, arranged specific dates for schools to return the questionnaires and within three weeks researcher received responses back from 80% of the schools.
- The problem of low responses by respondents on questionnaires sent via mail was addressed as indicated in the above explanation. The continuous follow-ups by colleagues and their arrangements to return responses to researcher played a major role in retrieving questionnaires from respondents.

5.3.2.2 Notes on actions taken to minimize confusion of respondents in terms of questionnaires

Since it is impossible to control the conditions in which and when questionnaires are completed, care was taken that questions could be read easily and could be easy to interpret. Before distribution, questionnaires were sent to the study leaders and the head of the Statistical Consultation Services of North-West University (Potchefstroom Campus) for comments. Four questionnaires were also distributed to principals and female educators of non-sampled schools to gain advice on how to make the questionnaires more user-friendly,

i.e. easy to read and interpret the questions. The necessary adjustments were made, seeing that easy questions minimize the possibility of not all female educators and principals being able to understand the questions.

Departure in this research was from the viewpoint that all respondents can read and write. To complete this questionnaire it is only necessary to make a cross to indicate the choice made by the respondent on each item although the level of reading and writing skills of respondents can be reflected in their responses. Questionnaires may be viewed as boring; therefore interesting questions enhances participation. An effort was made in this research to set authentic questions, based on the literature study (Chapters 2 - 4) trying to combat boredom by setting relevant, authentic questions. Questionnaires must not be too long although all relevant information must be included and for this study the questions was set in such a way that it could be completed within 12-15 minutes. The questionnaires for both principals and female educators were photocopied back to back on an A4 paper to prevent handling more than one paper that could enhance confusion. In this research respondents were requested, as part of the instructions, to complete all questions and there was an obvious request to turn the page.

To minimize confusion, clear instructions on the questionnaire, sensibly constructed questions and numerical arrangement of pages and questions are important. For this research clear instructions were placed at the top of the questionnaire, for example on how to complete the questionnaire, whilst the meaning of the numbers on the Likert scale was also explained.

There is always a possibility that questionnaires may be completed by other individuals than respondents. It was requested that both principals and female educators complete questionnaires at school to minimize that possibility. If at school the questionnaire was given to another female educator the questionnaire was still valid because envelopes with questionnaires were sent to schools including one (1) questionnaire for the principal and ten (10) questionnaires for female educators on post levels 1 and 2. Principals handed the questionnaires to ten female educators for completion; therefore it is not a problem as long as the same educator completed the questionnaire.

5.3.3 The questionnaire as a research instrument

5.3.3.1 Construction of the questionnaire

The questionnaire, as means of the quantitative data collecting process, is constructed in such a way to capture information on the study population. The questionnaires in this research were accompanied by a cover letter outlining the process to gather information from respondents.

In the cover letter respondents were requested to complete the questionnaire in full and the importance of the required information in terms of the research done was emphasized whilst the purpose of the research was outlined. Respondents were guaranteed anonymity in the letter and ensured that participation was optional. The return date was clearly indicated in the cover letter as well as assurance of permission granted from the FSDoBE to undertake the research (Addendum A). In the cover letters (Addenda B & D), it was clearly stated that by completing the questionnaire permission was granted by the respondent to the researcher to use the questionnaire for research as outlined.

The rest of the questionnaire was divided into two sections, namely Section A and Section B. The aim of section A was to gather biographical information regarding the respondents. To gather biographical information on respondents, eight (8) questions were set for the principal (Addendum C) whilst only seven (7) were set for female educators, since female educators did not have to indicate their gender (Addendum E). In section A, both biographical information regarding respondents and general information regarding schools were obtained. The first eight questions on the biographical information of the principal referred to age, qualifications, gender, current post level; years of experience as a principal; race, race group of the majority of female educators at school and lastly to the number of female educators at school. For female educators, their seven questions referred to age; qualifications, current post level; years of experience on current post level, race, marital status and the number of female educators at the school.

The rest of the questionnaire (section B) consisted of 68 questions, categorised into 10 (ten) sub-categories addressing different aspects of career development, underpinned by a sound literature study (cf. Chapters. 1-4). It is acknowledged in this research that overlapping of concepts may occur in different sub-categories, indicating that sub-categories are by no

means cast in stone. However, the organizing of items/questions in section B on the questionnaire is indicated in the next table based on the literature study done in this research (cf. Chapters 2-4).

Table 5.2: Sub-categories and questions

Number	Sub-category	Questions/Items
1	Human resource management on micro-level	Q1-Q6
2	Affirmative action, equity and equality	Q7- Q13
3	Career development on micro-level & influence of systemic factors	Q14-Q19
4	Career development needs of female educators	Q20-Q28
5	Improving the self-concept of female educators	Q 29-Q35
6	Delegating	Q 36-Q43
7	Networking	Q 44-Q50
8	Role conflict and role models	Q 51-Q58
9	Mentoring	Q 59-Q63
10	Career development: Partnership between educator and principal	Q 64-Q68

To highlight the main reasons why each sub-category was included in the questionnaire, a brief discussion on each will follow.

Human Resource Management on micro-level (cf. Pars. 2.3.2; 2.2.3.6; 2.5; 2.10 & 4.8.3) was included because, as the manager and leader of the school, a principal is for example responsible for planning, organising, motivating and monitoring and controlling. Principals are in a position to steer career development as part of staff development by means of proper HRM to utilize HC (cf. Par. 4.8.3). Proper career planning and assistance by means of skills development will enhance female educators' progress (cf. Par. 2.3). The role of the principal as a motivator (cf. Par. 3.5.5) is of great importance to guide female educators to take sensible career actions. Proper induction programmes (cf. Par. 2.3.2) will enhance HRM.

Affirmative action, equity and equality (cf. Pars. 3.3.1-3.3.4; 3.4 & 4.8.1) as a sub-category was included to determine the extent to which the career needs of female educators were attended to in terms of the constitution. Progress in terms of social challenges (gender

sensitivity) (cf. Pars. 3.8.2 & 4.8.1); constitutional precepts (cf. Par. 3.3.1) for redress and access; equity and equality (cf. Par. 3.3.2) as well as affirmative action are to be mirrored in school policies, i.e. managing diversity. The role school principals' play to remove glass ceilings (cf. Par. 3.6.2.2) within set parameters will affect the career development of female educators. By not allowing old-boys networks to colour perceptions regarding female educators, principals allow female educators a fair chance (cf. Pars. 3.6.2.1-3.6.2.3).

Career development on micro-level and the influence of systemic factors (cf. Pars. 2.2.3; 2.9.1; 2.3.3; 3.4; 3.5; 3.8.3; 4.2 & 4.8.2 - 4.8.3) emphasize the importance of proper HRD (cf. Pars. 2.3.2 & 4.8.2) and HRM (cf. Pars. 2.3.2 & 4.8.3) to reconcile the needs of the school and those of the female educator (cf. Pars. 2.2.3.6; 2.5 & 2.7.2.1). This will enable female educators to get a clear understanding to set realistic and feasible career goals (cf. pars. 2.2.3.1 - 2.2.3.5). Proper communication is essential for career development and proper HRM includes, for example, recruitment (cf. Par. 3.5.4.2).

In short, the career development needs of female educators (cf. Pars. 2.8.4) centred on increased employability (cf. Par. 2.2.3.5) and visibility (cf. Par. 2.3.3.1) in the workplace, gaining skills, knowledge and competencies in an orderly manner, mapping out career development plans (cf. Pars. 2.2.3.1 - 2.2.3.3). The improving of the self-concept of female educators (cf. Par. 3.5.2) is of the utmost importance. The self-concept of many females is still determining their positions at school and in society and is still the reason why some females do not apply for promotional posts (cf. Par. 3.6.1.1). Recognition of work done and positive feedback from mentors in general, but principals in particular, play a huge role in enhancing females' self-concept (cf. Par. 3.5.2). Knowledge of the needs of and assistance to female educators during different career and life cycles (cf. Pars. 2.8.2 - 2.8.4) and on re-entering will enhance her self-concept.

Delegating (cf. Par. 3.5.3; 4.2 & 4.8.3) based on a proper SWOT analysis will assist female educators to further improve their career strengths whilst managing their career weaknesses. Principals can by means of proper delegating within certain parameters enhance career development. Proper delegating allows females to grow and to obtain management and leadership skills and prevent boredom. Networking (cf. Pars. 2.3.3.1; 2.8.4 & 4.8.3) allows female educators to build SC and to benefit especially from mixed networks, allowing them to build reputations and become more visible in the work place.

Role conflict and the availability of role models play an important part in career development (cf. Pars. 3.8.3 & 4.8.3). Role conflict due to feelings of guilt for not properly managing different life roles (cf. Par. 3.8.2) sometimes influences one's self-concept (cf. Pars 3.5.2 & 3.6.1.1-3.6.1.4). The extent to which principals understand females' conflicting feelings and the degree of assistance rendered by principals in assisting them on how to manage conflict and change (cf. Pars. 3.5.4; 3.5.4.3) will influence the level of career development of female educators. Principals in general and male principals in particular, due to a lack of (female) role models, play an important role in the career development of female educators in terms of leadership and management styles. Mentoring and coaching (cf. Pars. 3.5.4; 4.2 & 4.8.3) of female educators, based on sound knowledge of their needs, and assistance to female educators during different career and life cycles (cf. Pars. 2.8.3 - 2.8.4) and, for example, on re-entering, will enhance her productivity and work satisfaction.

Career development represents a partnership between educator and principal (cf. Par. 2.2.2). Career development of staff in general, and for this study female educators in particular, is the combined responsibility of educator and principal. Clear career guidance from principals followed by motivated career actions from female educators will lead to proper career development. The relationship between the different roles of the principal in terms of career development (cf. Par. 3.5) and the responsibility of the female educator to make her own career decisions outline the boundaries for staff development.

To understand and make meaning of the responses of respondents it is necessary to provide a scale to measure the extent of the involvement of principals in the career development of female educators in each item/question. In chapter 6 frequencies and percentages of responses are reported as well as ratings in terms of average means regarding each sub-category (cf. Pars. 6.4.1.1 – 6.4.1.2; Tables 6.10-6.19 & 6.22-6.31) whilst the same procedures were followed in terms of biographical data (cf. Tables 6.1-6.2). Clear instructions were given on how to complete the questionnaire, i.e. the respondent only crosses the corresponding number indicating the best description of the statement made in each question, whilst the scale used will be discussed in the next paragraph.

5.3.3.2 Scale

The extent to which respondents agree in relation to a particular question on a given continuum is indicated in this research by a Likert scale (Giem & Giem, 2003:1). The Likert

scale is a particularly useful instrument to evaluate and quantify data as part of a research survey (De Vos *et al.*, 2005:180). The Likert scale, as a category partition method, is used to indicate/measure the extent of involvement of principals in the career development of female educators within primary schools in the Free State.

In this research the following scale was used to describe each statement to allow the researcher to force the respondents to choose a directive, preventing respondents from choosing a neutral score. A number is used to indicate the level of agreement with each statement. The scale used is:

- (1) No extent (2) lesser extent (3) average extent (4) great extent.

5.3.3.3 Pilot test

A **pilot test** was conducted in four primary schools (two township schools and two schools in town) in district D to gain feedback on the research process. Forty female educators participated in the pilot test including the four principals. The schools were not part of the sampled group of the study population. The main objectives of pilot testing were to ensure that the outline of the questionnaire and the formulation of questions were comprehensive, reasonable and intelligible. Feedback and recommendations were sought regarding the formulation of questions, the ordering thereof, the format of the questionnaires etcetera as well as the degree of clarity of the measurement instruments.

The objective of the pilot test was to rule out misunderstandings; therefore to enhance validity, the efficacy of the rating scale and completeness of the questionnaire. Construct validity (same understanding of different items by respondents) and concurrent validity (whether true opinions were stated) (Gall *et al.*, 1996:291; Ibert *et al.*, 2007:175) had to be established (cf. Pars. 6.3.1.1 – 6.3.1.2). Due to the relatively low number of questionnaires (n=44), responses were analysed and in no question did the respondents all indicate the same level for the extent of involvement of principals. Although principals seemed to understand all the questions in their questionnaire, female educators encountered problems with questions 2-5. The necessary adjustments were made to those questions, based on the recommendations of respondents. One of the problems encountered was that four of the female educators did not complete the last page of the questionnaire, possibly because they had not turned the page, despite an indication on the first page of the questionnaire. An

effort to solve this problem resulted in adding a large PTO on the front page of the questionnaire.

One of the biggest limitations of closed-ended questions in a questionnaire is that all questions are answered easily by using a cross and comprehension is not necessarily a precondition to be able to answer the question, because the level of the respondent's comprehension cannot be determined to the same degree as when the question is answered in a sentence. Another problem/possibility is that it also implied that a respondent may respond to a certain question without having applicable knowledge of or an opinion on it. Whenever respondents left out/failed to complete questions/items during the pilot test, those questions/items were afterwards discussed with respondents and study leaders and the necessary adaptations were made to ensure that in the final questionnaire, if respondents do not answer a question, it was not the result of educators not understanding the questions. Maree and Pietersen (2007a:159) believe respondents should, not take longer than 20 minutes to complete a questionnaire and for this research, during the pilot study, it took respondents on average 13 minutes to complete the questionnaire but no one exceeded 15 minutes.

5.3.3.4 Reliability and validity

In pursuing truth by eliminating error (Roberts *et al.*, 2006:41) reliability and validity are of the utmost importance in any research process as it underpins sound scientific processes. In Chapter 6 reliability (cf. Par. 6.3.1.3) and validity (cf. Par. 6.3.1.1) are discussed in full. The Cronbach alpha coefficient, an instrument to indicate the degree of reliability of the questionnaire for each identified construct is also discussed in Chapter 6 (cf. Par. 6.3.1.3).

5.3.3.5 Study population

The study population refers to the members of a defined group of people, acting as respondents, to report the results, findings and inferences (De Vos *et al.*, 2005:193). For this study principals of primary schools with 300 learners and more as well as female educators on post levels 1 and 2 (n=1350) form the study population.

Different authors (Neuman, 1997:203; De Vos *et al.*, 2005:193) define sampling as a process to select a sample as a small portion from a defined population to represent the chosen population. The identified group of schools, accepted as study population, to determine the

extent to which principals are involved in the career development of female educators will inform general trends and approaches on the career development of female educators. Based on financial implications and the large number of primary schools in the Free State ($n=1320$), the sample group for this research refers to the principals of and female educators (post levels 1 & 2) at 50 identified primary schools in the Free State with more than 300 learners. Schools that met the set criteria were identified and chosen by means of stratified systemic cluster sampling where the female educators at a school formed a cluster. Systemic sampling differs from simple random sample in the sense that every n^{th} site was chosen to partake in the research whilst in stratified sampling the population is stratified on a specific characteristic, for example gender followed by simple random sampling (Creswell, 2012:143-144). In this study questionnaires were sent to female educators (gender) whilst questionnaires were also sent to principals of the same schools irrespective of their gender. The systematic sampling (interval random sampling) procedure was done by the Statistical Consulting Services at North-West University (Potchefstroom Campus) based on information on the 2006 information on the EMIS system of the FSDoE. District E is a much smaller district in terms of the number of schools than the other four school districts, but is geographically large. Ten public schools were chosen by means of stratified systemic sampling from each of the five school districts in the Free State. To ensure anonymity; thus adhering to ethical principles (cf. Par. 5.5), the school districts are referred to as school districts A-E. The decision to choose primary schools with 300 learners and more for this research is based on the assumption that there will be approximately ten educators at school from which the majority will be female educators (stratified systemic cluster sampling with female educators forming the cluster).

5.3.3.6 Data collection procedures

Following the completion of the pilot study, questionnaires were distributed to the principals and female educators (post levels 1 & 2) of 50 primary schools (10 per district) with more than 300 learners. A letter of permission granted by the Free State Department of Basic Education to undertake the research project in the Free State Province (refer to letter of approval: Addendum A) was attached to the questionnaire. Attached, were covering letters for primary school principals (Addendum B) and primary female educators on post levels 1 & 2 (Addendum D) at the same schools. Questionnaires (in envelopes) were personally delivered to colleagues in different districts from where it was distributed to sample schools by means of a postal system to distribute mail from the district office in each school district.

After completion of questionnaires by principals and female educators it was collected by district officials and by the researcher.

Table 5.3: Composition of responses of study population in the Free State Province

Districts (n=5)	Primary schools (n = 50)	Number of primary schools responding (n=40)	Percentage of schools responding (%)	Number of respondents	
				Principals (n)	Teachers (n)
A	10	6	60	6	49
B	10	8	80	8	61
C	10	8	80	8	73
D	10	10	100	10	90
E	10	8	80	8	63
Total	50	40	Average 80%	40	336

An average response of 80% of the schools in the study population (10 schools per district from primary schools with more than 300 learners) represented by 376 respondents will be used for quantitative research. For this research, all questionnaires could be taken into account although a few of them were incomplete.

5.3.3.7 Data analysis

According to Gall *et al.* (2007:123-262), quantitative research starts with a theory, and then data is collected based on that theory, followed by the descriptive or inferential statistical method. In order to organize, analyse and interpret quantitative data, descriptive statistical techniques are applied. Recorded measurements as indicated on the four-point Likert scale are used to describe the average sets of selected scores to obtain indication of tendencies.

The completed questionnaires, collected from respondents, were coded by the researcher and sent to the Statistical Consultation Service of North-West University (Potchefstroom Campus) for data capturing and statistical analysis. The statistical analysis was done by the Statistical Consultation Services of NWU (Potchefstroom Campus). Qualitative data are organized, analysed and interpreted by means of descriptive statistical techniques. A four-point Likert scale was used to record measurements regarding the extent of involvement of

primary school principals into the career development of female educators. Measurements of central tendencies were applied to describe indications of typical tendencies flowing from the average of selected sets of scores. The data gathered from the questionnaires were statistically converted by means of computer software programmes to obtain relevant related scores. Computer software programmes used are the 2005 SAS programme (SAS Institute Inc., 2005) and SPSS (SPSS Inc., 2009) and Statistica (StatSoft, Inc., 2011).

Different techniques were used to analyse data.

- Descriptive statistics are used to organise, to summarise, to describe and to characterise data in a meaningful way and refer to a number of statistical procedures/methods (Maree & Pietersen, 2007c:183). Descriptive statistics allow the description of gathered information in an understandable, meaningful way (Fraenkel & Wallen, 2008:185; Creswell, 2009:152; Creswell, 2012:182). Descriptive data in this study allows the writing of data sets in terms of means, standard deviations, frequencies and percentages to gather meaning from the information. Frequency and percentage analyses, means and standard average deviations are used in this study to analyse the responses received from respondents. In the questionnaires sent to female educators and principals, Section A addressed biographical information and the captured data was described in terms of frequencies and percentages, ready for interpretation.
- According to Ary *et al.* (2010:162) and Creswell (2012:182) inferential statistics allow a researcher to make fair, realistic but not absolute decisions in terms of the population based on the sample. A number of statistical procedures are used in this study, for instance the *t*-tests and ANOVA tests. The *t*-test is a statistical procedure to indicate whether averages of two groups differ significantly, i.e. if the *p*-value of the *t*-test is less than 0.05 then the difference implies statistical significance (Ellis & Steyn, 2003:51). The *t*-test, for example, was used in this study to test the extent of principals' involvement in the career development of female educators in terms of the race (black and white female educators) and also, for example, in terms of the gender of principals (cf. Par. 6.6.2.3 & Table 6.39). In both cases practical significance is determined based on responses from the respondents.

A three-stage procedure was followed to obtain related scores for interpretation of quantitative data:

The initial stage involved the use of descriptive statistics such as frequencies, means, and ranking and standard deviation scores representing a statistical position regarding recorded responses (cf. Pars 6.4.1 & 6.4.2). The researcher was able to interpret frequencies of respondents (both principals and female educators) in terms of subcategories and to categorise items in terms of average means.

The second stage entailed the evaluation of validity (cf. Par. 6.3.1.1) and reliability (cf. Par. 6.3.1.3) of questionnaires through factor analysis (cf. Par. 6.3.1.2) and calculation of the Cronbach alpha coefficient (cf. Table 6.8). The final stage entailed inferential statistical procedures for the calculation of practical significance, i.e. effect sizes for differences in means of different groups of the study population (cf. Pars. 6.5 & 6.6.2). Practical significance is evident if the observed mean differences are large enough to have an effect in practice. Effect size is an indication of the size of the mean difference between groups and is not affected by the size of the sample. Whilst statistical significance indicates a difference, effect size indicates the magnitude of the difference (University of Guelph, 2010:6). Therefore effect size is an indication of the average discrepancy between the groups. A d-value of 0.2 indicates a small effect; of 0.5 a medium effect while 0.8 indicates a large effect with practical significance (Cohen, 1988:26). Detailed discussions on effect sizes in terms of identified constructs are discussed in paragraphs 6.5 and 6.6.2 (cf. Tables 6.34-6.4.2).

The statistical procedure includes the calculation of practical significance of differences in means portrayed by different groups represented in the sample group. According to Maree (2007:211) and Fraenkel and Wallen (2008:244) the ratio between the magnitude of differences in numerical averages and the standard deviation of two groups is called effect size and can, according to Ellis and Steyn (2003:52), be calculated as :

$$d = \frac{|\bar{X}_1 - \bar{X}_2|}{S_{\max}} \text{ with}$$

$\bar{X}_1$ = Numerical average of group 1.

$\bar{X}_2$ = Numerical average of group 2,

$S_{\max}$ = Maximum standard deviation from groups where a value for

$d=0.2^*$ indicates a small effect

$d= 0.5^{**}$ a medium effect and

$d= 0.8^{***}$ a large effect.

The statistical procedure to analyse the data of more than two groups to compare a single quantitative measurement is called ANOVA, i.e. analysis of variance (Maree, 2007:229; Ary *et al.*, 2010:178). In this study the marital status of female educators (biographical factor) is divided into three groups, for example single, married and the third group consisting of widows and divorcees, and ANOVA was used to indicate to what extent these female educators experienced the involvement of principals in their career development as well as significant differences (cf. Par. 6.5.4). Whenever a statistical significant difference occurs between the subgroups, post hoc *t*-tests are used to determine which subgroups differ from each other, indicating statistical or practical significance.

The **paired *t*-test** is used to determine statistical and practically significant differences between the means of the responses of principals and the average response of female educators per school. The paired *t*-test is a parametric statistical test used to determine whether the numeric/arithmetic average of two dependent samples differ significantly. In this study, paired *t*-tests in association with effect sized (*d*-values) are used to determine practical and statistical significance whilst *t*-tests, ANOVA and post-hoc *t*-tests are used to partially address research aim 4; sub-aim 4.3 (cf. Par. 5.1).

Qualitative research conducted for this research, is discussed in the subsequent paragraph.

5.4 QUALITATIVE RESEARCH

Focus group discussions represent a qualitative research method, to collect data on a specific topic (Cohen & Crabtree, 2006:1-3). In this research, in addition to the quantitative

component of empirical research, a focus group discussion, as a form of qualitative research, is discussed.

During focus group discussions, subjective opinions and perceptions of a small target group of people on a certain topic are elicited. As there will be no pressure to reach consensus, they will function in a non-threatening environment (Denzin & Lincoln, 2005:703; De Vos *et al.*, 2005:299-300). By allowing a multitude of perceptions into the defined area of a research problem the defined area of interest enhances the acquiring of insights and ideas by listening to people (Breen, 2006:464). Spontaneous responses from participants reflecting their views, experiences and feelings regarding the research problem provides the opportunities to make new insights possible and further the explanation of existing results (Sekaran, 2006:220). Focus group interviews as a qualitative research method is based on interpretivism as a qualitative research paradigm (cf. Par. 5.2.2).

5.4.1 Rationale and purpose of focus group discussions

Uncertainty about the underpinning research paradigm of focus group research is expressed by some researchers, for example Webb and Kevern (2001:798-805) and McLafferty (2004:187-194). Focus groups, on the one hand, can provide major insights in perceptions, beliefs and opinions but, on the other hand, individual voices can be silenced. Focus groups, used in combination with surveys, are particularly useful to reflect social realities and strengths where phenomena are observed in context (Hughes & Du Mont, 1993:775-806; Morgan, 1996:129-152). The identified focus groups in this study, involved in different aspects of the career development of female educators in primary schools, will therefore provide a valuable source of diverse information regarding different aspects of the career development of female educators in primary schools. In this research, focus group discussions (a tool for qualitative research) were used in combination with questionnaires (a tool used for quantitative research). Spontaneous responses from participants reflecting their views, experiences and feelings regarding a research project will provide the opportunities to make new insights possible and further the explanation of existing results (Sekaran, 2006:220; Creswell, 2012:218-219)

Informed focus group discussions will assist the researcher in this study to interpret information emphasizing the on-going relationship between elements of career development (parts) of female educators and career development itself (the whole). An example of the

latter is the effect of career barriers of female educators on their career development and vice versa. The relationship between the weak self-image of female educators, for instance, and their management skills (parts of phenomenon of career development) is also co-determining and affecting other elements of their career development. Interpretation of the gathered data is central to qualitative research. Focus group discussions ensure cumulative and more elaborate data for a fuller, deeper understanding of the research topic, according to research aims and the variety of others' experiences (Denzin & Lincoln 2005:703; De Vos *et al.*, 2005:301 & 311-312; Breen, 2006:467; McMillan, 2012:294). To understand phenomena in context-based settings where the researcher will not manipulate the phenomenon aiming at unveiling the truth, qualitative research methods such as interviews and observations are dominant in the interpretive paradigm (Golafshani, 2003:597-607; Bashir *et al.*, 2008:35-45). To maximize knowledge of a research problem, focus group discussions as a method of qualitative research problems, can be used to illuminate key points of the research. In this research it is important to be aware of the feelings and understanding of career development and the related concepts of different sections of the study population, as manifested in the sample group.

5.4.2 Participants

In this study the focus groups were from District D where people possibly know each other although they are not necessarily working at the same institution. By focusing on educators from District D, money would be saved and researcher would be able to conduct a focus group discussion in town after hours. The study population was chosen in terms of convenience, i.e. to benefit from proper management to minimize travelling cost and to utilize time effectively.

From literature it is evident that both the number of focus groups and the sample size may vary (McLafferty, 2004:187-194; New York State Teacher Centres, 2010:1-5), representing small to full groups, both with limitations and advantages (*ibid.*). Benefits to conduct interviews with smaller focus groups entail, for example, that within smaller groups, interaction will be better (Carey, 1994:225-251) and it is more cost and time effective. According to Mc Lafferty (2004:190) the number of groups involved for a focus group discussion may vary from three as a minimum to maximum of twelve. Smaller focus groups are more manageable than larger groups, whilst the homogeneity of focus groups are not of high importance, especially because of the wealth of information available (McLafferty,

2004:187-194). The wealth of information leads to and enhances open discussions, and within a supportive environment, it implies credible research (ibid.).

In this research non-random sampling (purposive sampling) (Creswell, 2012: 206-209) is done to find individuals, based on researcher's knowledge, to represent the teaching population in terms of the extent to which principals are involved in the career development of female educators. Different segments of the study population, i.e. post level 1 female educators; female educators on the SMT and principals, are represented in focus group discussions for this research. None of the participants, selected for partaking, comes from sampled schools used in quantitative research. For these studies, three (3) groups, heterogeneous in themselves in terms of qualifications, experience and practises etcetera, were chosen.

The first group consisted of four (4) principals of primary schools. The principals, two males (one white and one African) and two females (one white and one African) were selected. The principals were selected from the same town, a male and female from township schools as well as a male and female from schools in town. The two female principals are in their thirties and forties respectively whilst the male principals are in their forties and early fifties respectively. The four principals differ in terms of years of experience from 2 years to twenty years and are on post levels 3 and 4. Due to unforeseen circumstances the African male principal could not attend the discussion.

The group representing post level 1 female educators is selected in one town although not from the same school. They represent both town and township schools (two educators each); one white, one coloured and two African educators. Their age ranges from late twenties to early fifties whilst their qualifications range from a three-year diploma to postgraduate qualifications. Unfortunately the white female educator, due to unforeseen circumstances, was not able to attend the focus group discussion. In terms of female educators on the SMT; two educators (white and black) are on post level 1 whilst two female educators (black and white) are on post level 2. Their ages range from early thirties to late fifties spending from seven to thirty five years on their current post level and they are from different schools. Their qualifications range from a four-year diploma to a degree and even postgraduate qualifications. Again the sample was set in such a manner as to represent both town and township schools.

5.4.3 Trustworthiness

For this research, reliability and validity and the implications thereof are described in the quantitative section of the research results (cf. Pars. 6.3.1.1 - 6.1.3.3). It is inappropriate to transfer terminology across paradigms (Huberman & Miles, 2002:38; Tobin & Begley, 2004:388-389); therefore reliability and validity will be demonstrated in alternative ways outside the confines of the quantitative research design (cf. Par. 5.4.5). In qualitative research terminology that encompasses both reliability and validity (separately treated in quantitative research) like credibility, transferability and trustworthiness are used (Golafshani, 2003:600; Bashir *et al.*, 2008; 39-42). Although some researchers used the terms reliability and validity for qualitative research, in this research report the emphasis will be on trustworthiness and terms that will be used instead of reliability and validity. Rigour refers to the trend to assure reliability and validity in qualitative research by demonstrating competence, integrity, adherence to detail and accuracy enhancing the authenticity and trustworthiness of the research process (Golafshani, 2003:597-603; Roberts *et al.*, 2006:43; Bashir *et al.*, 2008:35-36 & 40). Therefore in essence rigour aims at the authenticity and trustworthiness of procedures to be conducted in a logical systematic way based on the following criteria (*ibid.*):

- **Credibility.** Credibility entails intensive engagement with data (recordings, notes and transcribes) to demonstrate clear links between data and interpretations. The range and tone of the gathered participants' responses were reflected by verbatim examples of participants' responses. Credibility was enhanced by the presence and assistance of a co-researcher. When the decoding process was finished the results were submitted to the co-researcher for an independent evaluation of the researcher's documents and interpretation of data. By means of regular discussions adjustments were made by following up on suggestions and recommendations.
- **Dependability.** The research process was logical, traceable and clearly documented in a reflexive way, leading to a detailed account of the entire research process.
- **Authenticity.** The development of the questions for focus group interviews were based on the literature study (Chapters 2-4). A pilot test ensured the yielding of responsible, valid and unbiased data.

- Conformability. An audit process (working forward and backward through research process) was implemented to ensure data and interpretations clearly derived, were sound and confirmed. The interpretation process focused on the identification of generally accepted principles and trends related to the research topic rather than on generalizing the findings of the study population.

Trustworthiness and authenticity of the research process was increased by a description of *what* was done, *and how* and *why* it was done. The stated criteria, as Sinkovics *et al.* (2008:689-713) points out, serve as parameters to generate informational knowledge in accordance with research aims and do not serve as a restrictive checklist. Legitimacy of the research process is assured by means of a clear conceptualisation, a purposeful design, the conducting of a pilot test and a set protocol to conduct the interview. Consistency of responses was checked by restating questions in different forms at various stages of the focus group discussions.

5.4.4 Data collection process

According to Neill (2007:1), opposite to quantitative research where tools such as questionnaires are used to gather data, in qualitative research the researcher acts as "data gathering instrument." Questions based on the literature study (Chapters 2-4) inform the data collection process regarding the extent of involvement of primary school principals in the career development of female educators. The basic questions to be asked will be discussed next.

The main questions to be discussed in focus groups are the following:

- How do you understand the concepts career and career development? (cf. Chapter.2).
- According to you, what role does legislation play regarding equity and equality? (cf. Chapter 3).
- According to you, what are the career development needs of female educators? (cf. Chapter 3).
- How do you think the career development needs of female educators can be addressed? (cf. Chapters 3 & 4).
- How does the partnership between the principal and female educator affect her career development? (cf. Chapter 4).

Although the main questions form the backbone of the focus group discussion, obviously sub-questions on each main question are used to enhance the level of the discussions because not all groups respond with equal understanding and enthusiasm.

A pilot test (with three post level 1 educators) was conducted to outline the functions of the researcher and the moderator. To minimize the level of uneasiness experienced by the researcher and to gather unbiased information it was decided that a moderator will assist the researcher to facilitate the process. The information gathered from the pilot group is not used as part of the research. Millward (1995:274-292) contends that low control and high process is the most appropriate style in focus group discussions. However, group dynamics determines the level of adherence to the above-mentioned style. The researcher and moderator were directly involved in the process of gathering data by creating a non-threatening environment conducive to participation and noting non-verbal responses.

Ground rules to regulate and rule processes and procedures were developed explaining the full process in writing prior to the interview to inform all participants regarding

- the purpose and design of the research.
- privacy and confidentiality regarding gathering, storing and handling of data and ethical aspects regarding the focus group discussions.
- the role of the facilitator/moderator (i.e. to ask questions, to seek elaboration but to remain neutral).
- that in spite of the time-consuming process of using focus groups as a means to gather data, the richness of the gathered data outweighs the negatives in full.

The approach to the focus group discussions was a welcoming address followed by a brief overview of the research topic and aims. The role of the researcher and moderator in this research was to ensure an interactive and participating atmosphere based on the dynamics of each focus group. In this study, focus group discussions lasted 50 minutes. The groups were encouraged to keep to the sequence of questions although some questions could be altered slightly depending on the group.

During the discussions the group members, after having introduced themselves, started off with a few general remarks on the research topic by sharing ideas and experiences. Pre-

prepared key questions asked by the researcher kept the focus on the main questions to enhance communication on desired information. Hannan (2007:1-19) demarcated sub-questions into the following categories: to search for opinions; to clarify; to explain; to compare; to pursue logic; to aim for comprehension; to summarize; and to play devil's advocate. The sub-questions, although adapted for each group based on their responses, included steering questions (to keep to the topic and not to force researchers' ideas); factual questions; obtuse questions; testing questions; and questions on feelings. The sessions ended by allowing participants in each group to summarize their standings and viewpoints and to provide feedback to enhance the level of interpretation by the researcher and moderator, i.e. to minimize misunderstandings. The moderator's responses in addition to the researcher's findings minimized biases and enhanced the formulation of balanced observations. The presence of the moderator prevents the possibility of leading questions to be asked in such a manner that respondents are led to respond to confirm researcher's views rather than to elicit their own views on different questions.

The focus group discussions were audio-taped allowing the researcher to capture essential information in an unbiased manner within proper context, i.e. to enhance proper analysis and integration. The analysis of the discussion of the three focus groups discussions depend on audio recordings; transcripts, note-taking on non-verbal observations and coding procedures.

5.4.5 Data analysis

Qualitative analysis in this research is aimed at the examining of various elements of captured data to enhance clarification of concepts and constructs to enable the researcher to identify patterns, themes and relationships in accordance with set research aims (Nieuwenhuis, 2007c:99-117). Qualitative data, in the form of text can, by means of deconstruction, be demarcated into manageable categories, patterns and relationships (Mouton, 2002:108).

Analyses and interpretation of the gathered data is central to qualitative research (Nieuwenhuis, 2007b:70-92). Evidence provided by audio tapes has been scrutinized by the researcher and the independent moderator to capture the essence and real meaning of the data. Audio-taping data is preferred to note taking to capture the real meaning of what was said, although the moderator and the researcher took note of body language and the atmosphere in which focus group discussions took place.

According to Partington (2003:113) there are no absolutes to relate a specific type of qualitative data to a specific type of qualitative data. It is therefore possible that qualitative data analysis may be uniquely designed to an extent for different events. For this research, the following procedures were followed during the data analysis process:

- recording of data by means of audio recording and note-taking.
- responses from focus group discussions were transcribed verbatim.
- an overall impression of context and content were obtained by reading the entire transcribed text and field notes.
- coding of information. Codes refer to names/labels assigned to specific units/segments of related meaning identified within transcriptions and field notes (Henning *et al.*, 2004:104). The coding process for transcripts and field notes comprise three steps, namely open coding, axial coding and selective coding (Maree & Pietersen, 2007b:160-161). Data received from respondents was first categorised to find similarities or themes. Deconstructing consists of three processes to enhance interpretation (Angot & Milano, 2007:135-141). The steps in the process to enhance understanding and interpretation namely open coding, axial coding and selective coding (Maree & Pietersen, 2007b:160-161) were followed. Open coding is the initial stage in data acquisition (Anon., 2000a:1-6) and entails the identification and naming of segments/categories/constructs of meaning from data, i.e. field notes and transcripts in relation to the research topic. The focus is on wording, phrasing, context, consistency, frequency, extensiveness and the specificity of comments. A segment of meaning from transcripts and field notes were highlighted and labelled in a descriptive manner (*ibid.*). Based on the gathered information by means of colour coding, in this research the researcher identified certain words, phrases and frequencies based on context and meaning. The next stage of coding is axial coding where data are put together in new ways, i.e. to seek and identify causal relationships between categories (Anon., 2000a:1-7). During this stage, for this research, the researcher reviewed and examined the initial codes as identified in the previous procedure. Categories and patterns were identified and organized in terms of causality, context and coherence. The third part of the coding process is selective coding which involves selective scanning of all codes that were identified for comparison, contrast and linkage to the research topic and central theme (Anon., 2000a:1-6). In this research report, the researcher scanned the identified codes to

compare (similarities and differences) and find linkages with research questions from the different focus group discussions.

In this research report, codes were evaluated for relevance to the research aims whilst the related codes were listed in categories in accordance with research aims based on the literature study (Chapters 2-4). Possible questions are for example those regarding the relationship between the categories as well as holistic conclusions on categories; those on which meaning was missing; what was moved to the fore and what to the background (Henning *et al.*, 2004:106). The data analysis process is informed by probing questions to identify thematic patterns in various categories.

The above outlined process entails a step-by-step logical approach allowing the researcher to go beyond the descriptive, comparative and explanatory ends to discover the rationale of and motivation for responses (Alard-Poesi *et. al*, 2007:361). For this research the qualitative research process entails three main phases, namely preparation, organising and reporting. In this research, qualitative research by means of focus group discussions is, opposed to quantitative research which is objective, systematic with set procedures for analysis for questions (cf. Par. 5.3.3.7), context-bound. The responses of each and every member in a focus group, is rooted in and within a certain context.

The above outlined process served as a framework to ensure that initial data collected by means of focus group discussions were systemised by thematic organisation. Based on the number of responses, indicating certain key elements/words/phrases that surfaced for different focus groups, a table was compiled for this research to indicate responses and to categorize it in terms of the questions posed. Afterwards the responses of members of the interview panels were re-evaluated to find meanings and coherence and eventually responses were categorized to make meaning in terms of the constructs used for this research.

On completion of the three coding processes it was possible to categorise data according to the sub-categories in the questionnaire and in terms of the constructs identified in quantitative research (cf. Par. 6.7).

In the next paragraph, ethical aspects applicable to this research, (for both qualitative and quantitative research) are discussed.

5.5 ETHICAL ASPECTS

In quantitative research objectivity is a pre-requisite implying guaranteed anonymity of respondents. The privacy, integrity and professionalism of both the researcher and the respondents must be guaranteed in terms of honesty and anonymity (Coleman & Briggs, 2002:273; Mouton, 2002:238-246; Ary *et al.*, 2006:584). Ethical issues, mainly concerned with permission to execute the research and honest reporting of information, should enable the researcher to reach scientifically sound conclusions, based on statistical calculations and conversions and analysis (Mouton, 2002:238-246; Leedy & Ommrod, 2005:245-279).

Permission to execute this research project was granted by the Ethics Committee on the Potchefstroom Campus of North-West University (NWU) and the information is as follows:

Title of project: Optimizing the quality of working life in schools

Title of subproject: A management strategy for principals for the career development of female teachers in primary schools

Ethics number: NWU-00054-07-S3

Date of approval: 26 February 2008

Expiry date: 25 February 2013

A number of ethical aspects were considered during the processes leading to the construction of the questionnaire, the data collection processes and interpretation and reporting processes.

Except for written approval from the Free State Department of Basic Education to conduct the research and pilot testing within schools in the Free State, other ethical aspects taken into consideration were:

- The questionnaire was accompanied by the approval letter of the FSDoBE as well as a cover letter outlining the importance of the research.
- Privacy, anonymity and confidentiality of respondents were guaranteed in the cover letter.

- Participation by completing the questionnaire was voluntary, as indicated in the cover letter from the researcher as well as in the permission letter from the FSDoBE. Respondents could not be harmed in any way and they could withdraw at any given time as indicated in the cover letter.
- Based on the information in the cover letters, completion of the questionnaires by respondents implies that permission is granted to researcher to use responses and that the decision to partake in this research is a well-informed decision.
- This research is directed only by the set research aims of this investigation. Honest reporting was done regarding conclusions made on statistical data.
- Feedback on research findings and forthcoming recommendations will be handed over to the FSDoBE when the research is finalized. Approval to undertake this research was granted on terms and conditions, for example that interviews would be conducted after hours and that feedback will be given to relevant stakeholders on completion of the study.

A number of ethical aspects were considered during the focus group discussions in terms of processes leading to the construction of the questions, the data collection process and the interpretation and reporting processes (cf. Par. 5.4.4) to ensure anonymity. Audio tapes were scrutinized only by the researcher and the moderator. Anonymity of group members is guaranteed because no real names were used during the focus group discussions. On the letter of invitation (Addendum F) to partake in focus group discussions it was clearly stated that by participating in the focus groups discussions permission was granted to the researcher to reflect on individual responses and whilst anonymity is guaranteed, participation is the result of an informed decision by the group member.

5.6 SUMMARY

The first part of this chapter explained the empirical part of the investigation, i.e. the research design and methodology regarding the extent to which principals are involved in the career development of female educators in primary schools in the Free State. A research strategy outlining research paradigms and methodologies was discussed. The survey with specific reference to structured questionnaires was discussed as a quantitative research instrument. The construction of the questionnaire, the data collection procedures and the establishing of study population were also addressed. Data analysis, administrative procedures and ethical

issues were outlined. In the second part qualitative research by means of focus group discussions as part of the process to gather data, as well as the analysis and interpretation of data gathered were discussed. Although this research study is based on quantitative research (questionnaire) and qualitative research by means of focus group discussion, it is not regarded by the researcher as a mixed methods research model. One of the reasons is for instance that information is not gathered simultaneously or concurrently. In the next chapter the collected data will be analysed and interpreted.