

CHAPTER FOUR

EMPIRICAL RESEARCH DESIGN

4.1 INTRODUCTION

The overall aim of this study was to gain to determine to what extent the management of the design and implementation of CTA satisfies criteria of quality at schools in the Sedibeng-West and Sedibeng-East school districts. Therefore this chapter, Chapter Four, outlines the empirical research design that was followed in order to gather information that would be relevant to this aim. In the first place, a harder look is taken at the place of a research paradigm in sound research, making sure that the researcher points out why it was necessary to place her study within the chosen paradigm (*cf.* 4.2).

The main focus of this chapter, however, will fall on a detailed discussion of the whole empirical research plan: first off, the researcher will describe the nature and importance of a research design as such (*cf.* 4.3.3.1) and distinguish between the different research method designs as they differ, given the choice of using quantitative, qualitative and mixed methods (*cf.* 4.3.3.2).

In the second place, the research strategy (*cf.* 4.3.4), data-collection strategy (*cf.* 4.3.5), relevant reliability and validity concerns (*cf.* 4.3.6), sampling procedure (*cf.* 4.3.7) and aspects concerning the analysis of the gathered data (*cf.* 4.3.8) will also be addressed.

In the last instance, this chapter will attend to ethical concerns as they played a part in this research (*cf.* 4.3.9).

4.2 RESEARCH PARADIGM

According to Bryman and Bell (2003:453), Creswell (2009:6) and Nieuwenhuis (2007b:47), a research paradigm or a philosophical worldview is a basic set of beliefs, assumptions or dictates about fundamental aspects of reality that guide action.

For example, a quantitative research approach means holding a positivist theory of beliefs, whereas a qualitative approach indicates the holding of beliefs related with a constructivist paradigm position. These relationships are, however, by no means fixed (Bryman & Bell, 2003:453).

MacKenzie and Knipe (2006:164) indicate that the theoretical framework of a research study, as different from a theory, is sometimes referred to as the paradigm and influences the way knowledge is studied and interpreted. According to Burton and Bartlett (2009:18), a research paradigm is described as a model of research that reveals a general agreement on the nature of the world and how to investigate it. Within a paradigm there would be a common consensus on the research methods that are appropriate and acceptable for gathering data and also those which are not satisfactory. A paradigm, then, is a network of similar ideas about the nature of the world and of the purpose of researchers which, adhered to by a group of researchers, regulates the patterns of their thinking and underpins their research actions (Burton & Bartlett, 2009:18).

It is the choice of paradigm that sets down the intent, motivation and expectations for the research.

In the next paragraphs, different paradigms will be briefly explained and the suitability of the various paradigms for the present research will be highlighted.

4.2.1 Pragmatism

Pragmatism as a worldview stems from initiatives, situations and problems rather than from antecedent conditions as in positivism (Creswell, 2009:10). Creswell (2007:46) and Armitage and Keeble-Allen (2007:31) are of the opinion that a pragmatist links the choice of approach directly to the purpose and nature of the research questions posed. Pragmatist research is often multi-purpose and follows a what-works strategy that will enable the researcher to address questions that do not fit comfortably within a wholly quantitative or qualitative approach to design and methodology (Creswell, 2012:537).

Pragmatism is not committed to any one system of philosophy and reality. As McMillan and Schumacher (2010:6) point out, the pragmatic paradigm offers the academic foundation for carrying out mixed-method research.

Since the researcher of this thesis did not intend (1) studying actions, situations and/or consequences or (2) conducting mixed-method research, she decided against choosing pragmatism as a worldview to underpin her study.

4.2.2 Constructivism

As far as constructivism is concerned, the research participants become active and involved in all the phases of the process. Participants seek understanding of the world in which they live and work (Creswell & Plano Clark, 2007:20).

Glicken (2003:30) applauds the idea of involving participants in choosing and formulating the research problem and in helping to formulate the measuring instrument and the strategy to be followed in the project. Constructivism can be regarded as a radical starting point from positivism in the sense that the movement developed from tight control over the total process to full engagement of the participants.

The researcher of this thesis did not follow a constructivist approach, as she did not plan to involve her research participants in being part of formulating the problem, the measuring instrument or the strategy.

4.2.3 Interpretive approach

The interpretive paradigm is also called the *phenomenological approach*, a way that aims at understanding people (Babbie & Mouton, 2001:28). Otherwise it is also referred to as the *interpretive social science approach* and it maintains that all human beings are involved in the process of making meaning of their worlds and continuously interpreting, creating, giving meaning, defining, proving and rationalizing their daily actions (Babbie & Mouton, 2001:28).

According to Neuman (2003:7), such researchers conduct a reading to discover meaning embedded within text. In this paradigm, the researcher

often utilizes participants' observations and field research, which are strategies where many hours and days are spent in direct contact with participants. Transcripts, discussions and video tapes may be studied in detail in order to gain a sense of subtle non-verbal communication or to understand the interaction in its real context (Neuman, 2003:76).

The researcher of this thesis decided against following an interpretive approach, since she did not aim at understanding people nor did she intend to conduct a reading in order to discover meaning that is entrenched in text.

4.2.4 Critical theory

Critical theory admits to bias being present in every action of human beings and hopes that the findings of research will support that bias (Glicken, 2003:23). Versions of this approach are called *dialectical materialism*, *class analysis* and *structuralism*. Critical theory agrees with many of the criticisms that the interpretive approach levels at positivism, but it adds some of its own and disagrees with interpretive social science on some points.

Patton (2002:130-131) adds critical theory as one of the most influential orientation frame-works, which focuses on how injustice and subjugation shape people's experiences and understanding of the world.

For Babbie and Mouton (2001:36), the critical approach emphasizes becoming part of the everyday life worlds of the people to be studied, whoever they may be, with the aim of becoming educative and ultimately transformative. The focus of the critical paradigm is thus on transforming human beings and their environment by being personally involved in actions that would change their circumstances.

Since, for the purpose of this study, the researcher was not studying the transformation of human beings, it was not proper to follow this approach.

4.2.5 Postmodernism

Patton (2002:100-101) defines postmodernism as follows: a belief in science as generating truth was one of the cornerstones of modernism inherited from the Enlightenment Era. Postmodernism attacked this faith in science by questioning its ability to reveal the truth, in part because, like all human

communications, it is dependent on language by which one can view reality. Since language is inevitably built on the worldview of the social group that constructed it and the culture of which it is a part, language cannot fully capture or represent reality.

It follows from this that the continuity of knowledge over time and across cultures is called into question. Hesser-Biber and Leavy (2006:244) mention that postmodern trends in qualitative research have opened newly created spaces to make the voices of participants heard. In postmodern research, there is also a focus on the explanation and interpretation of behaviour patterns and narratives of participants in the research project.

The researcher of this thesis did not make use of the postmodern perspective because she was not focusing on the explanation and interpretation of behaviour patterns and narratives of participants.

4.2.6 Positivism

Silverman (2005:403) describes positivism as a representation of the design of the research process which treats social facts as existing independently of the activities of both participants and researchers.

It is positivism that seeks to apply the natural science model of research on investigations of social phenomena and explanation of the social world (Denscombe, 2008:14). According to Bryman and Bell (2003:13-16), the problem with this stance is simply that the term positivist was used glibly and indiscriminately by many writers and in fact became a term of abuse. Positivism firstly involves conformity that the methods and procedures of the natural sciences are suitable to the social sciences (Glicken, 2003:20).

The positivist also believes that an objective reality exists outside personal past experience that has results and immutable laws and mechanisms that can inform cause-and-effect relationships (Babbie & Mouton, 2001:23; Neuman, 2003:75). Positivism maintains that it is possible and essential for the researcher to adopt a distant, detached, neutral and non-interactive position (Morris, 2006:3). For the same reason, positivists prefer analysis or outside observer interpretations of data (Druckman, 2005:5).

A positivist researcher would propose that there is one objective truth which is examined by the inquirer who has hardly any effect on what is being studied (Nieuwenhuis, 2007b:53). Having ascertained the new knowledge, the researcher can then suggest probable reasons for the reasons why things come about on earth as they do (Nieuwenhuis, 2007b:55).

According to Neuman (2007:42), positivism views social science as an organized way for putting together deductive logic with precise empirical observations of individual behaviour in order to find and confirm a set of probabilistic changing laws that can be used to predict general patterns of human activity. Positivists believe that knowledge can be disclosed or perceived through the use of a scientific method. The scientific method (positivism) underpins quantitative research (Snowden, 2000:112; Maree & Van der Westhuizen, 2007:31-32).

For the most part, this study followed a positivist paradigm (*cf.* 1.5.1), since the researcher was intent on maintaining a non-interactive position while looking for new knowledge in order to suggest reasons for the outcomes of her research. Furthermore, she was interested in analysing her gathered data with the aim of developing a general understanding of how CTAs are designed, managed and implemented at Sedibeng-West and Sedibeng-East schools that took part in the research.

4.2.7 Post-positivism

Positivism, as was indicated just above, asserts that there is a reality out there to be studied, captured and understood; post positivists argue that the reality can never be fully discovered (Nieuwenhuis, 2007b:65): researchers can only make estimations (Creswell, 2009:7). Moreover, post-positivism is pointed out as one of the research strategies, along with critical theory, that fills up the break between positivism and constructivism (Guba & Lincoln, in Nieuwenhuis, 2007b:65).

The post-positivist researcher focuses on the understanding of the study as it evolves during the investigation and thus begins with an area of study and what is relevant to that area for a fuller understanding thereof. A precise question and hypothesis are thus not developed before starting the study

(Morris, 2006:77). Post-positivists often believe that different variables cannot always be controlled and that positivist research is often difficult and impractical for many forms of social research (Glicken, 2003:27).

To Glicken (2003:28), post-positivism is a much freer paradigm, since it allows for the development of alternative research strategies that might be able to discover information in the most unlikely ways. Researchers in this paradigm normally believe in multiple opinions from participants rather than in a single reality (Creswell, 2009:20).

Based on the benefit of obtaining multiple opinions from the research participants, the researcher of this thesis decided to include a small qualitative dimension in a post-positivist paradigm (*cf.* 1.51). In this way, she intended strengthening the data collection and analysis process. Moreover, following this paradigm would allow for the discovery of information that would have been difficult to obtain with the use of the positivist paradigm only.

4.3 EMPIRICAL RESEARCH

In this section, the researcher will explain how the literature review and the empirical research were conducted. The research design, research strategy, sampling and how data were collected, analysed and interpreted will be discussed.

4.3.1 Literature review

Phase one of the study entailed a literature study. The literature review made use of relevant books, journals, papers presented at professional meetings, dissertations and theses by graduate students, reports by schools and university researchers and Government Gazettes. In order to obtain relevant literature, a variety of electronic databases (NEXUS, EBSCO-HOST and ERIC) and internet search engines (Google, Google Scholar and Yahoo) were used. The resources provided information on how far research on how the quality of the design and implementation of CTA could be managed at Sedibeng-East and Sedibeng-West schools has progressed.

The key words and phrases used for the literature search included the following:

Assessment; Common Task Assessment; CTA; managing quality in assessment; features of quality assessment, moderation; evaluation; management; reliability, authenticity, validity; fairness; transparency.

4.3.2 Aims and objectives

The overall aim of this study was to determine to what extent the management of the design and implementation of CTA satisfies criteria of quality in the Sedibeng-East and Sedibeng-West Districts (*cf.* 1.3.3).

The objectives were as follows (*cf.* 1.3.3):

- to indicate what quality entailed in the design and implementation of CTA (*cf.* 2.1; 2.3-2.2.3 – in order to construct the questionnaires in line with the literature review);
- to determine how quality in the designing and implementation of the CTA was managed at present (*cf.* 3.5.5; Chapter Five: the empirical study);
- to establish whether there is a difference between learner and educator perceptions concerning quality in the design and implementation of CTA (*cf.* Chapter Five); and
- to suggest components and processes based on the data to be included in the guidelines towards a management intervention plan to be used at schools in the Sedibeng-East and Sedibeng-West Districts to improve quality management of the design and implementation of school-based assessment (*cf.* Chapter Six – where the reader will find the suggested management intervention plan).

4.3.3 Research design

4.3.3.1 What is a research design?

As pointed out by Blaikie (2000:21), McMillan and Schumacher (2001:31), Mouton, (2002:55 & 94), De Jong (2005:9), Kagee *et al.* (2006:71 & 107) and Babbie (2007:112), a research design is a set of guidelines and instructions or an integrated plan comparable to the activities of an architect who is designing a building. This will outline how researchers will carry out the research project, which includes the procedures they will follow during their studies, when and

from whom the data will be obtained and what methods of data collection will be used.

This, therefore, means that when deciding on a research design involves identifying what the research purpose and questions will be; what information would appropriately answer specific research questions and which strategies would be most effective in obtaining this. In addition, the research design is the logical sequence that connects the empirical data to the study's initial research questions and ultimately to its conclusions (Kagee *et al.*, 2006:18). According to the explanations given by the researchers mentioned above (Blaikie, 2000:21; McMillan & Schumacher, 2001:31; Mouton, 2002:55 & 94; De Jong, 2005:9; Kagee *et al.*, 2006:71 & 107; Babbie, 2007:112), a research design focuses on the product and all the steps in the process to achieve the outcome anticipated.

The researcher of this thesis used the research design as a guideline according to which she made her choice about data collection and sampling methods. In choosing such methods, it was necessary to provide reasons for her choices. The research design ensured that evidence obtained enabled her to understand accurately how the design and the implementation of Common Task Assessment (CTA) were done. In support of a positivistic research paradigm, the research design used in this study was quantitative in nature. At the same time, the researcher included a small qualitative dimension to probe participants' viewpoints and understanding.

4.3.3.2 A distinction between various research designs

Gay and Airasian (2003:19) indicate that the consequence to be investigated will lead the type of research design. The authors acclaim that the many types of research can be used to investigate the same common problem. Cooper and Schindler (2001:62) mention that a best way to approach the research process is to indicate the basic dilemma that led the research and then to try to develop other questions. According to Gay and Airasian (2003:19), knowing the type of research helps one identify the important aspects to be examined in evaluating the study (Gay & Airasian, 2003:19).

Quantitative and qualitative research designs

The reason for quantitative research is linked to control of a phenomenon, while that of qualitative research is to understand a social situation from participants' perspectives (McMillan & Schumacher, 2006:23). However, quantitative and qualitative researches differ in their view of the world, and they lean towards using different methods to seek knowledge (Gay & Airasian, 2003:20).

Moreover, quantitative and qualitative approaches should be viewed as balancing methods that, when used jointly, give more options for studying an array of important topics (Gay & Airasian, 2003:21).

Gall *et al.* (1996:20) affirm that in the perception of some researchers, qualitative studies are best applied in investigating themes and relationships at the case level, as quantitative studies are best applied in validating those themes and relationships in samples and populations. Looking at this perspective, qualitative research will play a discovery role, while quantitative research plays an affirming role (Gall *et al.*, 1996:20).

Table 4.1 below offers an explanation of the differentiated uniqueness of quantitative and qualitative research. The purpose of including such information is to reveal the greater depth of understanding that one can derive from adding a qualitative approach which relies on analytic induction to the systematic and objective process of following a quantitative approach.

Table 4.1: Differences between quantitative and qualitative research

Quantitative research	Qualitative research
Assume an objective social reality	Assume that social reality is constructed by the participants in it.
Assume that social reality is constant across time and settings	Assume that social reality is continuously constructed in a local situation.
View causal relationship among social phenomena from mechanist perspective	Assign human intentions a major role in explaining causal relationships among social phenomena.

Quantitative research	Qualitative research
Take an objective, detached stance towards research participants and their settings	Become personally involved with research participants, to the point of sharing perspectives and assuming a caring attitude.
Study populations or sample that represent population	Study cases.
Study behaviour and observable beliefs	Study meanings that individuals create and other internal phenomena.
Study human behaviour in natural or contrived setting	Study human action in natural settings.
Analyse social reality into variable	Make holistic observation of the total context within which social reality is constructed.
Use preconceived concepts and theories to determine what data will be gathered. Generate numerical data to present the social environment	Discover concept and theories after data have been gathered; generate verbal and pictorial data to represent the social environment.
Use statistical methods to analyse data	Use analytic induction to analyse data.
Use statistical inference procedures to generalize findings from sample to define population	Generalize case findings by researching for other similar cases.
Generalize findings from sample to a defined population	Prepare reports that reflect researchers' constructions of the data and awareness so that readers will form their own construction from what is reported.

Quantitative research	Qualitative research
Prepare impersonal, objective reports of research findings	

(Gall *et al.*, 1996:30)

According to the information in the table above, quantitative and qualitative designs differ. In a quantitative approach, the researcher tests a theory by specifying a narrow hypothesis and collecting data to support or refute the hypothesis. The data are gathered by means of an instrument that measures attitudes, and the information is analysed using statistical procedures and hypothesis testing.

The qualitative approach differs in that the researcher seeks to make meaning of a belief from the views of participants (Creswell, 2009:16). Davies (2000:1) describes quantitative research as research which focuses in numbers, logic and the objective. Quantitative research focuses on the left-brain objective, comfortably logic numbers and unchanging static data and detailed, convergent reasoning rather than divergent reasoning. Qualitative research focuses on the right brain – the hemisphere accountable for processing data such as words, emotions, feelings, colour and music.

McGuigal (2011:2) asserts that qualitative research is a much more subjective form of research in which researchers allow themselves to introduce their own biases to help form a more complete picture. Based on this type of research which is qualitative in nature, it might be necessary in situations where it is unclear exactly what is being looked for in a study, for the researcher to be able to determine what data are vital and what are not. Whereas quantitative research generally knows exactly what it is looking for before the research begins, in qualitative research the focus of the study may emerge as time progresses.

For the most part, a quantitative research design was used in this study. Yet the researcher also included a small qualitative dimension. Quantitative research is a type of educational research that typically collects numerical data from participants, analyses these numbers using statistics and conducts the inquiry in an unbiased objective manner (Hopkins, 2000). The intention of

the researcher in choosing a quantitative approach as the main approach to data collection was to obtain numerical data about managing the quality of the design and implementation of CTAs and then to describe the data.

4.3.3.3 The research design chosen for this study

As indicated in 1.5.3, this researcher decided on using a quantitative design in order to validate findings and recommendations that followed from evidence found in the survey about CTA classroom practice and the relevant literature. The type of design was that of a single type quantitative design with a small qualitative dimension (*cf.* 1.5.3), as will be described in the paragraphs below.

The quantitative research design was suitable to this study to capture the descriptive nature thereof. The small qualitative dimension (*cf.* Questionnaire: Section E & F) occurred in the form of a selected number of open-ended questions, aimed at creating a better understanding of the descriptive nature that was obtained by the quantitative questionnaire items.

As is the case in all research designs, the researcher of this thesis had to take note of the specific advantages and disadvantages connected to conducting research within a quantitative design. This enabled the researcher to understand the challenges that she would have to face in order to be better prepared.

Table 4.2: The advantages and disadvantages of quantitative research

Quantitative Advantages	Quantitative disadvantages
This research design is an excellent way of finalizing results and providing or disproving a hypothesis.	Experiments can be difficult and expensive and require a lot of time to perform.
After statistical analysis of results, a comprehensive answer is reached. Quantitative experiments also filter out external factors, if properly designed, and so the results gained can be seen as real and unbiased.	Quantitative studies require extensive statistical analysis, which can be difficult, due to scientific discipline and can be difficult for non-mathematicians.

Quantitative Advantages	Quantitative disadvantages
Quantitative experiments are useful for testing the results gained by a series of qualitative experiments, leading to a final answer, and a narrowing down of possible directions for follow up research to take.	In this method the successful statistical confirmation of results is very stringent; with experiments comprehensively proving a hypothesis; there is usually some uncertainty. This means another investment of time and resource must be committed to fine-tuning results.

(Matveev, 2002:60-62)

According to Maree and Pietersen (2007c:145), quantitative research is a route that is procedural and objective in its ways of using numerical data from only a selected sample of a population to generalize the findings to the population that is being studied.

The reason why the researcher of this thesis chose a quantitative research design for the most part of her study was because she was seeking to describe the managing of the quality of the design and implementation of CTAs.

4.3.3.4 Research strategy

Survey research was conducted (*cf.* 1.2). In the subsections below the term research strategy will be defined; and a distinction between different research strategies, the research strategy and data collection methods chosen for this research will also be discussed.

In the next paragraph, the researcher will explain what the term *research strategy* comprises.

4.3.3.5 What is a research strategy?

According to Creswell (2009:11), ways of inquiry are types of qualitative, quantitative and mixed method designs or models that provide specific direction for following in a research design. Research strategies are also called research methodologies.

4.3.3.6 A distinction between different research strategies

Research strategies differ: there are quantitative and qualitative strategies.

Quantitative research strategies

Quantitative strategies include experimental and non-experimental research strategies (cf. 4.3.4.1). According to Maree and Pietersen (2007c:149), experimental designs have been developed to answer a specific kind of research question, namely the cause-and-effect question. The following three characteristics distinguish *an experimental design* from other designs (Maree & Pietersen, 2007c:150):

- **Manipulation** takes place – some of the participants receive some kind of treatment.
- **Control** occurs – a number of participants are used as a control method by not getting the treatment, while the others do receive the treatment.
- **Randomization** is used to divide the participants into different groups (cf. Figure 4.1).

A typical illustration of an experimental design would be using a pretest-posttest design by means of a control group (Maree & Pietersen, 2007c:149).

For the purpose of this study, an experimental design was not appropriate in the sense that the researcher did not intend giving any form of treatment to her research participants.

McMillan and Schumacher (2006:215) indicate that there are five types of non-experimental research designs which include descriptive, correlation, comparative, surveys and ex post facto. The focus of this study was on a non-experimental research strategy which included survey research, discussed in 4.3.3.7 below. According to Maree and Pietersen (2007c:152), the term *non-experimental* implies that the researcher does not influence any data. Moreover, most researchers choose surveys as their non-experimental research design.

Qualitative research strategies

The qualitative strategies include ethnography, grounded theory, case studies, phenomenological research and narrative research. In qualitative strategies, the researcher seeks to establish the meaning of a phenomenon (Creswell, 2009:16).

4.3.3.7 The research strategy chosen for this study

In this study, this research focused on acquiring information about educators and learners' opinions and attitudes regarding the management of CTAs and their understanding of how they gave meaning to the implementation of CTA by using survey research, which is non-experimental research.

The quantitative strategy: non-experimental descriptive survey research

In this study, the researcher made use of non-experimental descriptive survey research (*cf.* 1.5.4). McMillan and Schumacher (2001:602) define survey research as the assessment of the current status, opinions, beliefs and attitudes by questionnaires or interviews from a known population.

Creswell (2009:12) points out that survey research permits for a numeric description of a population's tendencies, outlooks or beliefs by focusing on a sample of that population. Survey research would take account of cross-sectional and longitudinal studies by using questionnaires or structured interviews when collecting data, with the purpose of generalizing from the sample to the population (Creswell, 2009:12).

Non-experimental survey research in the form of a questionnaire was utilized to determine the perceptions of Grade 11 learners and educators who were involved in CTA administration in 2009, regarding the way in which the design and implementation of CTA were managed. The researcher arranged with the principals of the respective schools for permission to administer the questionnaires as a survey method. The researcher aimed comparing educators' responses on the questionnaires with the learners' responses.

The advantage of a survey research was that it promised to be cost-effective and there could be a quick turn-around when collecting the data. A disadvantage that the researcher took note of was that some participants may

not complete the survey, increasing the possibility of non-response error (Creswell, 2012:382).

The qualitative research strategy: phenomenological research

This researcher followed a phenomenological research approach in the small qualitative phase of this study. In qualitative strategies, the researcher seeks to establish the meaning of a phenomenon (Creswell, 2009:16). As pointed out by Boeije (2010:8), phenomenological research is an approach of inquiry during which, among others, the researcher aims at interpreting human experiences and behaviour. Rudestam and Newton (2007:206) feel that phenomenology focuses on how people experience a particular phenomenon and point out their estimation that phenomenologists explore how individuals construct meanings from the experience and how these individual meanings shape group or cultural meanings.

Understanding the lived experiences marks phenomenology as a philosophy as well as a method (Moustakas, in Creswell, 2009:13), and the procedure encompasses studying a small number of participants through extensive and prolonged involvement to develop ways and relationships of meaning. In this process, the researcher brackets or sets sideways his/her own experiences in order to gain those of the participants in the study (Creswell, 2009:12-13).

For the completion of this thesis, a phenomenological study was done in that the researcher aimed at gaining a deeper understanding of the learner and educator participants' viewpoints regarding particular aspects through an open-ended part in the questionnaire that was of a qualitative nature. The researcher aimed at gaining insight into participants' understanding of what measures need to be put in place for the smooth design, implementation and management of CTA (*cf.* 1.5.4).

4.3.4 Data-collection methods

Creswell (2009:161) describes a data collection instrument as a research instrument which is used to compute, examine or report data. It could be a test, questionnaire, tally sheet, log, observational checklist and inventory or assessment instrument.

Surveys typically employ face-to-face interviews or written questionnaires (Leedy & Ormrod, 2005:184). The focus of this study was on describing the phenomenon of how the design and implementation of CTAs were being managed at the participating schools. Survey research was appropriate for this study as the researcher's concern was about the views of educators and learners on how the design and implementation of CTAs were managed.

Survey research comprises a printed list of questions that are used in the collection of research data. The researcher of this thesis chose questionnaires as her method for gathering the necessary data.

4.3.4.1 The design of the questionnaire

In both questionnaires, the one for the educators and the other for learners, the title of the study was indicated. This intended to make participants aware of the aim of the investigation. Both questionnaires had clear and concise instructions on how participants should complete them. The wording of the questionnaire was simple and direct. The reason was to ensure that questions were clearly understandable and the questions would have the same meaning for the participants as they did for the researcher. The questionnaire was designed in such a way that it held the participants' interest. The goal was to make the participants want to complete the questionnaire. This was done by providing the participants with a variety of items and by varying the questioning format.

The researcher designed structured questionnaires that would serve as an appropriate and useful data-collecting tool as they are easy and quick to answer and sensitive questions are answered more easily. Moreover, the questionnaires could boost the validity of her data: statistical conclusion validity, internal validity, construct validity and external validity form the components of the *quantitative research design's validity* (cf. 4.3.5.2); content validity, face validity and construct validity form the components of the *questionnaire as research instrument's validity* (cf. 4.3.5.2).

Moeketsi (2004:52) indicates that a badly structured questionnaire is a waste of time for both the researcher and the participants. Questions should allow the participants to review their own relevant experiences thoroughly, arriving

at accurate and complete responses. The researcher of this thesis communicated some guidelines about the process of answering the questionnaire items by providing the participants with the necessary procedures indicated in Section A of both the questionnaires (*cf.* Addendum B) to reduce complexities and ambiguities. In both questionnaires, the educators and the learners' items were constructed and carefully developed in such a way that they would measure specific aspects of the study's objectives.

For instance, in the questionnaire for educators and learners, sections on the design of CTA and its implementation – including challenges in the implementation – were included. The questionnaire for educators also included sections on the assessment policy and the administration of internal practical assessment. The questionnaires for learners and educators were designed with the concerns of Rubin and Babbie (2008:205) and Creswell (2012:364) in mind, where they indicate that an improperly laid out questionnaire can lead participants to miss questions, confuse them about the data desired and, in the worst case, lead them to lose interest in completing it.

Aspects that the researcher considered when designing her questionnaires

As pointed out by Maree and Pietersen (2007b:159-160), the design of the questionnaire is an essential part of the research process since this is where the data are generated. Since different types of surveys require different types of questionnaires, the designer needs to keep in mind what type of data will be generated by questions and which statistical techniques will be used to analyse them. The designing of a questionnaire requires the researcher to give attention to the following six aspects indicated below.

- **The appearance of a questionnaire**

The appearance of the questionnaire was neat, the printing font not too small and it was user-friendly. It encouraged the participants to take time to complete it (Maree & Pietersen, 2007b:159).

- **The order of the questions**

Questions were ordered in such a way as not to confuse the participant. The researcher provided a short introductory part explaining the research to the participant. The questionnaire started with a few easy-to-answer, non-threatening questions such as biographical details to put the participants at ease. Then the questionnaire moved on to the topics relevant to the study. Questions on the same topic were put together and the topics followed a sequential order. Questions that required similar responses were kept together (McIntyre, 2005:170).

The data for this research were collected by means of a questionnaire containing 55 items in the educators' questionnaire. The majority of these questions were closed-ended items. There were eight open-ended items and five questions had to be answered on a seven-point semantic scale, which related to the assessment policy. The learner questionnaire contained 41 items of which the majority was closed-ended; three were open-ended questions. The researcher of this thesis complied with the requirements concerning completion time of a questionnaire.

A total of 55 questions were included in the questionnaire for educators so as to formulate items relating to the following:

- Biographic information (Section A)
- The design of CTA (Section B)
- The implementation of CTA (Section C)
- Administration of internal practical assessment (Section F)

In the educator questionnaire, qualitative items formed part of Section E: Administration of internal assessment; and Section F: Internal practical assessment (*cf.* Appendix H). In the learner questionnaire, the open-ended questionnaire items were part of Section C: Implementation of the CTA (*cf.* Appendix I).

The researcher aimed at gaining a deeper understanding of the educator and learner participants' viewpoints and understanding regarding particular aspects through open-ended questions which are of a qualitative nature. Participants' understanding of what measures need to be put in place for the

smooth design, implementation and management of CTA, were obtained through the open questions.

Information contained in each section of the questionnaire is indicated below.

SECTION A: BIOGRAPHIC INFORMATION

This section was divided into 6 items. Items 1-6 required of the participants to record their personal information: aspects such as gender, age, the highest qualification, teaching experience, present position and experience in the present post. The items in this section in the learners' questionnaire are those on gender, age, the area where they live and the language of communication at home.

SECTION B: DESIGN OF CTA

Section B of this measuring instrument focused on eliciting information regarding the design of CTA. The responses of the participants to this section of the questionnaire enabled the researcher to assess if the EMS CTA was properly designed to suit the level of Grade 9 learners and be relevant to their lives.

SECTION C: IMPLEMENTATION OF CTA

Section C of this measuring instrument focused on eliciting information regarding the implementation of CTA.

The responses of the participants to this section of the questionnaire enabled the researcher to assess if validity, reliability and authenticity were visible in the implementation of the EMS CTA as an instrument for measuring the achievement of learners.

SECTION D: ASSESSMENT POLICY

Section D of this measuring instrument focused on eliciting information regarding the assessment policy.

The responses of the participants to this section of the questionnaire enabled the researcher to assess if there are measures in place to ensure that assessment of Grade 9 learners is continuous, multi-dimensional, varied and balanced.

SECTION E: ADMINISTRATION OF INTERNAL ASSESSMENT

Section E of this measuring instrument focused on eliciting information on the administration of internal assessment. The responses of the participants to this section of the questionnaire enabled the researcher to assess the effectiveness in the administration of internal assessment.

SECTION F: ADMINISTRATION OF INTERNAL PRACTICAL ASSESSMENT

Section F of this measuring instrument focused on eliciting information on the administration of internal practical assessment. The responses of the participants to this section of the questionnaire enabled the researcher to assess the effectiveness of this aspect.

• Types of questions

Bell (2005:31) lists seven types of questions which can be divided into two main categories, namely open (or unstructured) and closed (structured) questions. In the case of an open question, a question is asked and space is provided for a word, phrase or even a comment. Obviously, analysing this type of question is more difficult than is the case with closed questions.

Hopkins (in Maree & Pietersen, 2007b:159) maintains that, whereas open questions are used to generate research hypotheses, closed questions are used to test research hypotheses. Each of these two formats is now discussed in some detail.

Open questions

Advantages and disadvantages of open questions as indicated by Maree and Pietersen (2007b:161) are as follows:

The advantages of open questions

- Participants can provide trustworthy answers and specifics.
- The participant's perception route is exposed.
- Difficult questions can be answered sufficiently.
- Thematic examination of the participants' reactions will disclose attention-grabbing information, categories and subcategories.

The disadvantages of open questions

- The quantity of information required may vary among participants.
- Coding the answers could be complex.
- The participants might want time in order to consider and write down their answer.
- Uneducated people find open questions tricky to respond to.
- Numerical analysis is also complicated.

Closed questions

A closed question provides for a set of responses from which the participant has to choose one or sometimes more than one response. The data obtained from the administration of closed questions is easier to analyse than the data obtained from open questions. Bell (in Maree & Pietersen, 2007b:161) makes a distinction between six forms of closed questions: list, ranking, category, quantity, grid and scale.

The most widely used scale, the Likert, was used in this research. A scale is a measure in which a researcher captures the intensity, direction, level or potency of a variable (Neuman, 2003:191). According to Leedy and Ormrod (2005:185), a rating scale is more useful when actions, outlook or another happening requires evaluation according to a range of possibilities, for example *strongly disagree* to *strongly agree*. A variation of the Likert scale is the semantic differentiation. McMillan and Schumacher (2006:199) indicate that the semantic scale uses adjective pairs with each adjective as an end or anchor in a single continuum. This scale is used to elicit descriptive reactions toward a concept or object.

The Likert scale that the researcher used required the participants to indicate their opinions on a four point scale using the following variables: Agree strongly; Agree; Disagree; Disagree strongly. Sections B and C were constructed in such a way as to obtain information on how quality in the designing and implementation of CTA is presently managed and to determine the authenticity, reliability and validity of CTA.

- **Question wording**

It was important to develop the questionnaire items in such a way that the meaning of each would be interpreted the same by all participants. A question that is not carefully structured may result in answers, and therefore data, that are meaningless.

The following guidelines were adhered to by the researcher when compiling questions (Maree & Pietersen, 2007b:160):

- ✓ The researcher's questionnaires used language that all the research participants understood - no slang or abbreviations were included.
- ✓ The researcher made sure to circumvent ambiguity or imprecision by developing plain questions so that participants could know exactly what was being asked.
- ✓ The researcher circumvented questions with two purposes or interpretations by making only one specific statement in each case.
- ✓ The researcher steered clear from including leading questions for example, *do you agree that...* so as not to confuse her participants.
- ✓ The researcher avoided questions that participants would find difficult to answer, such as theoretical questions.
- ✓ The researcher did not ask any *double-negative questions* for example, *don't you agree that smoking is not good for you...* as they could be quite confusing.
- ✓ The researcher avoided asking questions that might offend her participants.
- ✓ The researcher formulated her questionnaire items as statements, not questions, in the first person.

- **Completion time of questionnaire**

According to Maree and Pietersen (2007b:159), the researcher should design the questionnaire in such a manner that the learner participants could answer it in under half an hour and the adult participants in fewer than 20 minutes. A structured questionnaire should therefore not have more than 100 to 120 items.

In the case of this thesis, the educator questionnaire contained 55 items and that of learners contained 41. This time frame was confirmed by a pilot study. It took learners 25 minutes to complete the questionnaire. Educators were given three days to complete the questionnaire.

In the next section, the researcher will present known advantages and disadvantages of questionnaire administration. This is of significance to the study since it pointed out the strengths and weaknesses of the technique before using it. In this way, the researcher could exploit the strengths while at the same time guarding against the influences of the weaknesses.

4.3.4.2 Advantages and disadvantages of using a questionnaire

The reasons for choosing a questionnaire included that questionnaires are generally used to collect data quickly; all participants are given the opportunity to provide feedback that is generally anonymous. The anonymity of the questionnaire encourages openness and honesty (Cohen *et al.*, 2007:15).

Advantages of using questionnaires

Cohen *et al.* (2007:344) mention the following advantages in this regard:

- Many participants can complete the questionnaire in a short space of time.
- Test administrators can check the questionnaire for accuracy.
- This method is relatively cheap and easy to carry out.
- Participants can be reached across long distances.
- The response rate is optimal.
- The interviewer can immediately assist with issues in the questionnaires that are not clear to the participants.

Looking at this type of questionnaire from a positive point of view, participants can respond confidentially within a known environment and feeling no anxiety that the presence of the researcher could cause. The level of anonymity is higher when the researcher is absent and this could be seen as providing for truthful data (Cohen *et al.*, 2007:344).

The appropriateness of using questionnaires as research instruments for this thesis was due to the advantage of being able to include a large number of participants (Leedy & Ormrod, 2005:185) within a relatively short time-span and/or across a geographically large area.

Disadvantages of using questionnaires

Cohen *et al.* (2007:344) mention the following disadvantages that researchers need to be aware of in this regard:

- When different administrators administer the tests, this could lead to different responses.
- The primary researcher has limited control over what happens in the field.
- The conditions in which the questionnaire is administered cannot be controlled by the primary researcher.
- Costs could be rather high when using standard tests.

According to Cohen *et al.* (2007:15), one of the major disadvantages of a written questionnaire is the possibility of low return rates. Low response is the underpinning problem of statistical analysis and it can dramatically lower people's confidence in the results. The researcher of this thesis intended to distribute and collect the questionnaires herself. She planned to allow the participants time to complete the questionnaires and collect them immediately afterwards.

The drawback of this type of questionnaire can be summarized by reminding researchers that it could lead to participants being unable to ask questions and therefore either leaving out responses or simply refraining from completing the questionnaire. Also not being able to manage the surroundings could cause participants to discuss their probable responses with others instead of giving their own opinions.

The researcher of this thesis arranged ahead of time with the principals and district offices of Sedibeng-West and Sedibeng East schools to administer the questionnaires at a convenient time.

4.3.4.3 Distribution of the questionnaire and administrative procedures

After obtaining official research permission from the Gauteng Department of Education, the document indicating this was made available to the District Directors of Sedibeng-West and Sedibeng-East before the researcher went ahead with the empirical research.

The researcher of this thesis had to take the questionnaires personally to each participating school and give them to EMS educators who taught Grade 9 in 2009 and their managers. The researcher's presence was helpful in that it enabled queries and uncertainties to be addressed immediately. Questionnaires were also administered to all Grade 11 learners (Grade 9 during 2009) of each participating school. The administration of the questionnaires was done after teaching time. The researcher did not mail the questionnaires to schools, due to the demography of the Sedibeng districts. The districts stretch from Sharpeville schools to the outskirts of Heidelberg and from the farm schools on the outskirts of Vanderbijlpark to the informal settlements of Orange Farm. Mailing the questionnaires would have posed a serious delay in terms of receiving them back. In this way, the researcher would have had to exercise control over the time for completing and returning the questionnaire.

The researcher gave the educators and SMT members two to three days to complete their questionnaires, while group administration of questionnaires was done with the learners by the researcher. Their questionnaires were collected immediately after completion. The questionnaire return rate concerning those distributed to learners and educators was very poor. A detailed report on the questionnaire return rate is provided in Chapter Five (*cf.* 5.1).

4.3.5 Reliability and validity

4.3.5.1 Reliability

Welman *et al.* (2005:9) define reliability as the extent to which results are consistent over time; are a stable measurement of data, are a representation of the total population under study and have the results of the study that can be reproduced under a similar methodology. Thus, the results or observations

can be replicated or repeated. Delpont (2005:165-166) defines reliability as a way of making sure that the instrument will generate the same or almost the same outcome consistently over time. The researcher of this thesis ensured reliability in her research by increasing the length of her questionnaires. A lengthened questionnaire generally increases reliability, according to Burns (2000:346).

The most commonly known coefficient that is used to measure the internal reliability of an instrument is called the Cronbach's alpha coefficient which is based on the inter-item correlation (Pietersen & Maree, 2007b:216). The guidelines suggested by Pietersen and Maree (2007b:216) and Clark and Watson (1995:316) were used in this research.

To guarantee reliability in this research, the researcher gave the questionnaire to learners to pre-test whether it would be able to measure what it was supposed to measure. After the pilot study had been completed, the researcher eliminated two of the items on the learner questionnaire (B17 & B20) and re-worded four of them (B6, B7, B13 & B16) to make certain of better internal consistency between these items. The researcher then distributed the final version. The researcher made changes to adapt the educator questionnaire.

Both questionnaires were pretested with a selected number of learner and educator participants from the target population – who did not form part of the actual study sample – regarding the qualities of measurement and/or appropriateness and to review them for clarity.

Table 4.3 presents the data of the learners who took part in completing the questionnaires during the pilot study.

Table 4.3: Pilot survey – learner Cronbach alpha/inter-item correlation

Learners (n=53)	Cronbach alpha	Inter-item correlation
Section B	0.927	0.297
Section C	0.883	0.264

Both the learner Cronbach alpha statistics were acceptable (*cf.* Table 4.3) and indicated that they complied with reliability criteria, since they fell within the propagated ranges of 0.7-0.9 (Pietersen & Maree, 2007b:216) and 0.6-0.9 (Simon, 2004). Moreover, both learner inter-item correlations (*cf.* Table 4.3) were acceptable and indicated that they complied with reliability criteria since they fell within the suggested average range of 0.15-0.5 as proposed by Clark and Watson (1995:316).

Table 4.3 presents the data of the educators who took part in completing the questionnaires during the pilot study.

Table 4.4: Pilot survey – educator Cronbach alpha/inter-item correlation

Educators	Cronbach alpha	Inter-item correlation
Section B	0.558	0.400
Section C	0.883	0.296
Section D	0.929	0.722

The reliability of the Cronbach alpha of educator statistics was acceptable (*cf.* Table 4.4) and indicated that they complied with reliability criteria, since they fell within the propagated range of 0.6-0.9 (Simon, 2004). Two of the educator inter-item correlations (*cf.* Table 4.4) were acceptable and indicated that they complied with reliability criteria since they fell within the suggested average range of 0.15-0.5 as proposed by Clark and Watson (1995:316).

The fact that the Section D 0.722 inter-item correlation of the educator pilot questionnaire fell outside the suggested range, pointing to the items not being fully correlated with one another, could be ascribed to the fact that this section comprised a semantic scale. Perhaps the participants felt more comfortable in the items that were ranked according to Likert scales.

Based on these statistics provided by the calculated Cronbach alpha and inter-item correlations for the educators (*cf.* Table 4.4), the Section B Cronbach alpha led to (1) eliminating three items (B13, B18 & B20) from the

section and (2) re-wording two items (B14 & B16) in order to ensure better internal consistency between the items.

The results of the actual study are reported in Chapter Five (*cf.* 5.2).

4.3.5.2 Validity

Validity determines whether the research accurately measures that which it was intended to measure or how truthful the research results are. Validity checks whether the research instrument allows the researcher to hit the *bull's eye* of the research object (Coleman & Briggs, 2002:61).

Authors such as Mills *et al.* (2007:5), Pietersen and Maree (2007b:216) and Mertler (2009:125), refer to *validity* as denoting the degree to which research instruments gauge that which they set out to gauge. Cohen *et al.* (2007:133) remind the reader that validity has of late taken several structures.

When conducting quantitative research, the researcher can improve the validity of the research design by (1) drawing the sample in a watchful manner; (2) using suitable instrumentation; and (3) treating the data in a statistically fitting way (Cohen *et al.*, 2007:133).

Validity of the quantitative research design

According to McMillan and Schumacher (2006:134), the following four types of validity are identified as addressing the validity of quantitative research designs:

- **Statistical conclusion validity** – This type of validity denotes using statistical tests to determine whether claimed relationships mirror actual relationships. The researcher of this thesis used the statistical services of the North-West University (*cf.* 1.5.7) to establish statistical validity.
- **Internal validity** – This type of validity denotes the degree to which claiming that adjustments in the independent variable cause adjustments in the dependent variable, is accurate.
- **Construct validity** – This type of validity denotes the point to which the measure is in line for measuring the construct that is being scrutinized, also supported by Vanderstoep and Johnston (2008:60). As far as the

researcher could establish, there were no existing questionnaires to gauge the constructs exactly that the researcher wanted to measure. She thus used experts in the field to verify whether her questionnaires gauged the constructs in question. She underpinned the construct validity of the questionnaires by making sure that, in general, even though they comprised of different sections, they dealt with facets that were regarded as essential to the research topic, based on the literature review.

- **External validity** – This type of validity denotes the generalizability of the outcomes of the study to the other populations, people and localities. The researcher of this thesis is aware of the fact that having chosen stratified, purposive sampling for drawing her samples can be regarded as a limitation in light of determining external validity. However, the intention was not to generalize these results to wider populations, but to obtain numerical descriptive data related to the management of the design and implementation of CTA, and to gain a deeper understanding of the management of the design and implementation of CTA for the districts that were selected (*cf.* 1.5.7).

Validity of the questionnaire as research instrument

- **Content validity:** The term content validity refers to the extent to which the instrument covers the entire content of the particular construct that it has set out to measure. To ensure content validity the researcher of this thesis presented a provisional version of the questionnaire to experts, in this case being the promoters of this thesis, in order for them to help validate that the researcher has covered the entire content (Punch, 2005:97; Rubin & Babbie, 2005:194; Babbie, 2007:147).
- **Face validity:** This type of validity refers to the extent to which an instrument looks valid. In other words, does the instrument appear to measure what it is supposed to measure? Gravetter and Forzano (2003:87) suggest that this type of validity concerns the superficial appearance of the face value of a measurement procedure. To ensure face validity the researcher of this thesis presented the questionnaire to her promoters for their professional judgement.

- **Construct validity:** When referring to the validity of the questionnaire as research instrument, construct validity is needed for standardization and has to do with how well the construct/s covered by the instrument is/are measured by different groups of related items. In the context of this research, factor analysis was used to indicate the standardization of the instrument that was used in this research to show items which belong together (Pietersen & Maree, 2007b:217). Construct validity, as asserted by Babbie (2007:175), is based on the logical relationship among variables. It involves not only validation of the instrument itself, but also theory underlying it. Another way of establishing construct validity is called *factorial validity* (Grinnell & Unrau, 2008:129). Factor analysis as a procedure is used to determine from the data the number of underlying factors in a questionnaire of the dimensions being measured or when the researcher wants to confirm whether the theoretical dimensions are in fact being measured (Pietersen & Maree, 2007b:219). Due to the smaller number of the educator participants, such a factor analysis was done concerning the learner data of Section B and Section C. A factor analysis was done to determine questionnaire items that belonged together and measured the same dimension or factor.

The questionnaire was constructed in accordance with the literature review and comprised items related to the design and implementation of CTA in a balanced way. The researcher's data collection process compared learner perceptions and educator perceptions and validated the data through the findings from the literature review.

Validity of the qualitative research

According to Merriam (2009:211), the broad assortment of types of qualitative research gives rise to the possibility of different criteria for, among others, validity. The researcher of this thesis followed the guidelines of Leedy and Ormrod (2005:100), Lincoln and Guba (in Nieuwenhuis, 2007c:80) and Mertens (2010:256-259), in attending to the four central factors of trustworthiness:

- **Credibility:** When conducting qualitative research, the term *credibility* refers to how *believable and trustworthy* the gathered data, the actual analysis of these data sets and the conclusions are (McMillan, 2008:296). In general, qualitative researchers will evaluate the credibility of a study from the perspective of a whole system of beliefs.

In this regard, the thesis included triangulation by gathering information concerning various perceptions and experiences from the participants, as well as a document analysis, to achieve credibility during the qualitative research phase

- **Applicability/transferability:** Babbie and Mouton (2001:277) use the term *transferability* here, pointing out that it is all about the degree to which the findings that are made could be relevant in other situations and/or with other participants. Guba and Lincoln (2005:216) discuss purposeful sampling as maximising the range of specific information that could be obtained from and about that context as strategy for ensuring applicability or transferability.

To this effect, the thesis made use of stratified purposive sampling, thus making the most of the scope of *specific information* that can be gleaned from the participating schools.

- **Dependability:** This aspect of trustworthiness points to the extent to which anyone interested in the research can be certain of the fact that the findings happened as the researcher reported them and that the research could be repeated (Durrheim & Wassenaar, in Maree, 2007:297).
- **Confirmability:** The term *confirmability* addresses the important aspect of making sure that the findings result from the focal point of the research investigation and not from the researcher's own biases (Babbie & Mouton, 2001:278).

To make sure confirmability was established, the researcher reviewed the following classes of data (Babbie & Mouton, 2001:278):

- Data reconstruction – The researcher generated themes, findings, conclusions and the report.

- Process notes – The researcher kept methodological notes.
- Material relevant to intentions – The researcher made personal notes.
- Instrument development information – The researcher applied preliminary schedules.

These all form part of what Lincoln and Guba (in Babbie & Mouton, 2001:278) call a *confirmability audit trail*.

The following criteria, as mentioned by Nieuwenhuis (2007a:113-115), were applied as follows in this study:

- Avoiding generalization, by remembering that the findings were only applicable to the area in which the research was conducted.
- Preserving confidentiality and anonymity, by requesting all participants to remain anonymous on the questionnaire and ensuring that each questionnaire was treated with confidentiality.
- Stating limitations of the study honestly, by remaining aware of possible drawbacks that may hamper a successful research process and study outcome. A limitation of this study could be ending up with incomplete questionnaires.
- Reflecting on being the instrument of data collection during the qualitative phase, by remembering that the researcher remained the key to data generation and interpretation. As the researcher is often involved in sustained and extensive experiences with participants, it must be remembered that a researcher can easily be influenced by aspects such as (Theron & Grösser, 2010:2):
 - ✓ historical, social and cultural experiences – the researcher has an black African heritage and had to visit schools comprising of a variety of cultures;
 - ✓ status – the researcher is an African female and she had to visit schools with principals form different cultural groupings;
 - ✓ assumptions – the researcher had to take note of specific assumptions, as indicated below;

- ✓ personal connection to site or participants – the researcher was no longer an educator at any school, but was acquainted with some of the educators;
 - ✓ steps in gaining entry – the researcher had obtained official permission from both school districts before she approached the principals at the participating schools; and
 - ✓ sensitive ethical issues – the researcher designed the necessary letters of consent to gain the participation ethically.
- Taking cognizance of one’s own assumptions at the onset of the research and avoiding any clouding of interpretation by sharing best guesses honestly. In this study, the researcher made the following assumptions: (1) most learners and educators would understand the concept *Common Task Assessment*; (2) most educators would understand what was expected from their schools in managing the design and the implementation of CTA; (3) most schools and educators would not comply with these managerial aspects in practice; and (4) learners would not have a clear understanding of the educators’ role in managing CTA.

In this research, the researcher minimized the amount of bias as much as possible by keeping her research distance and by not leading the research participants in any answers and/or responses.

4.3.6 Population/sample/research participants

In this section, the population and sample that were targeted for the research will be discussed.

4.3.6.1 Distinguishing between universe, population, study population and sample

Sampling means taking a portion or a smaller number of units of population as a representative or having a particular features of the total population (Kerlinger & Lee, 2000:164; Thomas, 2003:225; Denscombe, 2008:141; Depoy & Gilson, 2008:234-235;). The description does not say that the sample taken is in fact representative. Rather, the sample taken is perceived to be representative. It is important to understand the concept of

representativeness and its relationships to generalizability (Graziano & Raulin, 2000:133). Generalization could be obtained in a study when it can be assumed that the sample and the subjects were observed in any group of subjects other than the population. In this study, the researcher's population comprised all EMS learners and educators in South Africa.

The term sample always implies the simultaneous existence of a population or universe of which a sample is a smaller section or a set of individuals selected from a population (Gravetter & Forzano, 2003:465). The population in this study comprised looking at the Grade 9 EMS CTA of 2009; the Grade 9 EMS educators; and school managers responsible for EMS in South Africa.

A sample in the context of this study is a subset of a larger population, from whom information is collected and chosen for research purposes (Walliman, 2006:232). According to Barker (in Strydom, 2011:224), a sample is the element of the population considered for actual inclusion in the study. It is a small portion of the total set of objects, events or persons, which together comprise the subject of a study. It assists in explaining some facet of the population.

As it was not possible to conduct research with the entire population, a study population was chosen. The study population comprised Grade 11 learners and the educators in the Sedibeng districts who had been involved in Grade 9 EMS CTA during 2009. Due to time and logistical constraints, a sample was chosen from the study population.

4.3.6.2 Sample

Sarantakos (2000:139) indicates that the major reason for sampling is making sure that sampling suits the study; also referred to as *feasibility*.

There are two types of sampling methods: the probability and non-probability types.

- **Probability sampling**

As has been suggested in this chapter, two major groups of sampling procedures exist, and a suggestion has been asserted that first-probability sampling is based on randomization. While second-non-probability sampling

is done without randomization – as stated earlier in this chapter – the quantitative paradigm relies more on probability sampling technique and non-probability technique can also be used, but in the qualitative paradigm, the focus is non-probability sampling technique. It all has to do with knowing or not knowing the population on which the intended study is planned (Grinnell & Unrau, 2005:155). In the most general sense, according to Kirk (2010:367), Drunkman (2005:141-142), Grinnell and Unrau (2008:143); Unrau *et al.* (2007:280) and Depoy and Gilson (2008:234), the probability to be representatively selected permits the researchers to compute an estimate of the accuracy of the sample even before the study is done.

Gravetter and Forzano (2003:118) support the possibility that in probability sampling the odds of selecting particular individuals are known and can be calculated. In addition, the selection of people from a population is based on some form of random procedure. The best-known kinds of probability sampling are simple random sampling, systematic sampling, stratified random sampling, cluster sampling and panel sampling.

The researcher used probability sampling (*cf.* 1.5.5) and chose simple random sampling (Maree & Pietersen, 2007a:172) as the method to draw the sample of schools for the study, ensuring the inclusion of all secondary schools in both districts, as well as rural and urban schools in different socio-economic milieus.

The survey population included educators and learners currently involved at public schools in the Sedibeng-East and Sedibeng-West Districts (D7 & D8). A variety of schools was used in the study, as the two school districts comprised of diverse socio-economic areas.

There were 100 public secondary schools in two districts: (n = 55) in Sedibeng-East and (n = 45) in Sedibeng-West, including single medium ex-Model C schools, parallel medium schools and dual medium schools. This selection of schools provided for a distribution of participants in different conditions. Using the guidelines for sampling as proposed by Stoker (in Strydom, 2011:225), a systematic random sample of 45% of the schools (n = 45) was selected (*cf.* 1.5.5).

- **Methods of probability sampling**

Monette *et al.* (2005:134) succinctly state that random sampling, also known as probability sampling, is a method of drawing a portion, or sample, of a population so that each of a population has equal chance of being selected. They point out, however, that this definition, although it is easily understood, is limited. A better definition would be that random sampling is the method of drawing a sample of a population so that all possible samples of a fixed size n have the same probability of being selected. The types of probability sampling include simple random sampling, systematic sampling, stratified sampling, cluster sampling and purposive sampling.

Simple random sampling

Marlow (2005:139) says that simple random sampling is the easiest of the sampling methods where each individual in the population theoretically has an equal chance of being selected for the sample (Jackson, 2003:15). The researcher used simple random sampling to identify the target population of learners and educators (*cf.* 1.5.5).

Systematic sampling

Here only the first instance is selected randomly, preferably from a random table. All subsequent selections are chosen according to a particular interval, for instance every fifth or tenth slot on a list of names, depending on the percentage sample needed (Rubin & Babbie, 2008:166-167). The researcher used convenient random sampling to identify the participating schools (*cf.* 1.5.5).

- **Non-probability sampling**

According to Cohen *et al.* (2007:113), the selectivity that is built into a non-probability sample obtained from the researcher targeting a particular group, in the full knowledge that it does not represent the wider population, simply represents itself. The types of non-probability sampling methods include convenience sampling, quota sampling, purposive sampling, dimensional sampling, snowball sampling, volunteer sampling and theoretical sampling.

Purposive sampling

In purposive sampling, the researcher selects specific elements from the population that would be representative or informative about the topic of interest. A decision is made, on the basis of the researcher's knowledge of the population to be researched, about which subjects should be selected to provide the best information to address the purpose of the research (McMillan & Schumacher, 2006:126). The researcher used purposive sampling to identify the EMS learners and educators

From the work of Creswell and Plano Clark (2007:112), it becomes clear that purposive sampling occurs when researchers deliberately choose those participants for their research who are familiar with the phenomenon that is being investigated.

Thus, the researcher planned on using purposive sampling in her study, as the groups of learners selected would be *typical* of those learners in district D7 and D8.

For the purpose of this study, choosing Grade 11 EMS learners who were involved in CTA assessment during Grade 9 in 2009 as well as EMS educators who experienced CTA during 2009 was done by way of non-probability purposive sampling.

The sample in this research comprised of Grade 9 educators who taught EMS (n = 60); HODs for EMS (n = 30); and learners who were involved in CTA in 2009: Grade 11 learners (n = 450). The total number of participants was (n = 540). The schools were selected through convenient and systematic random stratified sampling (*cf.* 1.5.1): every second secondary school in the two districts was selected.

The participating educators and learners were male and female and they came from a variety of cultural backgrounds. This information is also covered in Chapter One (*cf.* 1.5.5).

- **The size of a sample**

The issue of the minimum size sample is repeatedly addressed in the literature. It is generally indicated that the larger the population, the smaller the percentage of the population sample needs to be, and vice versa

(Neuman, 2003:232). If the population itself is relatively small, the sample should include a reasonable large percentage of it. Larger samples allow researchers to draw more representative and more accurate conclusions, and to make more accurate prediction than in smaller sample, although this is more costly (Bless, Higson-Smith & Kagee, 2000:107; Salkind, 2000:96; Mitchell & Jolley, 2001:496-497).

However, by increasing sample size, smaller and smaller effects will be found to be statistically reflected until, at a very large sample size, almost any effect is significant. The researcher must always be aware that sample size can impact on the statistical test by making it either insensitive (at a small sample size) or overly sensitive (at a very large sample size). The size of the sample will also be influenced by the relative difference of the population and the desired degree of reliability for the purpose of the study (Huysamen, 2001:50-51). The greater the probability of a sample error, the larger the sample should be (Grinnell & Unrau, 2005:168; Welman *et al.*, 2005:70-71). Since a certain degree of participant mortality generally occurs in any research project, it is wise to draw a larger sample than would eventually be needed. Any researcher ought to obtain the largest possible sample.

Grinnell and Williams (1990:127) assert that in most cases a 10% sample should be sufficient for controlling for sampling errors. However, differences of opinion exist with regard to the minimum number of participants that should be involved in an investigation. Grinnell and Williams (1990:128) contend that 30 are sufficient to perform basic statistical procedures, while others feel that a minimum of 100 is needed. It is always possible to involve a minimum number of participants in an investigation, because the total population is often quite small, and it is preferable to use the total population in such cases.

Stoker (in Strydom, 2011:225) suggests a table to indicate how big a sample should be:

Table 4.7: Guidelines for sampling

Population	Percentage suggested	Number of participants
20	100%	20

30	80%	24
50	64%	32
100	45%	45
200	32%	64
500	20%	100
1000	14%	140
10 000	4.5%	450
100 000	2%	2000
200 000	1%	2000

The researcher of this thesis used Table 4.7 as a guideline to calculate the size of her samples. The table below, Table 4.8, indicates the sample for this research. The sample selection was based on all educators and Grade 9 learners in the Sedibeng-East and Sedibeng-West Districts during 2009.

Table 4.8: Sample selection of the research participants

	Population	Selected sample	Percentage selected	Sampling guidelines followed (Stoker)
Number of high schools in Sedibeng-East (55) and Sedibeng-West (45)	100	45	45%	Yes
EMS Educators	125	60	48%	Yes
EMS HODs	45	30	66.7%	Yes
EMS Learners	982	450	45.8%	Yes

4.3.6.3 Representativeness of samples

The representativeness of a sample is important when researchers want to generalize from the sample to a larger population, meaning the sample should have approximately the same distribution of characteristics as the population from which it has been selected (Marlow, 2005:136). If gender and socio-economic class variables and characteristics are relevant to the research, a

representative sample will have approximately the same portion of men and women from the middle and working classes. In this research, Grade 11 male and female learners were represented; educators who taught Grade 9 were also represented.

It is, nevertheless, important that all novice researchers such as the researcher of this thesis, master the very simple practical technique of drawing random samples using a table of random numbers of which most methodologist textbooks usually have lists as appendices. Following the steps above and Table 4.7 helped the researcher of this thesis in executing such random sampling.

In this study, the researcher deliberately chose participants who are familiar with the management and use of CTAs. Thus the researcher planned on using purposive sampling in her study, as the groups of learners selected were *typical* learners who did Grade 9 EMS CTAs during 2009 in the school districts D7 and D8.

The following criteria for inclusion into the study were used:

- ✓ Grade 9 educators who teach EMS
- ✓ HODs of EMS
- ✓ Learners who were involved in EMS CTA during 2009

4.3.7 Data analysis: quantitative data

The data collection, processing and analysis followed the survey research. A statistically valid instrument with the STATISTICA software package was used to obtain the results.

The data for this study were analysed by using the statistical package SPSS. SPSS stands for *Statistical Package for the Social Sciences*. A professional statistician of the North-West University, Vaal Triangle Campus, was approached for support concerning the analysis and interpretation of data collected from the questionnaires.

4.3.7.1 Descriptive statistics

As pointed out by Pietersen and Maree (2007c:183), the term descriptive statistics is a combined name for a variety of statistical methods that are used to systematize and sum up data in a significant manner, thus augmenting appreciation of the properties the data have to offer (Pietersen & Maree, 2007c:183).

Blaikie (2000:236) indicates that descriptive methods are used to report the distributions of a sample or population across a wide range of variables, using all four of the measurements mentioned above. The aim of these methods is to produce a scope of the characteristics of such distributions through frequencies, measures of central tendency and measures of dispersion. Moreover, the descriptive statistics can be presented in a graphical and/or numerical way. The collected data were analysed by means of frequencies, percentages, means and standard deviations.

By means of descriptive statistics, data were organized and summarized to encourage an understanding of the data characteristics (Pietersen & Maree, 2007c:195).

This section presents the reactions gathered from the educators and learners for each of the sections in the questionnaire. Each section focused on a particular construct in relation to the management of the design and implementation of CTA. Although some of the learner and educator questionnaire items were directed to similar issues, the questions were worded differently to suit the relevant group.

The data for the responses were summarized with frequencies, means and percentages. Graphical and tabular depictions were provided to highlight the prominent characteristics that radiated from the responses visually (Pietersen & Maree, 2007c:185).

4.3.7.2 Inferential statistics

In this research, the researcher went beyond just summarizing and describing the data she had collected. She made use of inferential statistics (*cf.* 1.5.7). Inferential statistics involved using a small sample of the population and then

estimating the characteristics of the larger population from which the sample has been drawn (Leedy & Ormrod, 2005:252). Inferential statistics, on the other hand, use probability theory to test hypotheses, permit inferences from a sample to a population and test whether descriptive results are likely to be due to random factors or to a real relationship (Kruger & Neuman, 2006:350).

Blaikie (2000:237) asserts that methods of inference are used both to make estimates of population characteristics and to establish whether relationships within a sample can be expected to assist in predicting relationships in the population from which the sample is drawn.

In order to determine whether there were any statistically significant differences between the educator and learner responses derived from the questionnaire, the responses were compared on the mean scores for each of the questionnaire sections. T-tests were utilized to establish whether differences that happened were statistically momentous (Pietersen & Maree, 2007a:230). In this study *t*-tests were administered to determine any significant differences between the perceptions of the educators and those of the learners where questions were similar. Correlations were drawn to determine the strength of the relationships between the CTA-results questionnaires of the learners and their perceptions. The comparison was done on questions that were similar in the learner and educator questionnaires in the Section B design and Section C implementation of CTA.

To determine the effect size of the statistical significant difference, Cohen's D was calculated and the effect sizes were interpreted as follows (Cohen, in Pietersen & Maree, 2007d:211):

- 0.2 – small effect
- 0.5 – medium effect
- 0.8 – large effect

The researcher made comparisons between the frequencies of the learner and educator responses. Cramer's V was used as a way of calculating correlations in tables which have more than 2x2 rows and columns. It is used as a post-test to determine strengths of association after a chi-square determined significance. Cramer's V varies between 0 and 1. Close to 0, it

shows little association between variables and close to 1, it would indicate a strong association between learner and educator learner responses (*cf.* 5.8.1; Table 5.47).

Chi-square was used to show a statistically significant relationship between variables, but it did not say just *how* significant and important this is. Cramer's V is a post-test that was used to get the additional information concerning the effect size (Leech *et al.*, 2008:244). The following guidelines were used to interpret Cramer's V:

- 0.1 – small effect
- 0.3 – medium effect
- 0.5 – large effect (Cohen, in Pietersen & Maree, 2007d:212).

The researcher interpreted the numeric data by using descriptive statistics (*cf.* 1.5.7).

Quantitative methods of analysis fall into four main groups, according to Blaikie (2000:236-237), but only the descriptive and inference groups were relevant to this study.

4.3.8 Data analysis: qualitative data

The qualitative data were analysed by means of codes and themes. In this regard, the researcher did multifaceted reasoning by using inductive and deductive judgement during the content analysis of the qualitative data that were gathered.

Content analysis refers to examining the gathered data for repeated occurrences which can be identified methodically and clustered together throughout the data set, by using some kind of coding scheme (Wilkenson, 2011:170). Moreover, according to Creswell (2013:45), following a *bottom up* inclination helps a qualitative researcher to reason inductively while organizing gathered data into categories, patterns and/or themes in order to create abstract information units. The rationale lies in being able to work backward and forward between the codes/themes and the data until the researcher has established a wide-ranging theme set (Creswell, 2013:45).

Apart from using inductive thinking, Creswell (2013:45) points out the added value of also using deductive thinking in order to construct themes that can be matched against the data regularly. In sum, following an inductive-deductive reasoning process when analysing qualitative data, supports researchers in using multifaceted reasoning skills during the research process (Creswell, 2013:45).

4.3.9 Ethical considerations

According to Parse and National League for Nursing (2001:19), ethical issues are always a vital consideration in any type of research as they are intended to protect participants from any harm, emotional or physical, befalling them during the course of the research study. Ethics are typically related with morality and deal with matters of right and wrong.

According to Strydom (2005:56-57), involvement in research requires a general awareness and acknowledgement of appropriate and inappropriate conduct. The fact that research in the human sciences requires the researcher to use human beings as objects of study means that the researcher should be bound by these conducts. The researcher of this thesis was therefore guided by, among others, the ethics of informed consent, no deception, voluntary participation, no violation of privacy, as well as taking responsibility towards the participants.

The researcher complied with the following four central ethical principles (Creswell, 2009:88-92; Creswell, 2012:277-280; *cf.* 1.5.10):

4.3.9.1 Ethical issues in the purpose and questions

All researchers need to ensure that the rationale behind their research is clear and that their research participants are well informed about this.

According to Welman *et al.* (2005:182), all research should be based on a systematic review of the literature, with the specific purpose of determining to what extent the research problem has already been addressed. A literature review was conducted at the start of this study and the results revealed that this specific research had not yet been conducted anywhere (*cf.* 1.1).

The researcher of this thesis developed a purpose statement that pointed out the intent of the research clearly (*cf.* 1.2). Moreover, a specific primary question was put (*cf.* 1.3.1), which led to clear secondary research questions (*cf.* 1.3.2). She then made sure to communicate the purpose of her study to all her research participants before the research was conducted.

4.3.9.2 Ethical issues in data collection

In collecting the data, researchers must value their participants and the places where the research is conducted. No research participant should ever feel under threat and populations at risk need to be revered.

In her data collection process, the researcher focused on having as little disruption as possible at schools which participated in the research.

The promoter, Prof. Elda de Waal, has ethical clearance from the Ethics Committee of the North-West University Committee to conduct her research project, which would include all the postgraduate students studying under her guidance. The ethics number is NWU-0068-11-A9 (*cf.* Addendum A).

Research permission was asked from and granted by the Gauteng Department of Education (*cf.* Appendix B).

Informed consent, which is arguably the most fundamental principle for ethical acceptability, is a standard procedure that the researcher follows in order to make sure that all the participants understand potential hazards (Babbie, 2010:67). However, Strydom (2005:59-60) adds to this that all the detail concerning the aim of the study, the procedures and the advantages/disadvantages also need to be made available to participants.

In the context of this research, informed consent was guaranteed by the Sedibeng-East and Sedibeng-West school principals; EMS educators and their Grade 11s were consulted to obtain permission for the research (*cf.* Appendix C). Participants were provided with a description of what their participation would involve and a statement indicating that their participation was voluntary. The parents/caregivers of the underage participants were consulted to give permission for learners to participate in this research

Moreover, the researcher involved participants in knowing about the nature and purpose of the research, its risks and benefits, and they were allowed to consent to participate without coercion. The researcher explained the whole process of the administration of questionnaires, as well as the aims of the research, to all the participants.

Wassenaar (2006:67 & 72-73) points out that participants need to consent to taking part out of their own free will, with the option of withdrawing from the study at any time, indicating their consent in writing by signing a document that the researcher has prepared to that effect.

The researcher of this thesis told her participants that they were not forced to take part in the study and that their participation was voluntary. They were informed that they could refrain from participation at any point of the study, should they feel like doing so. The participants were assured that any data collected from or about them would be held in confidence (*cf.* Appendix F for educators & Appendix G for learners).

Avoiding harm involves an assessment of any harm that the research may cause. It is imperative that the researcher conducts the research in a way that does not cause undue stress, harm or inconvenience to any participant, especially not to learners (Welman *et al.*, 2005:182).

The researcher ensured that the risk involved in participating in the study was no greater than the normal risks of day-to-day living.

In addition to the above concerns during the data collection process, Welman *et al.* (2005:182) discuss the significant ethical issue that no researcher should conduct research without having acquired the relevant skills. The researcher of this thesis acquired skills to administer questionnaires when she was doing her Master's degree (M.Ed).

The goals of the study and research procedures that were followed during the investigation were clearly stated while gathering the data, without any deception. Participants were given ample time to ask questions relating to the research. The research participants were informed of the fact that they would have access to the research report if they wanted to verify any aspect of the research (*cf.* Appendix C).

4.3.9.3 Ethical issues in data analysis and interpretation

Data of completed research must be safely stored for a realistic time-span, such as 5-10 years. As done during her Master's degree, the researcher of this study is aware of the fact that the analysed data needs to be kept for at least 5 years. Her promoter, Prof Elda de Waal, will keep the data locked away safely in her office.

Protecting participants' identities – Babbie (2010:67) is of the opinion that the researcher's most obvious concern while trying to protect participants' security and welfare should be that of shielding their individual identities. Maree and Van der Westhuizen (2007:41-42) support this by referring to protecting the identity of participants and regarding research results as confidential as *essential ethical aspects*. Babbie (2010:67-68) describes *confidentiality* as being guaranteed when the researcher is able to name a given participant's responses, such as would be the case in a survey that uses interviews, but pledges not to.

On the other hand, *anonymity* implies that the researcher cannot name a certain response as belonging to a specific participant (Babbie, 2010:67).

The researcher of this thesis reassured all participants that they would not be identified by their responses in the study. Their names were not used in the returned questionnaires, thus another form of ensuring their privacy.

Access to findings – It is an important principle that any final report or submission of findings is presented to the participants or is at least made available to them. The findings in this research are to be presented to the participants once the study has been finalized. Once the study has been concluded, the researcher will send a copy of this thesis to the Gauteng Department of Education.

4.3.9.4 Ethical issues in writing and disseminating the research

In the context of this study, the researcher noted the following three aspects while writing up her research (Creswell, 2009:92; Creswell, 2012:277-280):

- **Bias** – Biased language, which would cause unease concerning gender/sexual orientation/disability/age, must be ignored as far as

possible. The researcher of this thesis steered clear of this dilemma by using unbiased language at the relevant levels.

- **Falsification of results** – It is unethical to fake, suppress and/or make up findings. Therefore, while reporting on the data, the researcher of this thesis reported only on the actual responses of the participants.
- **Plagiarism** – It is unethical to use other researchers' ideas or content without the correct and frequent acknowledgements. Therefore this researcher took special care to re-word and paraphrase her information while at the same time referencing frequently according to the NWU Quoting Sources requirements. Each chapter was also put through the Turnitin system (*cf.* Appendix M).

4.4 SUMMARY

The research methodology employed in this study was discussed in this chapter. The methodology entailed the description of the research design, strategy of inquiry, the population and sampling, the data collection methods, the data analysis and measures to ensure validity and reliability of the study. The study involved using mainly quantitative research in an investigation into the management of the quality of the design and implementation of CTA.

This chapter started with an introduction to the chapter (*cf.* 4.1). Thereafter, the researcher gave guidance concerning her choice of research paradigms: she revealed that she would be following a positivist and a post positivistic paradigm in her study (*cf.* 4.2). The research design was discussed (*cf.* 4.3). The researcher stated that she was following a single method (quantitative) design for the main part of her study, with a small qualitative dimension. In the section on the strategies of inquiry (*cf.* 4.3.1), the researcher revealed that the bigger quantitative component focused on description (*cf.* 4.3.2.1), while a phenomenological approach was followed in the smaller qualitative component (*cf.* 4.3.2.2). Brief mention was made of the comparative education design that would be followed (*cf.* 4.3.2.3), which comprised that learners and educators' perceptions regarding the design, implementation and management of CTA were established. The method of choosing the research participants was revealed, namely purposive sampling (*cf.* 4.3.2.4) and

thereafter the researcher made known how she planned and constructed her closed-ended questionnaires. This included pointing out the four-point Likert scale questionnaire items with options such as *strongly agree*, *agree*, *disagree* or *strongly disagree* as used in her quantitative research (cf. 4.4.1). Open-ended questions were also included in both the educators and learners' questionnaires (cf. Appendix F and G).

The pilot study and the data thereof were mentioned (cf. 4.4.2) and the actual study was thereafter focused on (cf. 4.4.3). In both of these study references, the researcher referred to reliability, validity, and the application thereof. Internal validity, external validity, statistical conclusion reliability and validity were considered (cf. 4.4.1.1). Concerning both of these methods, the researcher not only indicated how they were used in her study, but also pointed out the advantages and disadvantages of each. The role of the researcher (cf. 4.6) and how the data analysis of the quantitative dimension was conducted and interpreted were looked at (cf. 4.7.1). Both descriptive and inferential procedures were used (cf. 4.6.1). The researcher paid attention to significant ethical considerations (cf. 4.8) and gave feedback on the research challenges that she had foreseen in Chapter One (cf. 1.7 & 4.9).

The researcher will pay attention to analysing and interpreting the data in the next chapter, Chapter Five.

CHAPTER FIVE

DATA ANALYSIS AND INTERPRETATION

5.1 INTRODUCTION

Chapter Four outlined the empirical research design that was followed in order to gather information that would be relevant to achieving the aim of this research.

The empirical survey that was used in the context of the research determined by means of questionnaires how the design and implementation of CTA are