

CHAPTER 5: RESEARCH DESIGN

5.1 Introduction

Chapters one to four set the scene for and provided the background to this dissertation. In chapter one I referred to the rationale for the research, listed the research questions, and gave an introductory overview of the literature study as well as a short version of the methodology that I used to obtain the data for this dissertation. Chapters two, three and four elucidated the three themes associated with my research topic namely, quality education, the legal framework for the funding of education in South African public schools and accountability regarding the financial management of education. In chapter five I provide a more detailed account of the methodology used in my dissertation.

5.2 Epistemology

For the purposes of my dissertation I am not going to provide a detailed discussion of the concept epistemology. I will give a brief explanation and then contextualise the concept in terms of my work.

Epistemology is the branch of philosophy that studies the nature and scope of knowledge. The term "epistemology" is based on the Greek words "*episteme*" (knowledge) and "*logos*" (account/explanation). The Concise Oxford Dictionary (1982: 349) defines it as the *theory of or the method or grounds of knowledge*. Epistemology is a branch of philosophy that investigates the origin, nature, methods, and limits of human knowledge. The first theories of knowledge stressed its absolute, permanent character, whereas the later theories put the emphasis on its relativity or situation-dependence, its continuous development or evolution, and its active interaction with the world and its subjects and objects. The broad understanding of knowledge seems to have moved from a static, passive view of knowledge towards a more and more adaptive and active one.

As the study of knowledge, epistemology is concerned with the following questions: What are the necessary and sufficient conditions of knowledge? What are its sources? What is its structure, and what are its limits? Epistemology has primarily concerned itself with propositional knowledge, that is, knowledge in the sense that '*something is true*'. as opposed to, other forms of knowledge, for example, knowledge about '*how to*'. There is a vast array of views about propositional knowledge, but one virtually universal presupposition is that knowledge is true belief. (<http://www.rep.routledge.com/article/P059> - accessed on 2/11/2011; <http://dictionary.reference.com/browse/epistemology> - accessed on 2/11/2011; <http://plato.stanford.edu/entries/epistemology/> - accessed on 2/11/2011; <http://pespmc1.-vub.ac.be/EPISTEMI.html> - accessed on 2/11/2011).

Thus, a central question in epistemology is: what must be added to true beliefs to convert them into knowledge? In order to formulate my own epistemological stance, I will first have to define the concepts reality, truth, belief and knowledge because they are of cardinal importance in explaining epistemology. However, debates about what these concepts mean have been going on for centuries. What follows is an effort to explain these concepts in very simple terms and to formulate an epistemological stance before proceeding to explain my methodology in more detail.

Reality.

Consulting a variety of other sources, I found the following to be a composite set of descriptors of reality. It is referred to as:

- that which exists objectively and in fact;
- a real event, entity, or state of affairs;
- the quality or state of being, real, as they actually exist in distinction from mere appearance, which is not imagination, fiction, or pretence;
- something that exists independently of ideas concerning it, i.e. is neither derivative nor dependent but exists necessarily, from which all other things derive, and is not merely an idea;

- the totality of all things possessing actuality, existence, or essence; that is absolute, self-sufficient, or objective, and not subject to human decisions or conventions.

(<http://www.thefreedictionary.com/reality>;<http://dictionary.reference.com/browse/reality>;
<http://www.merriam-webster.com/dictionary/reality>;
<http://www.brainyquote.com/words/re/reality210450.html>;
<http://oxforddictionaries.com/definition/reality> - all accessed on 2/11/2011)

I found the explanation of reality on the <http://en.wikipedia.org/wiki/Reality> - website (accessed on 2/11/2011) as *'the state of things as they actually exist, rather than as they may appear or might be imagined. In a wider definition, reality includes everything that is and has been, whether or not it is observable or comprehensible. A still more broad definition includes everything that has existed, exists, or will exist'* particularly useful with the three levels of focus on the phenomenon. I especially relate to the latter as reality in its broadest context, but would like to add the qualifier *as we / man understands it at the moment.*

Truth.

I similarly compiled a composite set of descriptors for truth from a variety of sources. It is described as a *'statement, judgment, proposition, or idea proven to be or accepted as true; conformity to fact or actuality; a verified or indisputable fact, proposition, principle, or the like'*. (<http://www.merriam-webster.com/dictionary/truth> - accessed on 2/11/2011; <http://dictionary.cambridge.org/dictionary/british/belief> - accessed on 2/11/2011; <http://www.thefreedictionary.com/Truth> ; <http://www.merriam-webster.com/dictionary/truth> - accessed on 2/11/2011)

<http://plusroot.com/dbook/23TruthDef.html> - accessed on 2/11/2011, contains a noteworthy, slightly different view of the concept, namely *'an intellectual, relational, unified, reliable, universal aspect of reality that we humans can discern in a limited but useful manner'*. The opposite of being the truth is that something is false, untrue or a lie. The purpose of referring to something being the truth appears to substantiate the factuality of whatever claim is being made

on one hand and on the other it appears to represent an insight into / grasp of reality.

Belief.

From an epistemological perspective, the concept is referred to in the contexts of conviction, credibility, mental acceptance of and conviction of the truth or validity of something. Consulting a series of sources I was able to compile the following list of descriptors associated with belief in the context described above:

- a state or habit of mind in which trust or confidence is placed in some person or thing;
- acceptance that something exists or is true, especially one without proof;
- something one accepts as true or real;
- a firmly held opinion;
- any cognitive content held as true;
- an opinion or something that a person holds to be true;
- the state of believing;
- conviction or acceptance that certain things are true or real;
- the feeling of being certain that something exists or is true.

(<http://www.thefreedictionary.com/belief>;
<http://dictionary.reference.com/browse/belief>;
<http://www.brainyquote.com/words/be/belief135832.html>; ;
<http://www.merriam-webster.com/dictionary/belief>;
<http://oxforddictionaries.com/definition/belief>;
<http://www.definitions.net/definition/belief>;
<http://www.yourdictionary.com/belief>;
<http://dictionary.cambridge.org/dictionary/british/belief> - all accessed on 3/11/2011)

My understanding and future use of the concept can be formulated as *belief* being an *opinion* or *conviction* (not based on immediate, positive personal knowledge) that a person holds with confidence in the truth or existence of something, that is not immediately susceptible to rigorous examination of evidence to prove it right / wrong.

Knowledge.

If epistemology is a branch of philosophy that investigates the origin, nature, methods, and limits of human knowledge, we should have a clear

understanding of what *knowledge* is. Table 5.1 depicts the contributions of key role players to our understanding of the concept of knowledge in chronological order.

Table 5.1: *Key contributors to our understanding of knowledge as concept*

Proponent	Date	View
Socrates	469 – 399 BC	In his use of critical reasoning, by his unwavering commitment to truth, and through the vivid example of his own life, fifth-century Athenian Socrates set the standard for all subsequent Western philosophy. <i>Knowledge is a matter of recollection, and not of learning, observation, or study.</i> (http://www.philosophypages.com/ph/socr.htm - accessed on 4/11/2011); (http://en.wikipedia.org/wiki/Plato - accessed on 4 /11/2011)
Plato	423- 347 BC	<i>Justified true belief – ‘in order to know that a given proposition is true, one must not only believe the relevant true proposition, but one must also have justification for doing so’.</i> This has been rephrased by Nonaka and Takeuchi to read "Justified true belief that increases an entity's capacity for effective action". (http://en.wikipedia.org/wiki/Justified true belief - accessed 4/11/2011). (http://www.businessdictionary.com/definition/knowledge.html - accessed on 4/11/2011)
Aristotle	384 – 322 BC	Aristotle believes that all philosophers try to overcome ignorance, and pursue knowledge for its own sake and not merely for the practical utility of it. Aristotle, who has been called the father of formal logic, shows us that the importance of logic, as a tool, in the quest for knowledge is as he says that, " <i>the philosopher, who examines the most general features of primary being must investigate also the principles of reasoning.</i> " According to Aristotle, scientific knowledge (<i>episteme</i>) must be expressed in statements that follow deductively from a finite list of self-evident statements (axioms) and only employ terms defined from a finite list of self-understood terms (primitives). [Stanford Encyclopedia of Philosophy] – Aristotle, along with many other classical Greek thinkers, believed that the appropriateness of any particular form of knowledge depends on the <i>telos</i> , or purpose, it serves. The purpose of a theoretical discipline is the pursuit of truth through contemplation; its <i>telos</i> is the attainment (http://www.infed.org/biblio/knowledge.htm - accessed on 4/11/2011). (http://www3.isrl.illinois.edu/~unsworth/Kings.5-00/primitives.html - accessed on 4/11/2011); (http://library.thinkquest.org/18775/aristotle/knowar.htm - accessed 4/11/2011)
René Descartes	(1596– 1650)	Descartes defines knowledge in terms of doubt. While distinguishing rigorous knowledge (<i>scientia</i>) and lesser grades of conviction (<i>persuasio</i>), Descartes writes: ' <i>I distinguish the two as follows: there is conviction when there remains some reason which might lead us to doubt, but knowledge is conviction based on a reason so strong that it can never be shaken by any stronger reason</i> '. (1640 letter, AT 3:64–65) (http://plato.stanford.edu/entries/descartes-epistemology/ - accessed on 4/11/2011)
John Locke	(1632- 1704)	<i>"Knowledge then seems to me to be nothing but the perception of the connexion and agreement, or disagreement and repugnancy of any of our Ideas."</i> Locke's definition of knowledge as the perception of the agreement (or disagreement) of ideas clearly indicates two fundamental criteria for acquiring knowledge: first, we have to have the requisite ideas, and then we also have to perceive the connection between them. Failure on either of these respects will leave us short of the certainty

		<p>characteristic of genuine knowledge. (http://www.philosophypages.com/locke/g04.htm - accessed on 4/11/2011). Locke views us as having sense organs that, when stimulated, produce “ideas of sensation.” These ideas of sensation, in turn, are turned into “ideas of reflection” By our minds. Thus, ideas come to us via our senses, which in turn can be turned into new ideas via reflection. These two routes that ideas take are derived from <i>experiences</i> — we can have no knowledge beyond our ideas. There are two kinds of <i>material</i> ideas: simple and complex. Simple ideas have one attribute, such as the sky is blue or lemons are sour. Complex ideas are compounds of simple ideas. There are building blocks to ideas — they come to us via our senses, and in turn we can reflect upon them to form complex ideas.</p> <p>Locke further divides knowledge into three types: (i) <i>Intuitive knowledge</i> involves direct and immediate recognition of the agreement or disagreement of two ideas. It yields perfect certainty, but is only rarely available to us. (ii) <i>Demonstrative knowledge</i> is when we perceive the agreement or disagreement indirectly through a series of intermediate ideas. For example, I know that A is greater than B and B is greater than C, thus I know demonstratively that A is greater than C. (iii) <i>Sensitive knowledge</i> is when our sensory ideas are caused by existing things even when we do not know what causes the idea within us. (http://www.nwlink.com/~donclark/history_knowledge/locke.html - accessed on 4/11/2011).</p>
Immanuel Kant	(1724 – 1804)	<p>His central thesis—that <i>the possibility of human knowledge presupposes the active participation of the human mind</i> — is deceptively simple, but the details of its application are notoriously complex (http://www.philosophypages.com/ph/kant.htm - accessed on 4/11/2011). Knowledge is the strongest mode of judgment of truth and is apodeictic¹⁴: "what I know, I hold to be apodeictically certain, i.e. to be universally and objectively certain", although Kant suggests that we can make this judgment about "a mere empirical truth". [L:78] This kind of knowledge--"or certainty"--is a judgment of truth by "a cognitive ground that is both objectively and subjectively sufficient". There are two kinds of knowledge (certainty), empirical and rational. Rational certainty is mathematical (in which case it is intuitive certainty) or discursive; all rational certainty is apodeictic. By contrast, "empirical certainty" is not apodeictic (And thus not, strictly speaking, knowledge?) but assertoric¹⁵. Kant comments, "we cannot have rational certainty of everything, but where we can have it, we must prefer it to the empirical". [A320/B377] In the Critique, Kant's first definition of knowledge--as "objective perception"--occurs early in the Dialectic. Kant gives this "definition" in the midst of an appeal not to use the term `idea' loosely, but to follow his terminology for the various kinds of representations; the passage rather confusingly invokes many earlier distinctions. Kant writes: "The genus is representation in general. Subordinate to it stands representation with consciousness. A perception which relates solely to the subject as the modification of its state is sensation, an objective perception is knowledge. This is either intuition or concept....The concept is either an empirical or a pure concept". [A822/B850] Much later in the Dialectic Kant speaks of knowledge in the terms of the Logic, writing "the holding of a thing to be true...has the following three degrees: opining, believing, and knowing....when the holding of a thing to be true is sufficient both subjectively and objectively, it is knowledge....Objective sufficiency is termed certainty". Presumably the "empirical knowledge"--experience--discussed in the Aesthetic and Analytic is different from this, which Kant characterizes (and then presumably goes on to critique) as "the transcendental employment of reason". In the Deduction in B, Kant speaks of the understanding as "the faculty of knowledge"--presumably empirical knowledge of appearances (<a 115="" 577="" 858="" 876"="" data-label="Footnote" href="http://www.philosophy-</p> </td> </tr> </table> </div> <div data-bbox="> <p>¹⁴ ap·o·dic·tic - Necessarily or demonstrably true; incontrovertible.</p> </p>

¹⁵ An **assertoric** proposition in Aristotelian logic: (Philosophy / Logic) (of a statement) stating a fact, as opposed to expressing an evaluative judgment - <http://www.thefreedictionary.com/assertoric> - accessed 29/11/2011

		dictionary.org/KNOWLEDGE -accessed on 4/11/2011).
John Dewey	(1859 – 1952)	In Dewey’s view, traditional epistemologies, whether rationalist or empiricist, had drawn too stark a distinction between thought, the domain of knowledge, and the world of fact to which thought purportedly referred: thought was believed to exist apart from the world, epistemically as the object of immediate awareness, ontologically as the unique aspect of the self. The commitment of modern rationalism, stemming from Descartes, to a doctrine of innate ideas, ideas constituted from birth in the very nature of the mind itself, had effected this dichotomy; but the modern empiricists, beginning with Locke, had done the same just as markedly by their commitment to an introspective methodology and a representational theory of ideas. The resulting view makes a mystery of the relevance of thought to the world: if thought constitutes a domain that stands apart from the world, how can its accuracy as an account of the world ever be established? For Dewey a new model, rejecting traditional presumptions, was wanting, a model that Dewey endeavoured to develop and refine throughout his years of writing and reflection. Dewey argued that organisms interact with the world through self-guided activity that coordinates and integrates sensory and motor responses. The implication for the theory of knowledge was clear: the world is not passively perceived and thereby known; active manipulation of the environment is involved integrally in the process of learning from the start. (http://www.iep.utm.edu/dewey/ - accessed on 4/11/2011). The terminology problem in the fields of epistemology and logic is partially due, according to Dewey and Bentley to inefficient and imprecise use of words and concepts that reflect three historic levels of organization and presentation. In the order of chronological appearance, these are: Self-Action: Prescientific concepts regarded humans, animals, and things as possessing powers of their own which initiated or caused their actions. Interaction: as described by Newton, where things, living and inorganic, are balanced against something in a system of interaction, for example, the third law of motion states that for every action there is an equal and opposite reaction. Transaction: where modern systems of descriptions and naming are employed to deal with multiple aspects and phases of action without any attribution to ultimate, final, or independent entities, essences, or realities. (http://en.wikipedia.org/wiki/John_Dewey - accessed on 4/11/2011)
Jean Piaget	(1896 - 1980)	Is considered to be the founder of constructivism . It is a theory of knowledge (epistemology) that argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas (http://en.wikipedia.org/wiki/Constructivism_(learning_theory) – accessed on 4/11/2011) Piaget emphasized that knowledge and understanding was not simply about ingesting a bunch of facts. That is, to mindlessly regurgitate facts is not real knowledge and not true intelligence -- however much it may impress certain adults. Rather, knowledge was about structures, in essence it is about understanding how the facts fit together, having mental models that allow one to accurately assimilate additional information and from it make useful predictions and conclusions (http://www.ndb.com/people/359/000094077/ - accessed on 4/11/2011). Piaget's theory is based on the idea that knowledge acquisition is a process of continuous self-construction. Knowledge is invented and re-invented as the child develops and interacts with its surrounding world (Driscoll, 1994). Central to the theory is the idea that children actively acquire knowledge through their own actions. Fundamental to the theory are principles of cognitive theory rather than those of behavioural theory. Central to the idea of cognitive theory are schemas or schemes, which refer to units of generalized behaviour (or action) that provide the basis for mental operations (Gruber and Voneche, 1977). In addition, Piaget's theory is geared towards knowledge acquisition for children not adults. Within the theory, Piaget describes three types of

		<p>knowledge that children acquire. They are 1.) Physical knowledge - "knowledge about objects in the world, which can be gained through their perceptual properties," 2.) Logical-mathematical knowledge - "abstract knowledge that must be invented," and 3.) Social-arbitrary knowledge - "culture-specific knowledge learned from people within one's culture-group" (Driscoll, 1994). (http://home.gwu.edu/~mcorry/corry2.htm - accessed on 4/11/2011)</p>
Carl Rogers	(1902 – 1987)	<p>Rogers distinguished between theoretical knowledge and applicable knowledge. The latter addresses more immediate needs and wants of the learner, and may bring about personal change and growth. One has to be open to change, in this light. Participating fully in the learning process and having enough and fit control over its main directions and outcomes, is viewed as a boon. Helping such learning on and up (facilitating it, making steps easier, smoother) includes:</p> <ul style="list-style-type: none"> • Setting a positive climate for learning; • Clarifying the purposes of the learners; • Organizing and making available learning resources; • Balancing intellectual and emotional components of learning; • Sharing feelings and thoughts with learners without dominating <p>(http://oaks.nvg.org/carl-rogers.html - accessed on 4/11/2011).</p>
Peter Drucker	(1909 – 2005)	<p>The term <i>knowledge worker</i> was first coined by Peter Drucker ca. 1959, as one who works primarily with information or one who develops and uses knowledge in the workplace. <i>Knowledge workers</i> in today's workforce are individuals who are valued for their ability to act and communicate with knowledge within a specific subject area. They will often advance the overall understanding of that subject through focused analysis, design and/or development. They use research skills to define problems and to identify alternatives. Fueled by their expertise and insight, they work to solve those problems in an effort to influence company decisions, priorities and strategies. What differentiates knowledge work from other forms of work is its primary task of "non-routine" problem solving that requires a combination of convergent, divergent, and creative thinking (Reinhardt et al., 2011). Weiss (1960) said that knowledge grows like organisms, with data serving as food to be assimilated rather than merely stored. Popper (1963) stated there is always an increasing need for knowledge to grow and progress continually, whether tacit (Polanyi, 1976) or explicit. Toffler (1990) observed that typical knowledge workers (especially R&D scientists and engineers) in the age of knowledge economy must have some system at their disposal to <i>create, process and enhance</i> their own knowledge. In some cases they would also need to manage the knowledge of their co-workers. (http://en.wikipedia.org/wiki/Peter_Drucker&http://en.wikipedia.org/wiki/Knowledge_worker - accessed 4/11/2011)</p>
Edmund Gettier	1963	<p><i>Gettier effect</i> "Is Justified True Belief Knowledge?" What conditions must be satisfied for a belief to become knowledge? For a proposition to count as knowledge it must (a) be believed, (b) it must be true, and (c) the believer must have good reason for their belief (http://www.facebook.com/pages/Is-Justified-True-Belief-Knowledge/106274476074389 - accessed 4/11/2011). It was named in honour of the American philosopher Edmund Gettier in 1963. His original article had a dramatic impact. It sparked a period of pronounced epistemological energy and innovation — all with a single two-and-a-half page article. There is no consensus, however, that any one of the attempts to solve the Gettier challenge has succeeded in fully defining what it is to have knowledge of a truth or fact. So, the force of that challenge continues to be felt in various ways, and to various extents, within epistemology. (http://www.iep.utm.edu/gettier/ - accessed on 8/11/2011)</p>

Consulting a series of sources, I was able to identify the following elements inherent to the concept *knowledge*:

- acquaintance with facts, truths, or principles, as from study or investigation;
- acquaintance with or understanding of a science, art, or technique;
- the fact or condition of being aware of something;
- the range of one's information or understanding of what has been perceived, discovered, or learned.
- the circumstance or condition of apprehending truth or fact through reasoning i.e. cognition;
- the state or fact of knowing, familiarity, awareness, or understanding gained through experience, association or study that germinates from the combination of data, information, experience, and individual interpretation;
- human faculty resulting from interpreted information;
- the sum of what is known and resides in the intelligence and the competence of people;
- facts, information, and skills acquired through experience or education;
- the theoretical or practical understanding of a subject; "things that are held to be true in a given context and that drive us to action if there were no impediments" (Andre Boudreau); and
- "Capacity to act" (Karl Sweiby)

(<http://www.businessdictionary.com/definition/knowledge.html><http://www.merriam-webster.com/dictionary/knowledge>; <http://www.thefreedictionary.com/knowledge>;
<http://www.marcusletter.com/Knowledge%20definitions.htm>; <http://oxforddictionaries.com/definition/knowledge>;
<http://philosophy.tamu.edu/~sdaniel/Notes/plato.html> – all accessed on 4/11/2011)

Concluding thoughts

Based on the preceding paragraphs, my epistemological view is that knowledge (as man or an individual's current collective understanding of reality, that which he/she believes to be the truth) is an evolving phenomenon that mankind has been trying to and will continue to try to analyse and understand. Knowledge has been passed on for millennia; from parent to child, from teacher/master to student, from one generation to the next. This has taken on the form of verbal narratives, pictures on (cave) walls and written records (from stone tablets to cyberspace). I find the following description insightful: *'Knowledge evolves. We may understand it as accumulated external and explicit information belonging to the community, being leveraged by tacit intrinsic insights which originate within individuals who then may act alone or*

cooperatively in order to control or integrate with their environment'
(<http://www.businessdictionary.com/definition/knowledge.html> – accessed on 4/11/2011)

This dissertation is aimed at obtaining a better understanding of the relationship between the funding of education and the quality of education in six diverse schools that are considered to be top performing schools in terms of their academic results in the National Senior Certificate examination in the Gauteng province of South Africa. Collecting and analysing the data from these schools will lead to a better understanding of the phenomenon. The information obtained during the investigation can be considered to be the truth and believable because of the integrity of the respondents and because data will be controlled and triangulation will be used to verify the factual basis of the data collected.

5.3 Theoretical and conceptual frameworks

The theoretical and conceptual frameworks for my dissertation was discussed in full in paragraph 1.6 of chapter one. In essence, this research project speaks to the fields of education law and financial management in education as subsets of the broader field of education management and leadership and the provision of quality education and the education production process.

5.4 Research approach

I have adapted the Fraenkel & Wallen' (2006: 19) model (see figure 5.1) to depict my view of the research process. Their exposition of the research process is depicted by the black and red lines. I have however, added three steps in green, that in my opinion form an integral part of the research process.

The decision on which approach to follow when embarking on a research project is guided by a number of factors. Three factors that play a major role, in my opinion, are the research question, the nature of the investigation and the researcher. The research problem, the sample, the location, time and

funding are all dimensions impacting on the nature of the research. The researcher, on the other hand, plays a major role in the sense that his/her research background (original field of study, training and experience as a researcher, personal preference, etc.) will strongly influence his decision on which approach to follow. In this case, I have decided to follow a qualitative approach from an interpretivist paradigm. This decision to adopt a qualitative approach is based on the exposition below and the reason for following the interpretivist paradigm is explained in paragraph 5.5.1.

[Legend: → = Usual sequence
→ = Most likely departures from the usual sequence
→ = My changes]

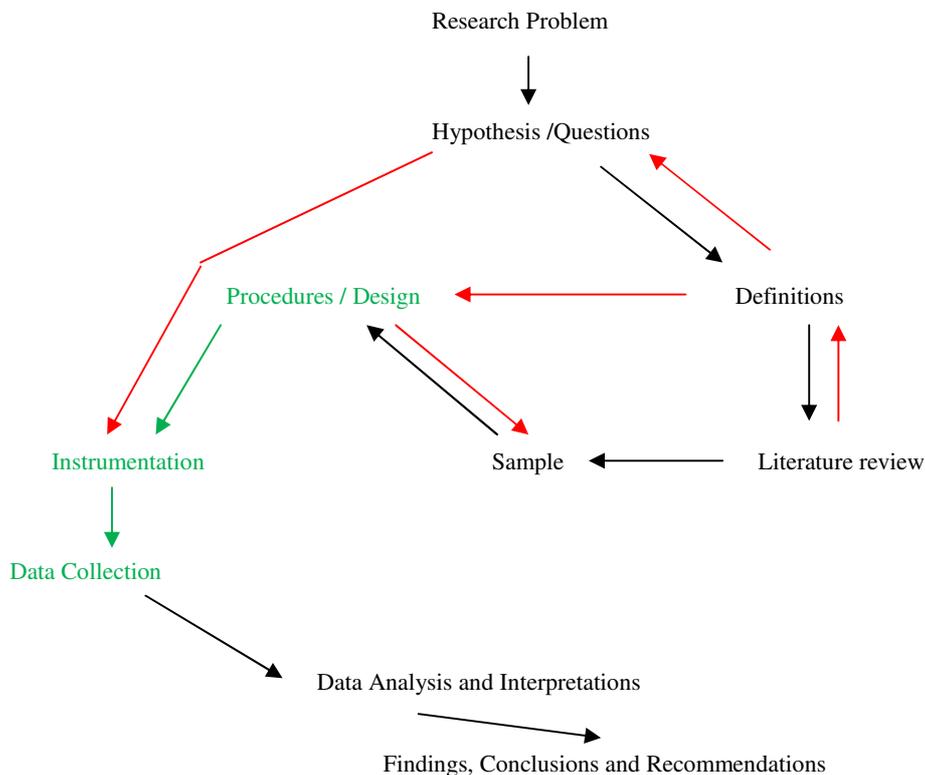


Figure 5.1: *The Research Process* (Adapted from Fraenkel & Wallen, 2006: 19)

According to <http://www.alzheimer-europe.org/Research/Understanding-dementia-research/-Types-of-research/The-four-main-approaches> - accessed

on 5/11/2011 - there are four approaches to research. They distinguish between quantitative, qualitative, pragmatic (mixed method) and advocacy / participatory (emancipatory) approaches to research. This is in line with what is found in the vast field of literature on research methodology. The first three approaches are fairly common and encountered in almost every discussion on research methodology. The latter however, is not as common. The focus is on marginalised / vulnerable groups; it seeks to bring change into the lives of the research subjects; the stance is not neutral and often involves a political agenda; research subjects are often involved as co-workers.

My understanding of the differences between the first three approaches is as follows. *Quantitative* research is generally associated with the positivist / postpositivist paradigm where researchers depart from one or more hypotheses where collected data is converted into numerical form so that statistical calculations can be made and conclusions drawn. A *qualitative* approach, on the other hand, is used where researchers want to get a better and deeper richer understanding of the phenomenon in question by analysing data in text form (it is not converted into numerical form and is not statistically analysed). On http://www.sagepub.com/upm-data/10981_Chapter_1.pdf (accessed on 6/11/2011), Cresswell is quoted as saying that *mixed methods* research is a research design with philosophical assumptions that guide the collection and analysis of both quantitative and qualitative data in a single study with a central premise that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach on its own (*my own rephrasing*).

When I considered my research question and the purpose of the research for my dissertation, it became evident that, because I (i) do not have a specific hypothesis about and (ii) want to obtain a better/deeper understanding of the problem, adopting a qualitative approach will serve me best. In order to get an even better grasp of the concept and to substantiate my choice, I consulted a series of sources and was able to identify the following as characteristics that typify the qualitative approach to research:

- a form of systematic empirical inquiry into meaning;
- an inquiry process of understanding a social or human problem;
- based on building a complex, holistic picture, formed with words;
- conducted in a natural setting;
- aimed at gaining a deep understanding and insight into people's attitudes, behaviours, value systems, concerns, motivations, aspirations, culture or lifestyles
- explores issues, attempts to understand phenomena and answer questions;
- through the analysis of unstructured information;
- the meaning emerges from the participants;
- flexible in that it can adjust to the setting (concepts, data collection tools, and data collection methods can be adjusted as the research progresses);
- encompasses a range of philosophies, research designs and specific techniques (including in-depth qualitative interviews; participant and non-participant observation; focus groups; document analyses) and a number of other methods of data collection;
- diverse methodological and theoretical approaches to study design and data analysis such as phenomenology; ethnography; grounded theory; action research; case studies; and a number of others
- results of qualitative research are descriptive rather than predictive;
- originated in the social and behavioural sciences: sociology, anthropology and psychology.

(<http://www.computing.dcu.ie/~hruskin/RM2.htm>;
<http://www.csulb.edu/msaintg--/ppa696/696quali.htm>;-
<http://www.qsrinternational.com/what-is-qualitative-research.aspx>;
http://wagner.nyu.edu/leadership/publications/files/Qualitative_Research.pdf;
<http://www.-qrca.org/displaycommon.cfm?an=1&subarticlenbr=6>;
http://www.mrc-bsu.cam.ac.uk/-cochrane/-handbook500/chapter_20/20_2_1_definition_of_qualitative_research.htm –
All accessed on 5/11/2011)

Qualitative research is a complex collection of different research methods complementing each other in trying to construct knowledge by analysing reality. In her discussion of qualitative research Merriam (1998: 5 – 8) identifies five characteristics of qualitative research which are depicted in Table 5.2.

Table 5.2: *Common Types of Qualitative Research (Merriam, 1998: 12)*

Type	Characteristic	Example
<i>Basic or generic</i>	▪ Includes description, interpretation, and understanding	▪ Meaning-making in transformational learning

	<ul style="list-style-type: none"> ▪ Identifies recurrent patterns in the form of themes or categories ▪ May delineate a process 	
<i>Ethnography</i>	<ul style="list-style-type: none"> ▪ Focuses on society and culture ▪ Uncovers and describes beliefs, values, and attitudes that structure behaviour of a group 	<ul style="list-style-type: none"> ▪ A study of twenty successful Hispanic high school students (Cordeiro & Carspecken, 1993)
<i>Phenomenology</i>	<ul style="list-style-type: none"> ▪ Is concerned with the essence or basic structure of a phenomenon ▪ Uses data that are the participant and the investigator's first-hand experience of the phenomenon 	<ul style="list-style-type: none"> ▪ The role of intuition in reflective practice (Mott, 1994) ▪ Practices inhibiting school effectiveness (Aviram, 1993)
<i>Grounded theory</i>	<ul style="list-style-type: none"> ▪ Is designed to inductively build a substantive theory regarding some aspect of practice ▪ Is 'grounded' in the real world 	<ul style="list-style-type: none"> ▪ A framework for describing developmental change among older adults (Fischer, 1993)
<i>Case study</i>	<ul style="list-style-type: none"> ▪ Is an intensive, holistic description and analysis of a single unit or bounded system ▪ Can be combined with any of the above types 	<ul style="list-style-type: none"> ▪ A comparative case study of power relationships in two graduate classrooms (Tisdell, 1993)

It was envisaged that elements of all five types of qualitative research will figure at different stages of dealing with different aspects of the topic during my research project; and it did. However, in the end, it was mainly be a multiple case study of how the relationship between funding and the quality of education manifests itself in the sample under investigation.

5.5 Methodology

The design of a research study begins with the selection of a topic and a paradigm. A paradigm is essentially a worldview, a whole framework of

beliefs, values and methods within which research takes place. It is this worldview within which researchers work.

<http://www.computing.dcu.ie/~hruskin/RM2.htm> - accessed on 5/11/2011

5.5.1 Research paradigm

Bush (2005(a): 2) is of the opinion that research attempts to produce new knowledge as a basis for insight into the educational process or in order to initiate improvements. Bassey (1999: 38) says '*Research is a systematic, critical and self-critical inquiry which aims to contribute to the advancement of knowledge and wisdom.*' Johnson (1994: 3), on the other hand, is of the opinion that '*Research is a focused and systematic enquiry that goes beyond generally available knowledge to acquire specialised and detailed information, providing a basis for analysis and elucidatory comment on the topic of inquiry*'. I find the latter useful for the purposes of this study, as this is exactly what I will attempt to achieve.

Merriam (1998: 3, 4) postulates that one can follow any one of three research paradigms in education. According to the first paradigm, the *positivist* approach, education is viewed as the object, phenomenon or delivery system to be studied. Knowledge is gained through scientific, objective and thus quantifiable experimental research. 'Reality' is viewed as stable, observable, and measurable. Morrison (2002: 15 – 17) identifies five main features of positivism, viz.:

- *People are the objects of educational research.*
- *Only observable phenomena, not feelings, can be considered valid knowledge.*
- *Knowledge is obtained through the collection of verifiable facts.*
- *Researchers should be objective or value free.*
- *Finding should be capable of generalisation beyond the location of the project.*

In the second paradigm, referred to as the *interpretive* approach, education is seen as a process and school as a lived experience. Knowledge is gained

through the understanding of the meaning of the process or experience. The mode of enquiry is inductive, hypothesis- or theory-generating, as opposed to being deductive or testing as in the case of the positivist approach. Individuals socially construct multiple realities. Morrison (2002: 17 – 21) identifies four main features of interpretivism, viz.:

- *Research is grounded in people's experience.*
- *People understand events in different ways.*
- *Research focuses on the meaning placed on events by participants.*
- *The emphasis is on words rather than numbers.*

The following information that I found at <http://www.qualres.org/HomeInte-3516.html> - (accessed on 15/11/2011) complements the preceding exposition of interpretivism well. The underlined emphases are mine. It is stated that ...

“the researchers' values are inherent in all phases of the research process. Truth is negotiated through dialogue. Findings or knowledge claims are created as an investigation proceeds. That is, findings emerge through dialogue in which conflicting interpretations are negotiated among members of a community. Pragmatic and moral concerns are important considerations when evaluating interpretive science. Fostering a dialogue between researchers and respondents is critical. It is through this dialectical process that a more informed and sophisticated understanding of the social world can be created. All interpretations are based in a particular moment. That is, they are located in a particular context or situation and time. They are open to re-interpretation and negotiation through conversation”.

In the third paradigm, **critical research**, education is considered to be a social institution designed for social and cultural reproduction and transformation. Marxist philosophy, critical theory and feminist theory are used as knowledge base for an ideological critique of power, privilege and oppression in educational practice.

As indicated previously, I have approached my research from an interpretivist / interpretive paradigm. I will be developing a hypothesis based on a growing

understanding of the phenomenon obtained from the respondents' lived experiences by conducting multiple case studies.

5.5.2 Case studies

Various authors define *case studies* in different ways. Yin (1994) defines a case study as an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. Miles and Huberman (1994: 25) view case studies as a phenomenon of some sort occurring in bounded context. They argue that if the phenomenon you are interested in studying is not intrinsically bounded¹⁶, it is not a case study. According to Cronbach (1975: 123) case studies are differentiated from other research designs by what he calls 'interpretation in context'. Wilson (1979: 448) conceptualises a case study as a process 'which tries to describe and analyse some entity in qualitative, complex and comprehensive terms not infrequently as it unfolds over the period of time'.

A combination of Merriam's view (1998: 29) that case studies are further defined by their special features and Olson in Hoaglin et al (1982:138 – 139)'s list of characteristics of case studies, can be summarised in the following manner:

Particularistic, meaning that case studies focus on a particular situation, event, programme, or phenomenon. This specificity of focus makes it an especially good design for particular problems. Case studies concentrate on the way particular groups of people confront specific problems taking a holistic view of the situation. It then suggests to the reader what to do or what not to do in a similar situation. It can examine a specific instance but illuminate a general problem. It may or may not be influenced by the author's bias.

¹⁶ The *boundedness* of a topic, is determined by how finite the data collection would be, that is, whether there is a limit to the number of people involved who could be interviewed or whether the amount of time for observation, is finite. If there is no end, actually or theoretically, to the number of people who could be interviewed or to observations that could be conducted, then the phenomenon is not bounded enough to qualify as a case study.

Descriptive, meaning that the end product of a case study is a rich, ‘thick’ description of the phenomenon under study. Case studies have also been labelled as being holistic, life-like, bounded, and exploratory. A case study can illustrate the complexities of the situation - the fact that not one but many factors contribute to it. They have the advantage of hindsight yet can be relevant in the present. They show the influence of personalities on the issue. They show the influence of the passage of time on the issue - deadlines, change of legislators, cessation of funding, etc. They include vivid material - appropriations, interviews, newspaper articles, and so on. They obtain information from a wide variety of sources. They could cover many years and describe how the preceding decades led to situation. Case studies spell out differences of opinion on the issue and suggest how these differences have influenced the result. Case studies present information in a wide variety of ways and from the viewpoints of different groups.

Heuristic, meaning that case studies illuminate the reader’s understanding of the phenomenon being studied. They bring about the discovery of new meaning: extend the reader's experience, or confirm what is known. A case study can explain the reasons for problem, the background of the situation, what happened, and why. They explain why an innovation worked or failed to work. They also discuss and evaluate alternatives not chosen. Case studies evaluate, summarise, and conclude, thus increasing its potential applicability.

Stake (1981) in Merriam (1998: 31) claims that knowledge gained from case studies is different from other research knowledge in four important ways, namely: it is more concrete; more contextual; more developed by reader interpretation, and based more on reference populations determined by the reader. Adelman et al (1984: 101) have identified the following advantages of case study research. Case study(ies) ...

- *data is ‘strong in reality’.*
- *allow for generalisation.*

- *recognise the complexity of ‘truth’ and allow for alternative interpretations.*
- *produce ‘rich descriptions’ of events.*
- *may be used to promote change.*

Case studies, however, also have several limitations. According to Bush (2005(a): 9), “*the case may focus on a unique institution or phenomenon, which may not be relatable to other schools. This is more likely with a single case study design than with a multiple design although individual cases within the latter may be unique*”. Linked to the above, it is often claimed that the findings of case studies are seldom susceptible to generalisation. It has also been alleged that case study approach lacks ‘scientific rigour’ because each case study depends on the nature of the phenomenon investigated, and the particular circumstances in which it occurs rather than a set of rules that dictates design. Another problem associated with case studies is the fact that researchers may find that they have ‘*differential access*’ to people, documents and events and this may distort findings.

My decision to use a multiple case study design, stems from the fact that this design leads to in-depth understanding and interpretation rather than hypothesis testing. Thus meeting the needs of the research for my dissertation

5.5.3 Sampling

Researchers are interested in generalizing to specific groups. The group you wish to generalize to is referred to as the **population**. When studying any phenomenon, researchers can very seldom study the population in its totality; they have to limit their investigation to a sample of an entire population and then attempt to generalize the commonalities of the group that they investigated as being representative of the entire population. A research population is generally a large collection of individuals or objects that is the main focus of a scientific inquiry. Populations are often defined in terms of demography, geography, occupation, time, care requirements, diagnosis, or

some combination of the above (<http://www.answers.com/topic/target-population>;<http://www.childrensmemory.org/-stats/definitions/pop.htm>;<http://www.experiment-resources.com/research-population.html> – All accessed on 8/11/2011).

However, due to the large sizes of populations, researchers often cannot test every individual in the population because it is too expensive and time-consuming. They therefore restrict their investigation to a representative sample of the population. The concept *research sample* is typified by the following characteristics:

- it is a portion, piece, or segment that is representative of a whole;
- the group you are interested in generalizing to;
- the process of selecting units (e.g., people, organizations) from a population of interest;
- a random (or a wishfully "representative") subset of a population;
- a subset of individuals from within a population to estimate characteristics of the whole population.

(<http://www.thefreedictionary.com/sample>;
<http://www.socialresearchmethods.net/kb/-sampling.php>;
[http://en.wikipedia.org/wiki/Sampling_\(statistics\)](http://en.wikipedia.org/wiki/Sampling_(statistics)) – All accessed on 8/11/2011)

There are many methods of sampling when doing research. I found the following exposition on http://changingminds.org/explanations/research/sampling/choosing_sampling.htm (accessed on 8/11/2011) very comprehensive and useful in:

- (i) explaining the different methods of sampling and
- (ii) selecting sampling methods for research purposes.

Probability methods. This is the best overall group of methods to use as you can subsequently use the most powerful statistical analyses on the results.

Table 5.3: *Probability methods.*

Method	Best when
<i>Simple random sampling</i>	Whole population is available.
<i>Stratified sampling</i>	There are specific sub-groups to investigate (e.g.

(random within target groups)	demographic groupings).
<i>Systematic sampling</i> (every nth person)	When a stream of representative people are available (e.g. in the street).
<i>Cluster sampling</i> (all in limited groups)	When population groups are separated and access to all is difficult, e.g. in many distant cities.

Quota methods. For a particular analysis and valid results, you can determine the number of people you need to sample. In particular when you are studying a number of groups and when sub-groups are small, then you will need equivalent numbers to enable equivalent analysis and conclusions.

Table 5.4: *Quota methods.*

Method	Best when
<i>Quota sampling</i> (get only as many as you need)	You have access to a wide population, including sub-groups
<i>Proportionate quota sampling</i> (in proportion to population sub-groups)	You know the population distribution across groups, and when normal sampling may not give enough in minority groups
<i>Non-proportionate quota sampling</i> (minimum number from each sub-group)	There is likely to a wide variation in the studied characteristic within minority groups

Selective methods where you target particular groups.

Table 5.5: *Selective methods*

Method	Best when
<i>Purposive sampling</i> (based on intent)	You are studying particular groups
<i>Expert sampling</i> (seeking 'experts')	You want expert opinion
<i>Snowball sampling</i> (ask for recommendations)	You seek similar subjects (e.g. young drinkers)
<i>Modal instance sampling</i> (focus on 'typical' people)	When sought 'typical' opinion may get lost in a wider study, and when you are able to identify the 'typical' group
<i>Diversity sampling</i> (deliberately seeking variation)	You are specifically seeking differences, e.g. to identify sub-groups or potential conflicts

Convenience methods. Good sampling is time-consuming and expensive. Not all experimenters have the time or funds to use more accurate methods. There is a price, of course, in the potential limited validity or reliability of results.

Table 5.6: *Convenience methods.*

Method	Best when
<i>Snowball sampling</i> (ask for recommendations)	You are ethically and socially able to ask and seek similar subjects.
<i>Convenience sampling</i> (use who's available)	You cannot proactively seek out subjects.
<i>Judgment sampling</i> (guess a good-enough sample)	You are expert and there is no other choice.

Ethnographic methods. When doing field-based observations, it is often impossible to intrude into the lives of people you are studying. Samples must thus be surreptitious and may be based more on who is available and willing to participate in interviews or studies.

Table 5.7: *Ethnographic methods.*

Method	Best when
<i>Selective sampling</i> (gut feel)	Focus is needed in particular group, location, subject, etc.
<i>Theoretical sampling</i> (testing a theory)	Theories are emerging and focused sampling may help clarify these.
<i>Convenience sampling</i> (use who's available)	You cannot proactively seek out subjects.
<i>Judgment sampling</i> (guess a good-enough sample)	You are expert and there is no other choice.

Records of the results of the National Senior Certificate examination results obtained from the Department of Basic Education were used as a data base from which the schools for my sample were selected. A combination of stratified, purposive and convenience sampling techniques was used to identify the schools for the research project.

Six schools were selected to investigate the relationship between the funding of schools and the quality of the education they provide. These schools are classified as schools that provide quality education because they have a proven track record of a 100% pass rate in the National Senior Certificate examinations for three consecutive years. The six schools represent three categories of schools. The first category represented independent schools, the second category represented quintile five schools and the third category of schools represented schools from quintiles four and five that are referred to as so-called transformed schools. This makes it a stratified sample.

Independent schools were chosen because the assumption is that they are well funded with good facilities. Quintile five schools are public schools that, by definition, represent schools from strong socio-economic communities with good facilities. The 'transformed' schools are schools where the student profiles have changed from monoculture previously white, to a fully integrated multicultural student profile that is now predominantly black. This makes it a purposive sample.

The second set of criteria that was used to select the schools for my research sample related to where the schools are situated. The sample schools all had to be situated in the Gauteng province of South Africa. The schools selected for the sample are all within a radius of fifty kilometres from my research basis to make for easy access for both the initial investigation and possible follow up visits. This makes it convenience sampling.

The socio-economic circumstances of all the schools vary; the independent schools represent a parent community from very strong socio-economic backgrounds, the socio-economic profiles of the four public schools vary from school to school. All the parents of all the schools have high expectations of the schools in terms of academic performance based on the schools' track record in the National Senior Certificate examination.

The fact that all the schools selected for my sample, had to meet all the criteria set out above, were chosen to come from a specific area within the Gauteng

province of South Africa, makes the sampling method used a combination of purposive, stratified and convenience sampling methods

5.6 Data collection

Data was collected on each of the sample schools for the period 2007 to 2009. Three categories of data were collected. The first category of data had to enable me to create a profile of the school. The second category of data had to shed light on factors enabling the sample schools to maintain their level of academic performance. The third category of data had to serve as triangulation by comparing the data obtained in the first two categories with the opinions of respondents based on the criteria developed by the European Union.

5.6.1 Questionnaire

A multipurpose research instrument (attached as ANNEXURE 3) was designed to achieve the objectives of the previous paragraph. It consists of three sections.

Section A dealt with

- demographic information about the school,
- demographic information about the School Management Team (SMT),
- demographic information about the members of the Finance Committee,
- demographic information about the staff that taught the grade 12 learners for the period under investigation,
- information regarding the school's budget for the period under investigation.

Section B served as the basis for a semi-structured interview with the school principal on

- information regarding special programmes / efforts to prepare the grade 12 learners for the senior certificate examination,

- an opinion on programmes / efforts to prepare the grade 12 learners for the senior certificate examination,
- evidence to substantiate the information provided in the two preceding bullets above

Section C of the instrument contained a matrix based on the sixteen indicators of the quality of school education developed by the European Commission in 2000, and was used to probe the quality of education in the sample schools.

5.6.2 Semi-structured interviews

Section B of the research instrument was used for this purpose. An appointment was made with the principal of each school. I requested to speak with them for ninety minutes. The entire research instrument was e-mailed to the respondents beforehand requesting that:

- Section A be completed to expedite the discussion thereof on the day of the interview;
- Section B be studied prior to the interview; and
- Section C be studied for discussion on the day of the interview.

On arrival the purpose of the research was again communicated to the respondent and a hard copy of the research instrument was given to the respondent for his/her perusal during the interview. The respondent was requested to sign the informed consent letter and permission to record the proceedings was confirmed. I used *Audacity's* free software on my computer to record the discussion digitally. Apart from the digital recording of the discussions, field notes were taken during all the interviews. The digital recordings were transcribed and consolidated with the field notes. Where necessary follow-up phone calls were made to confirm certain information prior to making a copy thereof available to the respondent for his/her approval and permission to use the information pertaining to his/her school for my dissertation. All the respondents were very friendly and open regarding all the information required of them.

Subsequent to dealing with the information required based on Sections A and B of the research instrument, respondents were briefed in detail on Section C. The fact that it was to serve a triangulation function was highlighted and respondents were requested to complete Section C at their leisure before e-mailing it back to me.

5.7 Data analysis

The national data base on the National Senior Certificate examination (NSCE) results obtained from the Department of Education was analysed to form a basis for the identification and selection of the sample schools in the Gauteng province of South Africa.

The data obtained from Section A of the research instrument was analysed by using an Excel spread sheet that I designed for this purpose. This instrument is attached as ANNEXURE 5. The transcripts of the semi-structured interviews obtained from Section B of the research instrument were analysed by creating tables of data and then using coding for further analysis and crystallisation of the data. The data obtained from Section C of the research instrument was analysed by making use of a combination of the methods used above. The data was transferred to an Excel spread sheet that I designed to analyse the data. The information obtained from this instrument was then also subjected to a process of coding to analyse the data.

The analysed data forms the basis for the discussions, tables and figures contained in Chapter six of this dissertation

5.8 Trustworthiness, Validity and Reliability

Research data needs to be *authentic, believable, valid and reliable* (Charles & Mertler, 2002: 40, 41).

Authenticity and believability are determined by the tests of external and internal criticism. *External criticism* has to do with determining whether the data comes from legitimate sources. This test is one of analysis and judgement and uses no statistical calculations. *Internal criticism* has to do with data accuracy and lack of bias. Data for this study was collected from the sample schools and the Department of Education as primary sources. The principal and the officials concerned had to sign off the information provided to ensure accuracy and authenticity. The methods used for data analysis would ensure accuracy and at the same time limit bias.

Validity. The sampling methods as well as the methods used for collecting and analysing the data in this study were intended to ensure that the data depict or deal directly with the topic under consideration to guarantee validity.

Triangulation was used with regard to both the financial information provided by schools as well as the results in the SCE to build coherent justification for themes.

Reliability refers to the extent to which data is consistent.

Creswell (1994: 196) distinguishes eight strategies to examine the accuracy of findings; they are arranged from the most frequently used and easy to implement to those occasionally used and difficult to implement:

- *Triangulate* different data sources of information by examining evidence from the sources and using it
- Use *member-checking* to determine the accuracy of the qualitative findings through taking the final report or specific descriptions or themes back to participants and determining whether these participants feel that they are accurate.
- Use *rich, thick description* to convey the findings. This may transport readers to the setting and give the discussion an element of shared experiences.

- Clarify the *bias* the researcher brings to the study. This self-reflection creates an open and honest narrative that will resonate well with readers.
- Also present *negative or discrepant information* that runs counter to the themes. Because real life is composed of different perspectives that do not always coalesce, discussing contrary information adds to the credibility of an account for a reader.
- Spend *prolonged time in the field*. In this way the researcher develops an in-depth understanding of the phenomenon being studied and can convey detail about the site and the people that lends credibility to the narrative account.
- Use *peer debriefing* to enhance the accuracy of the account. This process involves locating a person (a peer debriefer) who reviews and asks questions about the qualitative study so that the account will resonate with people other than the researcher.
- Use an *external auditor* to review the entire project. As distinct from the peer debriefer, this auditor is new to the researcher/research team and the project and can provide an assessment of the project throughout the process of research or at the conclusion of the study. The role is similar to that of a fiscal auditor, and specific questions exist that auditors might ask.

Despite the fact that a comprehensive / representative sample has been selected, no claims of completeness will be made. Because it is a qualitative study, the data obtained and the interpretation thereof only reflect my understanding of the problem. Every effort was however made to ensure authenticity and believability by applying both external and internal criticism. The first seven of the eight strategies listed above were used to ensure validity and reliability prior to submission for examination purposes. The eighth strategy will come into play when the research report is submitted for examination purposes.

The analysed quantitative data from Section A of the questionnaire formed the basis for an in-depth discussion on these findings indicating trends where possible. The information obtained from Section B of the questionnaire provided rich qualitative data that enriched our understanding of:

- the efforts to improve the school's results in the annual senior certificate examinations as an indicator of the quality of education in that school,
- the impact of the management of the funds of a school on efforts to improve the schools' results in the annual senior certificate examinations as an indicator of the quality of education in that school.

Trustworthiness and validity were ensured by:

- using the data obtained through Section C of the research instrument for purposes of *triangulation*;
- *member-checking* the information obtained through Sections A and B of the research instrument by having the respondents sign off the reports on their respective schools;
- *rich, thick descriptions* to share in the experiences of the respondents;
- preventing *bias* to affect the data and analysis thereof by being constantly aware of the possibility of bias and subjectivity; and
- using my supervisor as a sounding board *for peer-debriefing* and to guard against the possibility of bias and subjectivity;
- finally this dissertation will be subjected to *external auditing* when it is assessed by both the internal and external examiners of my dissertation.

5.10 Ethics

The research proposal was subjected to internal scrutiny to a standing Departmental committee before I submitted an application to the Faculty of Education's Ethics Committee for permission to proceed with the field work of my research in line with the established official procedures prescribed by the University of Pretoria and the Faculty of Education's policy documents. Permission was obtained from the Faculty's Ethics Committee before I

embarked on the process of collecting the data. A copy of the original ethical clearance certificate issued by the Faculty's Ethics Committee on completion of the research, is included as ANNEXURE 1 to this dissertation.

All respondents took part in this research on a voluntary basis and they were free to withdraw from the process at any time if they became uncomfortable with the process. This was spelt out verbally beforehand and reiterated before they were requested to sign the letter of informed consent. Throughout the process of application, the collection of data and the subsequent writing of the research report, the identity of all parties and respondents were safeguarded by using aliases and code names for institutions as well as individual respondents, thus guaranteeing anonymity.

5.11 Storage of data

All correspondence, collected data and related documentation as well as all digital and electronic records related to the research process in its entirety, will be stored according to the procedures prescribed in the University of Pretoria's regulations in this regard.

The original documents will be stored in the facilities of the Department of Education Management and Policy Studies by my supervisor. A second set of records will be stored at the facilities of the researcher. Both sets of records will be kept for a period of fifteen years. Both a *PDF* and *Word* version of the approved dissertation will also be kept in the University's archives.

5.12 Limitations

My lack of experience as a researcher was the biggest limiting factor in my research. It resulted in much time being wasted and having to redo a number of aspects of my investigation. My close involvement in the research theme through my postgraduate teaching necessitated a constant awareness to guard against subjectivity and bias.

The fact that I did case study research balanced the size of the sample because the purpose of the research was to develop an understanding of the relationship between funding and the quality of education and not to test a hypothesis.

Obtaining data was not difficult. What was more important was to use the data in such a way that the anonymity of the sample schools and the respondents were always safeguarded. Because I used official and primary sources of information, the reliability of the data is secure. None of the data was really sensitive as it is all available in the public domain of the specific school communities.

The reliability of the data obtained from the interviews was not in jeopardy as I was able to validate the information by cross checking with information from Sections A and C.

Despite having carefully designed the research instrument, a number of aspects that requires further investigation have emerged from the analysis and interpretation of the data that were not anticipated initially. These are addressed in the recommendations for further investigation in paragraph

5.13 In closing

In this chapter I started out by giving an exposition of my epistemological and theoretical frameworks. I then gave a detailed description of the research approach, research design, data collection and data analyses, culminating in a discussion on trustworthiness and the limitations applicable.

In chapter six I will discuss the analysed data and findings that emanated from the analysis of the data obtained through the processes described in chapter five. This in turn will serve as a basis for the discussion of the findings and recommendations in chapter seven.

CHAPTER 6: DATA ANALYSIS AND INTERPRETATION

6.1 Introduction

The instrument used to analyse the data collected in Sections A and C of the research instrument is attached as ANNEXURE 3. The unprocessed data collected during the research, is attached to this report as ANNEXURE 4. The analysis of the data collected from the respondents based on the questions in Section A of the research instrument is attached to this report as ANNEXURE 5.

In this chapter, I will interpret and comment on the data contained in ANNEXURES 4, 5 and 6. In paragraph 6.2 the data collected based on the questions in Section A of the research instrument will be reported and discussed to understand the profiles of the sample schools. In paragraph 6.3 the responses to the questions contained in Section B of the research instrument will be reported. Paragraph 6.4 contains a discussion of the data based on the respondents' reactions to Section C of the research instrument. Paragraph 6.5 contains a summary of this chapter and sets the scene for Chapter 7.

6.2 Section A: Demographic and other information

6.2.1 *Enrolment*

Table 6.1 shows that there is an extreme spread in the number of students enrolled at the sample schools. The two independent schools have a smaller number of students than the public schools. The biggest school had a total enrolment of 1972 students in 2007, while the school with the smallest enrolment had only 193 students in the same year. The average enrolment for the six schools for the period studied was 974.8 students. This was made up of 471.3 male and 503.6 female students.

Enrolment as a factor thus indicates that, with the exception of one independent school, all the other schools are fairly large in South African terms. This provides a fairly broad income base for the schools in question since all the schools charge school fees. It also shows that the sexes are more or less evenly represented in the sample schools.

Table 6.1: *Total enrolment of the sample schools*

Enrolment			Sample schools					
		AVG	I	II	III	IV	V	VI
2007	M	469.0	96	269	956	642	481	370
	F	516.0	97	290	1016	666	584	443
	Total	985.0	193	559	1972	1308	1065	813
2008	M	482.3	121	275	956	638	533	371
	F	494.0	115	274	942	641	545	447
	Total	976.3	236	549	1898	1279	1078	818
2009	M	462.5	164	267	864	633	469	378
	F	500.7	141	273	861	632	604	493
	Total	963.2	305	540	1725	1265	1073	871
Overall averages	M	471.3	48.3%					
	F	503.6	51.7%					
	Total	974.8						

This picture is essentially duplicated when the data in table 6.2 is analysed. School I again had the smallest number of learners in 2007 (48) and School III again had the biggest enrolment (437) in grade twelve. The average enrolment for the six schools for the period under investigation was 191.4 grade twelve learners. This was made up of 89.7 male and 101.8 female students. Again the sexes are more or less evenly represented.

The total number of students in a school and in grade twelve specifically impact on the:

- physical facility requirements (classrooms, Information Technology laboratories, library, toilets and sporting facilities)
- staffing requirements and student-teacher ratios

- income base; irrespective of whether the school is funded from private or public funds, or both.

Table 6.2: *Grade 12 enrolment of the sample schools*

Enrolment in Gr 12			Sample schools					
		AVG	I	II	III	IV	V	VI
2007	M	84.8	21	57	201	101	91	38
	F	102.0	27	69	236	127	94	59
	Total	186.8	48	126	437	228	185	97
2008	M	92.2	30	50	212	125	88	48
	F	101.8	37	53	190	129	129	73
	Total	194.0	67	103	402	254	217	121
2009	M	92.0	44	56	186	148	92	26
	F	101.5	47	53	186	140	106	77
	Total	193.5	91	109	372	288	198	103
Overall averages	M	89.7	46.8%					
	F	101.8	53.2%					
	Total	191.4						

6.2.2 Drop-out rate

In the context of this research project, the term *drop-out rate* is used when referring to the attrition of students enrolled at schools to be educated from grades eight to twelve with the aim of sitting for the National Senior Certificate examination (hereafter referred to as the NSCE). With the exception of School VI, where learners come from less privileged socio-economic situations, all schools show a low drop-out rate. An average drop-out rate of five per cent over the five year period seems to be within reasonable limits. The situation in School VI appears to be improving; according to the respondent this can be attributed to hands-on management by the school and the ethos of the school. All the schools reported that most students that leave school are in the lower grade and that the drop-out rate for grades ten to twelve is negligible. This is consistent with the findings of question 17 in Section C of the questionnaire as discussed and reflected in Table 6.21 of paragraph 6.4. None of the schools offered any specific reason as explanation for the drop-out rates in their schools. The majority of them did not perceive this to be a serious problem. So the drop-out rate does not seem to

constitute a significant problem in terms of the academic performance of any of the schools which formed part of the investigation.

Table 6.3: *Drop-out rate for Grades 8 to 12*

Drop out rate Gr 8 -12 (%)	Sample schools						
	AVG	I	II	III	IV	V	VI
2007	5.9	9.3	0	0.0	1.5	4.8	20
2008	5.3	7.2	0	0.0	1.7	4.6	18
2009	4.1	10.1	0	0.0	2.5	3.9	8
Average	5.1	8.9	0.0	0.0	1.9	4.4	15.3

6.2.3 University entrance

Admission to studies at institutions of higher learning (universities) is not automatic in South Africa; a student has to include specific subject combinations in his or her offering for the National Senior Certificate examination in order to qualify for admission to university baccalaureate studies.

Schools I to IV specifically mentioned that university entrance is an aspect that they actively promote in the school community. School VI is situated in a community with a lower socio economic status (hereafter SES) where this is not such a high priority and although the school has a 100% pass rate, not many students pursue tertiary studies at academic institutions. Many enter the labour market directly or pursue studies of a technical nature after leaving school. Further scrutiny shows three distinct groupings within Schools I to V; School I at 98%, I and III at 84% and IV and V at 75%. Without directly investigating the matter further an interpretation thereof is mere speculation, but I suspect that it is a combination of socio economic status and the ethos of the school. However, this being a qualitative study, I have not factored it in as such because it will require an extensive quantitative investigation of both external SES of the community, SES of the parents as well as internal SES of the student within the school environment (see the work by UW-Madison professors Adam Gamoran and Geoffrey Borman reviewing the 1966 “Coleman Report” 40 years down the line in this regard) to do justice to SES

as a determining factor in academic performance. An important aspect that will have to be factored into such an investigation is the work of Rumberger and Willms (1992) quoted in Wildeman (2008: 64) who argue *that schools that do not have significant proportions of middleclass parents have low levels of school resources and poorer academic outcomes. These authors make the point that the racial and socio-economic composition of schools plays a vital role in determining the academic climate and academic outcomes of schools.* Another dimension that will have to feature in such an investigation is the controversy on the relative effectiveness of public and private schools (Raudenbush and Bryk, 1986: 1). The data in Table 6.4 makes for interesting reading when compared to the international information discussed on page 217.

Table 6.4: *University entrance admissions*

University Entrance admission (%)	Sample schools						
	AVG	I	II	III	IV	V	VI
2007	69.5	93	99	75	62	70	18
2008	80.0	88.9	97	90.36	78	81	45
2009	76.0	69.9	98	85.9	86	73	43
Average	75.2	83.9	98.0	83.8	75.3	74.7	35.3

6.2.4 Distinctions

A final score of 80% or more in a subject in the NSCE is referred to as a distinction. A distinction in any given subject indicates that the candidate has mastered the content and possesses a sound knowledge base in that particular field. It is not only a reflection of the student's input in preparing for the examination, but it is also indicative of the quality of the education provided by the teacher that teaches the subject area. Although the total number of distinctions in the NSCE obtained in a given school is often used as a marketing tool, this number, as indicator of the quality of education, could be misleading because the number of candidates that sat for the examination is not taken into consideration. The moment that it becomes part of the equation however, it becomes significant; the average number of distinctions per candidate that sat for the NSCE can now be calculated. The average number of

distinctions per candidate that wrote the NSCE for the period under investigation was 1.5.

It is clear from table 6.5 that Schools II (independent) and III (public) are doing particularly well in this regard. It would thus appear that the average number of distinctions can even be used to distinguish between top performing schools as indicator of the quality of education provided. It is also important to state that although this is a significant indicator of quality, it cannot be used in isolation. Again, School VI's performance is probably attributable to factors related to SES. A more comprehensive view of a number of indicators is required; these could include the difference in funding levels and more stringent admission requirements.

Table 6.5: *Distinctions in the NSCE*

NSCE Distinctions		Sample schools					
Total # of distinctions	AVG	I	II	III	IV	V	VI
2007	238.5	74	339	616	229	164	9
2008	321.5	73	376	807	336	292	45
2009	327.0	95	386	800	435	216	30
Average	295.7	81	367	741	333	224	28
Average /Gr 12 Learner	1.5	1.2	3.3	1.8	1.3	1.1	0.3

6.2.5 Subject averages

One of the factors used to assess the performance of teachers providing education in grade twelve subjects, is the subject average obtained by the candidates that sat for the NSCE in that subject. The subject average for a given subject is considered to be an important indicator of the ability of the teacher and the quality of education provided by said teacher in that specific subject. The subject average obtained is a determined by a number of factors. These include the teacher's qualifications, experience at his level, dedication, extra time and effort put into preparing candidates for the examination and motivation of students to perform at the best of their ability. When the average

of all the subjects for a given school is calculated, this likewise, serves as a collective indicator of the quality of the performance of a school.

When calculating the overall average obtained by all the candidates in all the subjects in the NSCE, it is interesting to note from Table 6.6 that Schools II, III, IV and V are all either on, or above the total average performance of all the learners that wrote the specific examination. This is consistent with the performance of the schools as indicated by the average number of distinctions per candidate discussed in the previous paragraph.

When this is considered in conjunction with the average number of distinctions referred to in the previous paragraph, a more comprehensive picture regarding the school's performance starts to emerge.

Table 6.6: *Overall averages in NSCE*

Subject averages in NSCE		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
2007	60.0	58.9	65.0	65.3	66.8	55.9	48.0
2008	63.6	54.9	75.3	68.9	68.9	64.4	49.0
2009	57.0	52.5	59.8	68.5	56.9	59.6	44.5
Average	60.2	55	67	68	64	60	47

An average of between 53 and 55% in the NSCE in any subject is considered to be within the norm. As discussed in Chapter 2 paragraph 2.3, language, mathematics and physical science, are used as indicators of the quality of education in many international tests (TIMSS, PISA, SACMEQ etc.). In all three these subject areas, the mean average for all the schools is 60% or higher. When looking at these three fields of study that are used as international indicators of quality education and the information contained in Tables 6.7, 6.8 and 6.9, it is again evident that, with the exception of the performance of School VI in physical science, all the schools are performing well in all three subjects. School VI is thus an example where, that although a school may not necessarily be a top performer in all subjects, it is possible to consistently maintain a 100% pass rate. The quality of the education in this

school is also not necessarily lower than in any of the other schools; the lower averages are probably due to socio-economic environmental factors. It will of necessity also impact on student's career choices.

Schools II, III and IV did extremely well in all three subjects. In English, they all had an average of more than 72%. In Mathematics, these three schools all had an average of 68% or more and in Physical Science, they obtained an average of 64% between the three of them. In all three instances, School II was the top performer with averages of 75%, 71% and 66% respectively in English, Mathematics and Physical Science respectively.

Table 6.7: *English averages in NSCE*

English		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
2007	66.9	66.9	73.7	70.54	70	68	52
2008	68.4	64.2	76.1	73	81.3	69	47
2009	66.3	61	74.7	72	71.2	63	56
Average	67.2	64	75	72	74	67	52

Table 6.8: *Mathematics averages in NSCE*

Mathematics		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
2007	61.7	59.9	71	61.3	60	60	58
2008	68.4	60.5	79.5	72	77.2	63	58
2009	61.6	60.7	63.5	70	67.5	51	57
Average	63.9	60	71	68	68	58	58

Table 6.9: *Physical science averages in NSCE*

Physical Science		Sample schools					
Overall average	AVG ¹⁷	I	II	III	IV	V	VI
2007	61.4	69.4	68.5	62.42	63	60	45
2008	60.7	55.5	70.6	67	66.3	63	42
2009	53.9	51.4	59.6	64	56.6	51	41
Average	58.7	59	66	64	62	58	42

¹⁷ No significance can be read into the fact that the averages for this subject have shown a steady decline over the three years under investigation.

6.2.6 *Demographic information about the School Management Team (SMT)*

In the South African context, schools are managed by a school management team (hereafter referred to as the SMT). In public schools funded by the state, the SMT normally consists of the Principal, the Deputy Principal(s) and the Heads of Departments. The number and composition of the SMT vary according to the size of the school. In independent schools the composition of the SMT varies from school to school. In most instances it is made up of the principal plus a varying number of senior staff members (both academic and administrative). Both the independent schools in the sample had heads of departments for the different subject areas.

The question on total experience did not include any experience in the private sector; it only referred to the incumbents' experience in teaching. Experience at the current post level referred to the total experience of the incumbent in a given position whereas the question on his/her experience in the current school referred to experience at their present position in this specific school. It does not include experience at lower post levels in the same school.

Qualifications were categorised based on the number of years of training. It was taken as a given that all members of staff referred to in this research project would at least have a four year qualification in order to teach. For the purposes of this research project '*Advanced training*' refers to all additional academic training that members of staff underwent that is education related such as degree studies or educational specialisation. It thus excludes training that cannot be directly linked to teaching a subject, educational support functions and / or the management of schools.

The question on '*Awards*' refers to recognition given to the individual by organisations outside of the school for outstanding performance in his or her field of expertise.

On average principals in the sample schools have approximately 28 years of experience in total and an average of 6 years of experience as principal at their current school. It is interesting to note that they have varying fields of specialisation and that on average they have studied for an additional three years after completing their initial training. Three of them have a Master's qualification in education management. It is further interesting to note that, in four instances, it is their first tenure as principal and that in three instances they have been at the particular school for five years or more. It would appear as though specialisation and experience contribute to the ability of teachers to achieve outstanding results.

Table 6.10: *Demographic information about the Principals*

Principal		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	27.7	20	29	29	33	25	30
Exp curr level	6.0	5		2	11	7	5
At this school	6.1	5	8	2	11	5.5	5
Qualifications	4.0	4	4	4	4	4	4
Specialisation		Geogr/Afr/EdMan ¹⁸	Geogr/PhysEd ¹⁹	Hist ²⁰	Maths ²¹	Hist/Ed Man ²²	EdMan ²³
Advanced training	7.0	8	6	8	6	8	6
Awards	0.2	0	0	0	0	1	0

With the exception of School I, all the schools have more than one and in three instances three deputy principals. A profile of all the deputy principals combined is depicted in table 6.11 and is self-explanatory. It is noteworthy that most of the deputy principals have previously been a deputy principal at another school. They have on average undergone 3.1 years of further training and a significant number of them have received awards as recognition for outstanding work in education. Five of the fourteen deputy principals have a

¹⁸ Majored in Afrikaans and Geography. Busy with Master's in Education Management.

¹⁹ Majored in Geography and Physical Education. FDE in Education Management.

²⁰ Majored in History. B Ed Hons in Education Management.

²¹ Majored in Mathematics and Economics. B Ed Hons in Education Management.

²² Honours in History. Busy with Master's in Education Management

²³ Majored in Mathematics. FDE in Education Management.

Master's degree in varying fields of specialisation; only one of them specialised in education management while the rest of them mostly pursued a qualification in their field of specialisation.

Table 6.11: *Demographic information about the Deputy Principals*

Deputy Principal		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	25.5	This school has 1 Deputy Principal	This school has 2 Deputy Principals	This school has 3 Deputy Principals	This school has 3 Deputy Principals	This school has 3 Deputy Principals	This school has 2 Deputy Principals
Exp curr level	9.4						
At this school	6.7						
Qualifications	4.0						
Specialisation	0.0						
Advanced training	7.1						
Awards	2.3						

The two independent schools do not have a formal position of HOD. In these schools, teachers function in subject teams where individual members play varying leadership roles depending on the situation. In the four public schools, depending on the size of the school, the number of official HOD positions, paid for by the state, varies between four and eight. In three of the public schools, persons are appointed as HODs in addition to the HODs on the formal staffing establishment. These appointments are made by the SGB and are funded from public money in the school fund. The combined profile of all the different HODs from the respective schools depicted in Table 6.12 is based on the information pertaining to the HODs forming part of the official staffing establishment of the public schools only. On average the HODs have 22.6 years of teaching experience in total. Although some of the HODs have held similar positions at previous schools, the majority have been holding tenure (7.6 years on average) at the same school since being appointed as HOD. HODs have undergone 3.6 years of further training in addition to the four years of initial training. It is evident that this training mostly consisted of an honours degree as specialisation in their respective fields of study. Most of the

HODs have received recognition for outstanding work in the form of either merit awards (some as many as three times) or receiving the National Teachers' Award at provincial level.

Table 6.12: *Demographic information about the HODs*

Heads of Departments		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	22.6	This school has 0 HODs	This school has 0 HODs	This school has 8 HODs	This school has 7 HODs	This school has 6 HODs	This school has 4 HODs
Exp curr level	7.9						
At this school	7.6						
Qualifications	4.0						
Specialisation	0.0						
Advanced training	7.6						
Awards	0.8						

6.2.7 Demographic information about the Grade twelve teachers

Table 6.13 depicts the demographics of the grade twelve teachers in the six schools in the sample. Apart from having 20.5 years of teaching experience on average, the grade twelve teachers have been teaching grade twelve students for 14.8 years on average of which a significant nine years are at their current schools. The grade twelve teachers from the sample schools have on average undergone two years of further training. This varies from one English teacher with a Doctorate, four with Master's degrees, three with Honours degrees and five with B Ed honours degrees. A number of others have pursued a Further or Advanced Diploma in Education. This information is depicted in Tables 6.14 for grade twelve English teachers, Table 6.15 for grade 12 Mathematics teachers and in Table 6.16 for grade twelve Physical Science teachers

Table 6.13: *Demographic information about all Grade 12 teachers / educators combined*

All Gr 12 Teachers	
Overall average	AVG
Total exp.	20.5
Teaching Grade 12	14.8
At this school	9.0
Qualifications	4.0
Advanced training	6.0
Awards	18.8%

Table 6.14 indicates that the total teaching experience of grade twelve English teachers varies between five and forty one years . The same tendency applies to their experience of teaching English to grade twelve students. They are all well qualified. The teacher from School II has a D Litt et Phil qualification. The teachers from Schools I and V have Master’s degrees in English while the one from School III has an M Ed degree in subject didactics.

Table 6.14: *Demographic information about the Grade 12 English teachers / educators*

Gr 12 English Teachers		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	21.5	5	41	20	24	26	13
Exp curr level	12.8	5	30	17	9	3	13
At this school	7.3	5	14	12	9	3	1
Qualifications	4	4	4	4	4	4	4
Specialisation	English	Eng	Eng	Eng	Eng	Eng	Eng
Advanced Training	6.5	8	10	8	4	6	0
Awards	17%	0	0	1	0	0	0

From Table 6.15 it is evident that the total teaching experience of the grade twelve Mathematics teachers varies between 19 and 40 years with an average of 26.2 years. They have been teaching grade twelve Mathematics for between 3 and 30 years at the respective schools. All of them hold B Sc degrees as undergraduate qualifications. None of them hold Master's degrees. Two of the teachers (Schools I and VI) hold Honours degrees in Mathematics. The teachers from Schools II, III, IV and VI hold B Ed Honours degrees and the teacher from School V is a qualified e-teacher (a one year qualification in the didactics of e-learning).

Table 6.15: *Demographic information about the Grade 12 Mathematics teachers / educators*

Gr 12 Mathematics Teachers		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	26.2	23	19	20	29	26	40
Exp curr level	22.4	23		8	15	26	40
At this school	10.2	3	4	8	8	8	30
Qualifications	4	4	4	4	4	4	4
Specialisation	Mostly Maths	Maths	Maths	Maths/Phys	Maths	Acc/Maths	Maths
Advanced Training	7	6	8	6	6	5	8
Awards	33%	0	0	1	0	1	0

Table 6.16 shows that the total teaching experience of the grade twelve Physical Science teachers varies between 11 and 28 years with an average of 19 years. They have been teaching grade twelve Physical Science for between 3 and 30 years at the respective schools. All of them, bar one, hold BSc degrees as undergraduate qualifications (the teacher from School V has a four year diploma specialising in physical science). The teacher from School I holds an MSc and the one from School VI holds an Honours (both specialising in Physics). The teacher from School III holds a B Ed Honours degree as a further educational qualification.

Table 6.16: *Demographic information about the Grade 12 Physical Science teachers / educators*

Gr 12 Physical Science Teachers		Sample schools					
Overall average	AVG	I	II	III	IV	V	VI
Total exp.	19.0	20	11	21	28	16	18
Exp curr level	15.6	13		21	15	11	18
At this school	9.0	2	2	18	15	8	18
Qualifications	4	4	4	4	4	4	4
Specialisation	Varied	Phys	Phys Sc	Bio/Phys Sc	Phys Sc	Phys Sc	Phys Sc
Advanced Training	6	10	4	6	4	0	11
Awards	0	0	0	0	0	0	0

Looking at the demographic information of teachers / educators in Tables 6.13 to 6.16 and the performance of their respective students, I get the impression that there are possible links between teachers' qualifications, experience and duration of their stay at a school and their impact on quality education as manifested in student performance. It was however, not specifically investigated and will have to be done before any substantive deductions can be made.

6.2.8 Demographic information about the SGBs

Table 6.17 provides information about members of the SGBs of the public schools in the sample only, because the independent schools are owned by listed companies and have a completely different governance structure. The SGB members of the four public schools have a sustained involvement in the schools in the communities they represent. The average SGB member is well qualified with an average of five years of training after leaving school. The parent component of the SGBs is from varying backgrounds. It is, however, noteworthy how prominent backgrounds in law, finances and business are.

When specifically looking at the chairpersons of the schools that form part of this research, we find that, on average, they have 7.5 years of experience as SGB members of which 3.8 years are as chairperson and they have on average 1.8 years of service at the school where they currently serve. They are clearly well experienced, both as members and as chairpersons of SGBs. Therefore they probably play a significant role in serving the best interests of the schools by ensuring that the provisioning of quality education is a priority at the schools where they are involved, provided that there is a healthy working relationship between the SGB chairperson and the school principal.

Table 6.17: *Demographic information about SGB members*

SGB Members													
Overall average	AVG	Chr	Dep Chr	Sec r	TR / FO	M1	M2	M3	M4	M5	M6	M7	M8
Total exp.	4.5	7.5	3.0	5.0	4.3	3.3	3.7	3.0	6.7	5.7	9.0	1.0	5.0
Exp curr level	3.7	3.8	3.0	5.0	1.8	1.8	3.7	3.0	6.7	5.7	4.0	1.0	5.0
At this school	3.2	1.8	1.3	1.8	1.5	1.8	3.7	3.0	6.7	5.7	4.0	1.0	5.0
Qualifications	5.1	5	5	5	4	4	5	5	6	6	6	6	6
Specialisation		Maths, Law	Busn, Fin	Varied	Law	Bus/Mark	CA	Adm	Relig	Fin	Bus	Ed Man	Mark

6.2.9 Demographic information about the Finance Committees (FCs)

The finance committees play a crucial role in the financial management of public schools. They are not only responsible for drafting the annual budget of the school, but they also play an important part in the effective management of the school's finances. The demographic profile of the Finance Committees (hereafter FCs) shows that the independent schools in the sample do not have finance committees. The financial management at the independent schools is handled by the principal assisted by a bursar that reports to the head office of the corporate that owns the school. The information in table 6.18 thus only refers to the four public schools.

It is clear that the members of the finance committees are well experienced SGB members and it is also evident that they have been members of the school's finance committee for some time at the current school. The fact that the average qualification rating of all the FC members is 5²⁴, implies that they are all well qualified. The data obtained from sample schools (Annexure 4) shows that the parent members of the SGBs have a varied academic background, ranging from finance, law and engineering to business. Many of the representatives of the teaching profession have qualifications in education management and normally such a qualification also includes some background in financial management in education. Looking at the academic background and experience of FC members, one can expect that sound financial decision making will be the order of the day in the sample schools.

Table 6.18: *Demographic information about the Finance Committee members*

Finance Committee Members		Chr	Dep Chr	Secr	TR / FO	M1	M2	M3	M4	M5
Overall average	AVG									
Total exp.	7.0	6.5	6.8	5.3	5.7	7.3	10.5	7.0	11.5	15.0
Exp curr level	5.0	2.0	5.5	1.7	5.7	4.8	10.5	7.0	11.5	15.0
At this school	4.2	1.8	3.8	1.0	6.3	5.5	7.0	7.0	11.5	2.0
Qualifications	5	5	3	4	2.3	5.7	9.0	6.0	4.0	8.0
Specialisation		Law & Fin	Varied Fin	Fin & Admin	Fin & Bus.	Office Man / Fin	Engineering & Maths	CA Fin	Ed Man	Ed Man

6.2.10 Budget information

Table 6.19 depicts information pertaining to the annual budgets of the sample schools. Not much can be read into the total and average budgeted amounts per school over the period under review for the purposes of this research project because variables such as school size and curricula offered vary from school to school. What is more relevant is that the total budget increased by

²⁴ This is equivalent to five years of training at an institution of higher learning

8.4% on average over the three year period. This is not excessive and more or less in line with inflation. This in turn implies that the annual increase in the budget should be affordable to the parent community.

On average, the four public schools only received 5.4% of their total operational budget from the state. When School VI (Quintile 4) is taken out of the equation and only quintile 5 schools are considered, the state's contribution to the operational budget (excluding the salary component of state employed staff; both teaching and non-teaching) of these three public schools forms only 1.39% of the total annual budget. The annual per capita cost to offer education at the six schools amounts to R22,522. However, when the sample is split into independent and public schools, the picture changes rather dramatically.

The average per capita cost to offer education in an independent school amounts to R50,567 as opposed to R8,501 in the public schools that formed part of the research sample. It is important to remember though, that the figures quoted for public schools do not include the salaries of state employed educators.

Table 6.19: *The annual budgets for 2007 to 2009*

Annual Budget Information		Sample schools					
	AVG	I	II	III	IV	V	VI
Total budget (R million) 2007	9.48	5.77		19.67	9.20	10.52	2.87
Total budget (R million) 2008	10.87	8.85		20.90	10.40	11.40	3.3
Total budget (R million) 2009	15.93	9.63	36.80	22.26	11.00	12.69	3.84
Variance %	8.4%	8.1%		6.1%	5.5%	10.2%	12.2%

Public funds %	5.4%	-	-	1.2%	1.6%	1.4%	17.6%
P/C cost in R Overall	22,522	32,998	68,145	11,298	7,954	10,759	3,991
P/C cost in R Indep. Schls	50,567	32,998	68,145	-	-	-	-
P/C cost in R Publ. Schls ²⁵	8,501	-	-	11,298	7,954	10,759	3,991

Table 6.20 depicts what percentage of the annual budgets of the sample schools is allocated to academic or curriculum related matters. It shows that, on average, schools in the sample earmarked 7.6% of the budget for this purpose. This is, however, problematic because of the huge variation of interpretation of what is included in this category by the sample schools. When the sample is split into independent and public schools it becomes a little more useful. It shows that independent schools allocate 2.3% of the annual budget for this purpose. The average figure of 10.8% for public schools is, however, still problematic because of the huge variation within the group; 0.6% in School III on one hand and 27.2% in School IV on the other²⁶. It must be mentioned though, that contrary to the other public schools, School IV included the salary costs for additional staff under this heading. The independent schools include the entire salary component as a cost item in their budgets and this then impacts on the percentage allocated to academic/curricular matters.

None of the schools in the sample included costs related to technology (computers, smart boards, data projectors, etc.) in this category because they consider this to be a separate budget item. Although budgeted for separately, both salary costs and costs related to technological infrastructure should in my opinion form part of the expenditure on academic and curricular matters. As discussed later in Chapter 7 respondents indicated that costs related to these

²⁵ Schools III, IV and V are categorised as National quintile 5 schools and School VI as a National quintile 4 school, thus the huge difference in the P/C cost per learner.

²⁶ Expressing amounts allocated for academic and curriculum matters in actual Rand value will be meaningless for purposes of comparison.

aspects do influence the quality of education. Table 6.21 shows that a significant percentage (36.5% on average) of the annual budget of public schools is used to provide for the appointment of additional teaching staff to reduce class size thus impacting on the quality of education.

Table 6.20: *Academic budget as a percentage of the annual budget.*

Annual Budget Information		Sample schools					
	AVG	I	II	III	IV	V	VI
2007	9.9	2.46	-	0.6	29	6.34	11
2008	9.1	2.3	-	0.6	28.0	6.4	8
2009	7.1	2.94	1.9	0.6	24.7	6.32	8
Overall AVG	7.6	2.6	1.9	0.6	27.2	6.4	9.0
Indep. Schls	2.3	2.6	1.9	-	-	-	-
Publ. Schls	10.8	-	-	0.6	27.2	6.4	9.0

Table 6.21: *SGB appointed staff as a percentage of the Annual budget.*

Annual Budget Information		Sample schools					
	AVG	I	II	III	IV	V	VI
2007 – 2009	36.5%	-	-	30%	47%	46%	28%

6.2.11 Additional funding per subject in preparation for the NSCE

None of the schools in the sample allocated any additional funding for the preparation of learners for the National Senior Certificate Examinations. They manage the preparations for the examinations as part of their normal academic quality assurance. This dimension is discussed in detail in paragraph 6.3.

6.2.12 Activities funded in preparation for the NSCE

Because of the fact that no additional funds are made available for this purpose, there were no specific activities funded in preparation for the

National Senior Certificate Examinations. The management of the performance of the sample schools is discussed in paragraph 6.3

6.3 Section B: Performance in the National Senior Certificate²⁷ Examination

6.3.1 Management of the academic programme

All the respondents indicated that a senior member of staff is responsible for managing the academic programme at the school.

The two independent schools do not have HODs in their organisation structure. School IV has five grade heads who manage and coordinate the academic programme. Schools I and II (independent schools) follow a matrix approach and organise themselves into subject teams for the delivery of high quality education. The effect of the organisation structure on academic performance was not investigated specifically. It can be incorporated into similar investigations in future.

In the four public schools, the management of academic programmes is the responsibility of one or more of the Deputy Principals. Depending on the size of the school, this task is split into the junior and senior secondary phases; thus becoming the responsibility of two of the Deputy Principals. HODs are responsible for subject areas in all the public schools. Three of the public schools (III, IV and V) appoint additional HODs from school funds to allow for a bigger subject choice as part of the school's curriculum. All the public schools have a non-formal position of subject heads where a senior, highly experienced teacher is responsible for the coordination of a specific subject and is accountable to the HOD for that subject field/learning area.

All the schools also have a system of grade heads that act in a coordinating role for programme delivery. In two of the public schools (IV & V) they deploy two persons (one male and one female) in this capacity in the senior

²⁷ For an explanation of what this examination entails, see paragraph 2.2 in Chapter 2

phase. One of the public schools (School V) refers to this position as a ‘grade tutor’ rather than a grade head. In this specific school one of the HODs acts as ‘head tutor’ to coordinate the functioning of the grade tutors.

In all the schools, provision is made for the services of at least one counsellor/psychologist as a support function for programme delivery. In one of the public schools (V) this is formalised in what is known as the School Based Support Team consisting of one counsellor, one psychologist and one educational psychologist.

The track record of having a 100% pass rate for a number of consecutive years combined with the ethos and philosophy of these schools has become both a powerful marketing / branding factor as well as an important management tool in all of the sample schools. Parents enrol their children in these schools expecting their children to receive quality education and to pass the NSCE. Evidence of this is found in the sentiments expressed by the principal of School III *“The school advocates academic excellence and a balanced school life. Students support and encourage each other but students are not pressurised to be a top performer with six or more distinctions”*. Teachers consider it important to teach at such a school because it projects them as being highly successful teachers. Students likewise want to be enrolled at such a school and work harder in order to succeed. Inherent in the ethos and philosophy of all these schools are considerations like: success requires focus and being motivated to achieve specific objectives and working hard to realise these objectives. Evidence of the above is found in the words of the respondent from School I. *“New applicants are interviewed and not just everyone is accepted. The newcomer has to subscribe to the school’s philosophy, both parent and the student have to understand the philosophy.”*

6.3.2 Management of academic performance with special reference to grade twelve

The two independent schools (I & II) do not necessarily enrol all applicants. Both of them have a selection process in place. In School I, prospective students are interviewed by the principal personally. During the interview, the

student has to show that he / she has a vision, is highly motivated and is focussed on achieving their objectives (... *the students must have a vision of what he/she wants from life and finally they must show signs of commitment and tenacity in working towards their goals*). The four public schools do not have a selection process before enrolling students. One public school (VI) does not take in any new students in grade twelve.

The question of subject choice is dealt with in detail in all the schools since this is an important motivational factor impacting on student success. If students are interested in a field of study, they want to know more and want to perform well. A huge effort also goes into making sure that students comply with the admission requirements of their prospective career choices and fields of further study after leaving school. It provides a sense of direction and purpose to their studies in grades eleven and twelve. The importance of the grade eleven marks in determining admission to institutions of higher education is communicated early and extra classes are offered in spring to afford students the opportunity to improve on their grades in grade eleven. A common point of departure is that grade twelve results are the culmination of a five year process and that at least grades ten, eleven and twelve should be treated as a unit. One of the public schools has introduced a special programme to improve the mathematics and reading skills of grade eight and nine learners and have found this to be extremely beneficial to the performance of students in subsequent years of study. From the discussion above, it becomes evident that achieving top results and academic excellence starts with the selection process but subject choice and the motivation of the student are also important determining factors. It is also evident that providing specific subject choices and providing additional support mechanisms have financial implications for schools.

All the schools place considerable emphasis on keeping parents informed of their child's academic performance at all times. Different schools handle this matter in different ways. Techniques for communicating this information vary from parents' evenings, meetings of specific groups of parents (such as the grade twelve parents), newsletters, personal letters, telephone calls, e-mails,

SMSs, personal interviews and formal academic reports; as the respondent of School III puts it “...Parents are notified of this (i.e. parents evenings) and invited to attend in different ways; notice is given in the remarks column on the report, letters as well as SMSs are sent out ...” . One of the independent schools (School I) issues eight such academic reports in the course of a year. Academic performance is managed as a partnership between the parents and the school. This is inter alia endorsed in the following quote from a respondent of School VI: “*Very strong sense of involvement. Very strong support from parents. The slightest problem is dealt with immediately. Parents are focused on the fact that their child must perform. There is a prestige factor involved in children attending this school*”.

All the schools have a system where students write regular tests according to a formal time table that is published annually and made available to all parents. School V already does this in the preceding year, but in the other schools this information is made available at the beginning of the year.

The number and frequency of the tests vary from school to school. A formal test series where the cumulative marks form the student’s year mark are written once a month with smaller tests for revision purposes in between. Academic results of all tests and examinations are discussed at formal meetings in different groupings; with the subject head and or HOD, within grade context and with the Deputy Principal or Principal. The frequency of such meetings varies from school to school; in one instance they take place on a weekly basis. The results are submitted as formal documents that provide management information on the progress of individual students. Students’ results are discussed and individualised plans of action are agreed with the teacher and student concerned to manage the performance of students who are underperforming (i.e. either failing, not performing to capacity or not achieving previously agreed upon levels of achievement).

Two of the public schools (III and IV) have adopted the principle that the same teacher teaches a given subject in both grades eleven and twelve. This enables the teachers to deal with the curriculum over the two years. One public

school (III) mentioned that they attempt to have two teachers team teach a subject in grade twelve wherever possible. This only came to the fore in one school; so no meaningful deductions can be made from this and will have to be investigated in future studies.

A very important factor in managing academic performance is the matter of teacher availability. One of the independent schools has a policy that teachers are available in person or by cell phone until 21:00 for consultation and assistance to students. All the public schools offer extra classes; some in the mornings before school, some in the afternoon and some during school holidays. This varies from school to school. One public school has extended the school day formally to last until 15:00 for grade twelve learners. In most cases however, it is an individual arrangement made by the teacher concerned. All the public schools offer winter schools during the July school holidays as part of the final preparation for the NSCE. With the exception of one public school these classes are offered to the parents at a cost.

School II, an independent school, has a formal system of international benchmarking for their grade twelve learners. Grade 12 students have the opportunity to obtain an internationally recognised school leaving certificate. The Victorian Curriculum Assessment Authority, in Australia (hereafter referred to as VCAA <http://www.vcaa.vic.edu.au/>) moderates the setting and the marking of examinations set by the school's staff on the South African core syllabus. These examinations are written in September of the grade twelve year in place of the customary preliminary examinations. On the basis of this moderation and the careful scrutiny of standards, the VCAA issues a *VCAA Certificate of Equivalence* which states that the grades achieved in each subject are of a standard equivalent to those of the VCAA, Victoria. This certificate is recognised by universities throughout the world. The principal has copies of specific responses from selected universities in Europe, Australia, the United Kingdom and the United States, indicating acceptance of the certification of the VCAA. Currently, the following Higher Grade subjects are offered: English, French, Afrikaans (moderated by the University of Pretoria), Mathematics, Physics, Chemistry, Biology, History, Geography,

Accounting, Business Economics, Computer Studies, Art and Additional Mathematics.

The examinations moderated by the VCAA must be written in conjunction with the General Achievement Test (hereafter referred to as GAT; <http://www.vcaa.vic.edu.au/-vce/exams/gat/gat.html>). Examinations are written in June by Grade 12 students. The tests assess general knowledge and skills in a broad range of fields including Written Communication, Mathematics, Science and Human and Social Science. The test is used to benchmark the equivalence examinations to ensure that standards are kept in place. Students are ranked in terms of performance against students from Australia, New Zealand, The Pan Pacific Islands and Singapore.

A third method used for international benchmarking is the Schools International Assessment Test (hereafter referred to as SIAT; <http://www.siat.co.za/>). Grade 8 students write compulsory examinations in English and Mathematics which are paid for by the corporate owners of the school. Competitions are held in English, Mathematics, Science and Computer Studies. They are constructed by the Educational Testing Centre of the University of New South Wales. Medals are awarded to the top achievers in each paper. Analysis of the school results are used to emphasize strengths and weaknesses in the assessed subjects.

6.3.3 Correlation between funding levels and academic performance of the school as a whole

The general response to this aspect was that money had very little to do with the performance levels of the schools in the sample. The principals were of the opinion that the general philosophy and approach to academic performance, the way they treated staff and the way they managed performance were the determining factors that made the difference. The principal of School I put it this way “*It costs more to attend a private school, but the results are*

attributable to the approach and methodology and not to the higher fees. If this was a government school we would have followed the same approach.”

The principal of School II said, *“Yes and no. It is not the only driver. ... it is about the dedication of the teacher; that is where the money comes in; to find a dedicated teacher you need to pay a little more and you have to go and look for them.”*

The public schools all said that, except for the funding of **additional staff** appointed by the SGB, money has very little to do with the academic performance of the school. The respondents from the different schools put it this way: School I: *“It costs more to attend a private school, but the results are attributable to the approach and methodology and not to the higher fees”*. School II: *“Yes and no. It is not the only driver. ... it is about the dedication of the teacher; that is where the money comes in; to find a dedicated teacher you need to pay a little more”*. School III: *“Not directly. The academic budget plays a supportive role across all grades and is not geared at the NSCE specifically.”* School IV: *“... money does play a role in terms of academic performance of the school in terms of staffing”*. School VI: *“There is no correlation between academic performance in individual subjects and funding. ... Our success can be attributed to the individual teacher ...”* Additional staff allows them to reduce class size (Table 6.22 illustrates class size in the sample schools; the impact of which on academic performance was discussed in paragraph 2.3.7), to deploy additional administrative staff and to utilize the services of counsellors and (educational) psychologists. School V has formalized the latter into what they call the *School-Based Support Team* that plays a major supportive role in the management of academic performance of the school.

Table 6.22: *Average class size*

School	I	II	III	IV	V	VI
Average class size	24	25	35	35	35	35

School III was the only public school where a specific amount was budgeted for the language departments and that is managed by the HOD concerned (see 5.3 on p.39 - 40 in ANNEXURE 4).

The availability and use of **technology** seem to suggest another area where funding plays a role in the performance of schools as a whole. However, most of the respondents said that it was more of a ‘nice to have’ than a prerequisite for good academic results. “*We have access to smart board technology and the internet; it is nice to have, it makes life easier, it gives the teacher a sense of being in touch with technology and the world of the student, but I am convinced that if you take it away, we will still achieve a 100% pass rate*” (School I). “*Technology plays a very small role in the academic performance of grade twelve learners. Except for IT and CAT, teachers do not have computers in their classrooms*” (School III). “*Technology plays a very small role in the academic performance of grade twelve learners. Except for IT and CAT, teachers do not have computers in their classrooms*” (School V). “*... except for the two members of staff that teach CAT no other teachers have access to computers and or smart boards. They use standard OHPs to teach*” (School VI).

Table 6.23: Availability of technology

School	I	II	III	IV	V	VI
Information Technology (Computer) Laboratories (Labs)	1	2	5	2	2	3
Comp./Lab	20	28	35	35	30	25
Internet in Lab	Yes	Yes	Yes	Yes	Yes	Yes
Comp. in library	0	?	35	10	16	0
Internet in library	Yes	Yes	Yes	Yes	Yes	Yes
PC/Laptops per class	1	1	No	No	1	No
Data projectors	1/class	1/class	1/dept	10/school	1/class	No
Internet in class	Yes	Yes	No	No	Yes	No
Smart Board technology	Yes	Yes	No	No	Yes	No
WiFi access	No	No	No	No	Yes	No
Cell phone technology	No	No	No	No	Yes	No

It is only in the two independent schools (I and II) and School V where the latest technology is really integrated into the teaching didactics in the classroom. That is where the majority of the teachers use computers / laptops, data projectors and smart board technology when they teach their classes. Similarly, they are the only schools included in the research sample that have internet access in their classrooms. School V is the only school that is using WiFi and cell phone technology as part of their didactic support when teaching.

All the schools in the sample have a separate budget vote for staff development. The amounts vary from school to school (see Table 6.24). In all instances, monies made available for this purpose include the attendance of short courses linked to the individual's field of specialisation. School II was not able to provide a percentage as this function and the funding thereof for this specific independent school, is dealt with at a corporate level and the budgets are not split to reveal the amounts per school within the group. In some instances, e.g. School I (ICDL training) and School V (e-teacher training), specific skills are targeted and the entire staff is sent for training. School IV subsidises further tertiary training on an individual merit basis. School V also has a system where staff members are subsidised to purchase laptop computers for use in the classroom for administrative as well as didactical purposes. However, the funding for the laptops does not come from the staff development budget but, from the portfolio covering computer technology. The budgets of the 5 schools are remarkably similar in size.

Table 6.24: *Budget for staff development*

Staff Development as % of Annual budget		Sample schools					
		AVG	I	II	III	IV	V
2007 – 2009	0.7%	0.624%	*	0.57%	1.0%	1.1%	0.4%

* *This is budgeted for at corporate level*

6.3.4 Correlation of funding levels and academic performance of selected subjects in the National Senior Certificate Examination.

The general response by the respondents to this item was that funding levels have no or very little bearing on the performance levels of specific subjects in the NSCE whatsoever!

All the respondents were adamant that the one single factor that determined their success in the NSCE was their teachers. In order to illustrate this I am including specific quotes from individual respondents.

School I said: *“Results in individual subjects are (also) because of the philosophy and approach of the school; much more so than because the child pays a higher fee, or that they have access to more technology or because the teachers get a higher salary. ... they are good because they are handpicked, but they are picked more for their passion rather than being such a subject specialist. ... They must be happy in their working environment. They must be focused on those matters that make a difference in the student’s performance and they must have the time to develop themselves”.*

School II put it this way: *“So it is about the dedication of the teacher; that is where the money comes in; to find a dedicated teacher you need to pay a little more and you have to go and look for them. I head-hunt teachers to find the best teacher available at the time. ... you must have the right person; he/she must be motivated, must be dedicated, and must be here for the child. My aim is to put the best person in the class for the student. ... There is a whole ethos around being the best teacher. They have to be innovative, thoroughly prepared (not the chalk and talk kind of business or reading from a textbook) ... You need subject experts, you need dedication and then you need fair infrastructure; it is not the most important thing, but it makes it comfortable and easier to achieve your objectives. ... They are doing things differently for the benefit of the students. It is very much part of the school’s ethos.”*

In School III's opinion: *“The secret of our success lies with the teachers. Teachers walk the extra mile without any additional remuneration. The school offers free extra classes in all subjects on Wednesday afternoons. In addition to the extra classes, Mathematics and Science offer big-group classes on Mondays. Classes are also offered in the morning before school (Afrikaans on Mondays and Wednesdays; Business Economics on Fridays). ... The academic success of the school is primarily linked to the vision, drive and dedication of the teachers on the one hand and the fact that they know that they can count on the support from the school management. The SMT and HODs specifically support the grade twelve staff on an individual basis. The motto for grade twelve teachers is twofold (i) a 0% failure rate, and (ii) a subject average 5% above that of the district in ‘my’ subject.”*

School IV phrased it in the following manner: *“... This enables the school to employ specialist teachers; it further enables the school to limit class size to a maximum of 35; it provides for flexibility both in terms of subject choices and when making the time table. ... Each teacher lives the moral obligation expressed by President Zuma; to be well-prepared, in class on time and teaching. This happens every period from January to December and is considered as a given. It requires continuous consistent hard work and involvement of the teacher. ... They then work as a team to optimise their collective skills and experience. The senior member of the team acts as leader for that subject for the specific grade. These teams consult at least on a weekly basis, if not from day to day, to monitor progress and performance. No additional remuneration is paid to individuals who act as subject leaders in the respective grades.”*

School V is of the opinion that: *“In general however, the school has a staff that is absolutely dedicated, purpose-driven and enthusiastic. No amount of technology can replace that. I believe that even without access to the technology they currently have the school would have been a top performer because of dedication and passion of the staff.”*

School VI responded by saying: “*Our success can be attributed to the individual teachers; their subject knowledge, skills, attitude and experience. ... In general, our success can be attributed to the staff; their level of training, their commitment as well as a lot of time and energy from the principal.*”

The sample schools are thus almost unanimous in their response. Question 9 of Section B in the research instrument provided for the opportunity to ask probing questions related to aspect that were not clear or needed additional elucidation. These responses are discussed in paragraph 6.3.5.

6.3.5 Reasons for the success in the National Senior Certificate Examination – supplementary comments derived from probing questions²⁸

Motivation of staff

The two independent schools both placed great emphasis on treating teachers as professional people. The Pygmalion effect of ‘*You get what you expect*’ appears to be a strong driver in how staff is managed. It was further emphasised that minimising the administrative load of educators appeared to be a strong motivational consideration. School I removed this responsibility entirely by appointing administrative staff for this purpose. Another way of alleviating administrative responsibilities was the introduction of WiFi connectivity from their classrooms to the school’s administration system by School V. In School VI, the principal has taken sole responsibility for the Grade twelve learners’ discipline; this includes poor behaviour, not doing their homework and absenteeism.

All the sample schools go to great lengths to afford staff opportunities to attend training. This includes both formal studies at tertiary institutions and non-formal training to improve their professional capacity. Studies are either fully or at least partially subsidised, depending on the school and the type of training. Staff should lead by example; as the respondent from School IV put it, “*Another very important contributing factor to academic excellence is the*

²⁸ Verbatim accounts are reported in ANNEXURE 5).

track record and example of the corps of leaders and the emphasis they place on academic excellence. This applies to the entire SMT". All schools have a specific budget portfolio for staff development.

Most of the schools arrange for motivational speakers to address staff. This takes the form of special slots during staff meetings, a monthly Teachers' Forum (School V) or an annual seminar on motivation (School III).

- ***Mentoring***

There is a significant 50:50 split in the responses in this regard. The two independent schools and one of the public schools (School III) have a formal one-on-one mentoring system that applies to all newcomers to the school, irrespective of rank or position. Two of the other public schools (IV & V) do not have a formal mentor system, but in both instances this role is handled very ably by the HOD concerned within the normal functioning of the specific department. This includes formal interviews with new arrivals as well as training during departmental meetings. The remaining public school (VI) follows a team approach in dealing with newly appointed members of staff; it becomes a collective responsibility and orientation is not limited to one individual.

The services of counsellors and or educational psychologists are available to staff in one independent school (I) and in two of the public schools (III & V). Staff can either consult these professionals in their personal capacity or refer learners with problems to them.

Networking with colleagues from other schools forms an important part of motivation within the different subject areas in all the public schools. This was not mentioned in the private schools, but that does not exclude the possibility of networking there as well.

- ***Use of external subject specialists in preparing students for the NSCE***

The use of external subject specialists in preparing students for the NSCE only occurred in two of the public schools in the sample.

In the first instance (School III), external subject specialists offer small group classes (a maximum of 20 students in a class) at a fee. That is it operates like a private school within a public school. This service is offered as a parallel to the school structure by independent subject specialists renting the facilities of the school. Parents pay the subject specialists directly for this service from their own pockets. Admission to these classes is not automatic, students undergo a screening process by the subject specialists. These classes are only offered in Mathematics and Physical science.

In the second instance (School IV), external subject specialists are invited to offer classes to potential distinction candidates during the annual winter school for grade twelve learners. These classes are also paid for by parents.

It appears to be common practice for teachers to network with colleagues at other schools when drawing up preliminary examination papers and on grooming grade twelve learners for the NSCE.

- ***Peer group pressure***

All the schools in the sample have consistently finished among the top performing schools in Gauteng in terms of their NSCE examination results; that is they have maintained a 100% pass rate for three consecutive years. This is an accomplishment of which they are all very proud. In almost all the cases, they have a motto putting this sense of pride into words. Examples are: “*it is cool to do well*”, “*excellence in all areas*”, “*you don’t fail*”, “*academic excellence*”.

This proud tradition is propagated in a number of ways. All the schools have an honours evening of some sort (early in the year), where recognition is given to the previous year group for their excellent results. A guest speaker normally

forms part of the programme for this event. The guest speaker often is a former student that has distinguished him / herself in his / her professional capacity. School V traditionally invites the head boy / girl or both of ten years ago to fulfil this function. This school also has a formal *Peer Support Group* of thirty learners who are elected to and trained for this position. Over and above advocating that it forms part of the school's ethos not to break the tradition of having a 100% pass in the NSCE, they motivate their fellow students, assist with study methods and assist underperforming students morally in addition to the formal support that they receive from the staff of the school.

All the schools have a system of giving recognition to the top performing students. The names of the "Top Ten / Fifteen" students are announced formally, most of them receive a badge that they wear on their uniform and their names are displayed in a prominent place in the school. Some schools announce these groups twice a year and others do so every term. The competition to be one of this select group of students is very strong. One principal (School II) indicated that a student needed a subject average of 90% plus to qualify. One independent school (School I) has a system where students receive an effort rating for their performance and this is held in very high esteem. The effort rating trophy is considered to be the most prestigious award in that school. This practice is likely to nurture both intrinsic and extrinsic motivation in learners and assist in prioritising their activities.

Grade twelve students in general, but the top performing teams specifically support and motivate one another. All respondents considered this to be a healthy situation in their schools where the phenomenon is rather referred to as peer group support, than peer group pressure;: *"There is a sense of competition among top achievers. They support one another, sit together, help each other etc. The school has a name and reputation of excellence and parents queue to get their children enrolled in this school"* (School VI).

- ***Parental and community involvement***

Respondents from the independent schools reported that parents are very involved with their children's performance. Because parents pay significant amounts of money, they expect results and are therefore quick to respond to underperformance by their children. They are very involved in their own child's performance and progress. The attitude in general, is very positive. *"Both parents and learners are highly motivated and highly driven. You will often find that a parent approaches me to find out how his child's performance can be improved"* (School II). Because independent schools charge large amounts for school fees, there are no fundraising projects etc. that require their involvement as is the case in public schools.

All the principals of public schools reported a similar phenomenon; parents are very involved in their own children's activities and performance, but the large scale involvement that typified PTAs ten to fifteen years ago, appears to be declining. All principals reported a positive relationship with parents and the communities that they serve²⁹.

- ***General comments***

Respondents were afforded an opportunity to add any general comment they may have at the end of the interview on Section B of the research instrument. They were almost unanimous in their response - they all attribute their success primarily to their teaching staff. This sentiment was phrased neatly by the respondent from School III: *"The academic success of the school is primarily linked to the vision, drive and dedication of the teachers on the one hand and the fact that they know that they can count on the support from the school management"*.

²⁹ During a visit to the top-performing primary school in Shanghai, China last year, I was informed by the principal that they have a 100% attendance of parents at parents' meetings. Parent involvement is very high because if the child does not perform he / she loses his / her position in the school. The Shanghai district came out tops in the most recent PISA survey; the first time that they participated.

To summarise the analysis of data obtained from the semi-structured interviews with the respondents based on Section B of the research instrument, I have the following two comments.

Firstly, the quality of the education offered at the sample schools is the cumulative effect of a number of structural and managerial factors. The respondents all agree on the crucial role the teacher plays in this regard. The primary factor here seems to be the sound academic background of teachers and their dedication, commitment and many extra hours of involvement with students. It is evident from the data that all the schools have different, but well-organised structures to support the academic programmes, with clear lines of communication and scheduled programmes of tuition, assessment and reporting mechanisms to identify academic under-performance. All schools also have well established support systems and interventions to remedy under-performance; both from the side of the teaching and support staff as well as peer support. A very important part of managing the academic performance of the schools is the involvement of parents in the achievements of their children by the schools through a well-established communication infrastructure.

Secondly, from the data in the respondents' reaction during the semi-structured interviews as contained in Annexure 4, it is evident that money does play a significant role in the quality of the education provided at the sample schools that formed part of this research project. Contrary to what would generally have been expected, the responses consistently indicated that technology, although convenient and beneficial, was not a particularly important factor in determining academic excellence. Again, the responses unanimously pointed to the fact that funding was primarily used to appoint staff. The appointment of additional staff members contributed to the academic performance of the schools in the following manners:

- It allowed the schools to reduce class size.
- These teachers were handpicked for their knowledge, experience and commitment.

- They walked the extra mile for the students by putting in hours of extra classes.
- The appointment of additional administrative staff lightened this burden of or took it away completely from subject teachers

The incorporation of technology enriched the learner experience of students.

6.4 Section C: Indicators of Quality Education

Questions in this section relate to the *sixteen indicators of the Quality of School Education instrument developed by the European Commission* in 2000. They were used to probe the quality of education in the sample schools by asking the respondents (i) to rate their respective schools on a four point scale (Not applicable / unacceptable performance = 0; Apply to limited extent / unsatisfactory / substandard / need to improve = 1; Implemented successfully / satisfactorily / acceptable standard = 2; and Implemented very successfully / exceptional / exceeds the standard = 3) and (ii) to substantiate their views by commenting in the space provided. The raw data is contained in ANNEXURE 4. The comments of the respondents are reported in a cryptic style to convey the essence of what was reported. Where the same response was received, the number of times it was repeated is indicated in brackets to get a sense of how widely this response occurs.

Regarding *Attainment* as an indicator of quality education as reported in Table 6.25, the average rating of 2.2 awarded by the six schools seems to point to the fact that they consider themselves to be performing at a satisfactory, slightly above the acceptable level based on their perception of what constitutes an acceptable norm. In relation to the three international indicators normally used in international studies to rate the quality of education; *Mathematics*, *Reading/language* and *Science* (physical science) are all rated 2 and above. It is noteworthy that two of the schools (one independent and one public school) mentioned that they are using computer software to upgrade the reading ability of specifically grade eight learners to address an identified need in this regard;

substandard reading ability impacts negatively on the academic performance of students. When the ratings for *ICT* and *Foreign languages* are considered, their ratings are also above 2. It is noteworthy that (i) not all the schools are offering a third / foreign language and (ii) where it is offered, it is rated very highly, but that in two instances, the tuition is offered by teachers from outside the school. It would appear that with the exception of school VI, all the schools consider the *Learning to earn* and *Citizenship* dimensions to be of a satisfactory nature.

Table 6.25: *Attainment as indicator of quality education.*

Average rating	2.2	2.3	2.7	2.4	2.2	2.2	1
ATTAINMENT	AVG	I	II	III	IV	V	VI
1. Mathematics	2.5	3	3	3	3	2	1
Started a Mathematics Career Targeting school; Very experienced staff (2x); Focus on Mathematics instead of Mathematical literacy (2x); We have a 100% pass rate and our average of 73% is way above the national standard Track record of SMT members sets the standard.							
	AVG	I	II	III	IV	V	VI
2. Reading/Language	2.0	2	3	2	2	2	1
Many foreign students struggle with English - started English-for-foreigners course; Reading not as expected; Reading programme for Grade 8 in IT centre during school hours based on software programme (2x); We are 25 to 30% above the national standard							
	AVG	I	II	III	IV	V	VI
3. Science	2.2	2	3	3	2	2	1
Many students struggle with Science, but parents force them to take the subject; Most popular elective (2x); We are 25 to 30% above the national standard Excellent results							
	AVG	I	II	III	IV	V	VI
4. ICT	2.0	3	2	2	2	2	1
Superb IT & CAT results IT is select group. We start with a group of 15 in Gr 10 and eventually about 9 complete Gr 12. It is very difficult and the focus is almost completely on programming. Unfortunately CAT has fallen by the way which is a pity. Number of students decreased. Do not have computers in every classroom							
	AVG	I	II	III	IV	V	VI
5. Foreign language	2.7	2	3	3	N/A	N/A	N/A
Outside teachers offer foreign languages privately on demand We offer Hebrew, French and German. We have Spanish and Portuguese, but they are offered by teachers from the relevant embassies.							

They are all doing very well. In fact in French students are writing the external examinations taught at a university level and the students perform very well. Very few students take a third language							
	AVG	I	II	III	IV	V	VI
6. Learning to learn	2.0	2	3	2	2	2	1
Our Counselling Psychologist offer Study Skills Training Courses Linked to the Life Orientation programme. Can be improved							
	AVG	I	II	III	IV	V	VI
7. Civics/Citizenship	1.8	2	2	2	2	3	0
Covered in all subjects. Constitution taught in Life Orientation. It is difficult because we are quite cosmopolitan; we have 14/15 different nationalities coming to school. We have a lot of the embassy children over here. No formal programme. It is incorporated throughout the curriculum. Existing efforts can be improved							

With regard to *Success & Transition* as an indicator of quality education as reported in Table 6.26, the average rating of 2.6 awarded by the six schools can be expected since all of these schools were included in the sample based on their academic performance. Concerning *Drop-out rate* (2.8 on average) it is apparent that this is not deemed to be a major problem, especially from grade ten onward. Completion of *Upper secondary education* (2.7 on average) and *Admission to University studies* (2.5) are both well above the acceptable norm of 2. All the schools in the sample have maintained a 100% pass rate in the NSCE for at least three consecutive years, thus scoring high on the completion of the upper secondary education category. From the comments of

the respondents it is also evident that, with the exception of School VI (where, as we have explained previously, pursuing tertiary studies is not such a high priority – only 20%), all the schools closely follow the further studies and career development of their alumni. It is informative that admission to universities in Schools 1 to V vary between 65% and 86% and there does not seem to be any logical explanation for it. I also find it noteworthy that in two instances (one independent and one public school) schools have researched the

Table 6.26: *Success & transition as indicators of quality education*

Average rating	2.6	2.5	3	3	2	2.8	2.3
Success & Transition	AVG	I	II	III	IV	V	VI
8. Drop-out rates							
Gr 8 -12	2.3	1	3	3	2	2	3
Gr 10 -12	2.8	3	3	3	2	3	3
Too many students drop-out in junior grades. Often (mainly) fee related. None Very few, if any. High in Gr 8.							
	AVG	I	II	III	IV	V	VI
9. Completing Upper secondary education	2.7	3	3	3	2	3	2
All who write the examinations, pass. 100%							
	AVG	I	II	III	IV	V	VI
10. Percentage obtaining admission to university	2.5	3	3	3	2	3	1
A large % goes to University (difficult to get exact numbers though). A large number go to other tertiary institutions. We provide Career Information Days. 65 to 70% go to varsity and complete their studies. We started following alumni's careers and the feedback is fantastic (one student received an Art award of R120 000 to study in Paris). High percentage passes with University entry. Good feedback from Universities. 86% 70% to 80% More than 20%							

academic performance of alumni doing undergraduate studies to keep track of their achievements after leaving school.

On the subject of *Monitoring Education* as an indicator of quality education as reported in Table 6.27, the respondents rated their schools as 2.3 on average. *Evaluating and steering school education* was graded as 2.7 on average, indicating that the structures and mechanisms established in the schools to (i) manage tuition and assessment and (ii) to provide support to underperforming individuals were considered to be well above average. This is endorsed by the track records of the respective schools in the NSCE. I find the average rating of 1.8 for parent participation, particularly remarkable. This is even more thought provoking when one considers the split between the independent and public schools on this dimension. School III in particular has a very comprehensive communication infrastructure and uses a public company to get feedback from the parent community. The other three public schools echo the sentiment that parents are very involved with the

performance of their individual children, but less so with the school as a whole.³⁰

Table 6.27: Monitoring as indicator of quality education

Average rating	2.3	2.5	3	3	1.5	2	1.5
Monitoring education	AVG	I	II	III	IV	V	VI
11. Evaluating and steering school education	2.7	3	3	3	2	3	2
8 school reports per year. Constant feedback given to parents. Continuous monitoring. Address deviations immediately. Doing well, but there always is room for improvement							
12. Parent participation	AVG	I	II	III	IV	V	VI
	1.8	2	3	3	1	1	1
Parents sign a contract with the school. They “buy” a service from us. They participate where asked, but they are mainly asked to support the academic process by providing resources at home and an environment in which students can learn. No PTA. Parents are dealt with on an individual basis. They do have a voice and make a contribution through their participation in the Markinor survey. We have a very open door policy and a client driven customer based approach in dealing with parents. Above average compared to other communities Involvement decreased over last 6 years							

About *Resources and Structures* as an indicator of quality education as reported in Table 6.28, the average rating of 2.1 for this dimension is well within the range of credibility. The schools rated *Education & training of teachers* as 2.3 on average and have also indicated that they invest in *extensive staff development programmes*. Both the independent schools indicated that they are accredited by *Investors in People*³¹. The comment about junior teachers not always being on par, is irrelevant in terms of this research project since no junior teacher (in either public or independent schools) will be involved in preparing grade twelve learners for the NSCE. *Participation in primary education* was ignored because the sample schools are all secondary

³⁰ The role of parental involvement in academic performance needs to be investigated further. What appears to be particularly significant is (i) the communication strategy followed to keep parents informed and involved and (ii) the way in which parents are involved in the academic performance of their children.

³¹ **Investors in People** is a business improvement tool administered by the [UK Commission for Employment and Skills](#) and supported by the [Department for Business, Innovation and Skills](#) (BIS).

schools. The average rating of 1.8 for the *Number of computers* criterion is interesting since all the schools do have computer laboratories where learners do have access to computers. It would however, appear that the schools deem this not to be ideal. Looking at the number of computers, I have included the numbers obtained from the interviews on Section B of the research instrument since not all the respondents provided numbers, but merely commented on the situation. The two independent schools have the lowest computers per student ratio when all the learners in the school are considered. Both these schools are also below the 2.4 computers per grade twelve learner for the sample. However, it is particularly interesting that School VI has the lowest ratio of grade twelve learners per computer of all the respondents. The average rating of 2.2 for *Education expenditure per student* seems to indicate that the respondents are of the opinion that this criterion is of a satisfactory nature. However, School VI indicated that there is room for improvement in this regard. The comments on this aspect allude to the fact that capital cost items are expensive ones. This in itself does not give us a picture of the situation. I thus included calculations of the actual cost to the school based on the information provided in Section B of the research instrument.

Although the combined average per capita cost for these schools may be informative, it becomes significant when the per capita cost of the two groupings is split. It now becomes evident that the average education expenditure for students for independent schools amount to R50,700 per annum while the corresponding amount for public schools is R8,500. It is further interesting to note that the cost of sending a child to School II is double that for School I. It is doubtful whether the quality of the education provided by the different schools in the sample corresponds to the education cost per student portrayed here. There are various other factors that influence these amounts, but this will have to be investigated in another research project.

The fact there are very few opinions shared by schools (evident from more than one similar response to the same criterion) is probably the result of the

Table 6.28: Resources & structures as indicators of quality education

Average rating	2.1	1.7	2.7	2	2	2	1.3
Resources & Structures	AVG	I	II	III	IV	V	VI
22. Education & training of teachers	2.3	3	3	2	2	2	2
Extensive staff development program. Investors in People accredited. Senior teachers are well trained. Subject knowledge of younger teachers not always on par							
14. Participation in	AVG	I	II	III	IV	V	VI
Primary Education	NOT APPLICABLE						
15 Number of computers	AVG	I	II	III	IV	V	VI
	1.8	2	2	2	2	2	1
Students/computer in school	11.8	7.8	9.6	11.5	15.8	14.1	11.6
Gr 12 students/computer	2.4	2.3	2	2.5	3.6	2.6	1.4
Mainly for CAT & IT 28 computers in the laboratory. All are linked to the internet. Are used for tuition and for research by learners. Two computer centres; one for IT and RTT the other for general use by the rest of the subject areas							
16. Education expenditure/student	AVG	I	II	III	IV	V	VI
Rating	2.2	3	3	2	2	2	1
Average amount in R (000)	22.6	33.3	68.1	11.3	8.0	10.8	4.0
Independent schools	50.7	33.3	68.1	-	-	-	-
Public schools	8.5	-	-	11.3	8.0	10.8	4.0
Capital expenditure budget is where big money is. Buses, computer laboratories, smart boards, lap tops etc.							

novelty of this instrument and may suggest that schools are not yet consciously engaging with these factors related to quality education.

6.5 Summary

In this chapter I have discussed the analysis of the data collected by means of the research instrument. The analysed data based on Section A of the research instrument deals with demographical and other information pertaining to the respective schools was discussed in paragraph 6.2. This included the total number of students per school and the number of students from the different schools that sat for the NSCE for the period 2007 to 2009. The performance of the respective schools in the NSCE was analysed in terms of the total number

of distinctions as well as the average number of distinctions per candidate in general as well as their performance in English, Mathematics and Physical science. The profiles of the school management teams, the grade twelve teachers, the school governing body and the finance committees were analysed and discussed. This section was concluded by discussing the budget information for the period under investigation. This included a discussion of the total amounts budgeted for during this period, the relationship between public and private funding as a source of income, the annual per capita cost to the schools and the cost centres required to sustain the quality of education offered at these schools.

The analysed data based on Section B of the research instrument deals with demographical information pertaining to the respective schools was discussed in paragraph 6.3. This data spoke to four aspects namely the management of the academic process, the management of academic performance, the correlation between academic performance and the availability of funds and other factors that impact on academic performance. The correlation between funding and performance was addressed by referring to costs related to the appointment of additional staff, costs related to technology, costs related to staff development. Other factors that impact on academic performance that came to the fore were the motivation of staff, mentoring, the involvement of external subject specialists, the impact of peer group pressure and the role that parents play in this regard.

The analysed data based on Section C of the research instrument deals with demographical information pertaining to the respective schools was discussed in paragraph 6.4. This data was discussed in the context of the four dimensions identified by the European Union in developing these criteria namely, attainment (representing academic performance in different fields of study, including mathematics, reading and language ability, English in this case, and physical science), success and transition (referring to the drop-out rate in schools, the completion of upper secondary education and admission to university studies), monitoring education (related to the internal evaluation and steering of education in schools and parent participation in the process)

and resources and structures (where the education and training of teachers, the availability of computers and the expenditure per student) are taken into account as factors serving as indicators of the quality of education offered at schools. However, further investigation is required before any substantive claims can be made regarding the use of these criteria in the South African context and whether similar analysis in poorly performing or non-performing schools, will yield similar results.

This chapter provides the information and platform for the conclusions and arguments that will be made in Chapter 7.