

**AN INVESTIGATION OF THE ROLE OF LEARNERS AND TEACHERS
RESOURCE MATERIALS IN DETERMINING A SCHOOL PERFORMANCE AND
QUALITY EDUCATION: A CASE STUDY OF ISIPHOSMVELO SECONDARY
SCHOOL.**

BY

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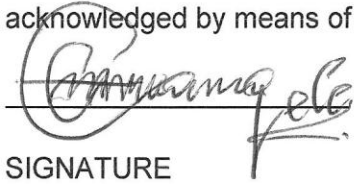
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Declaration

I, Clement Mandlenkosi Manqele declare that the Dissertation: **An Investigation of the role of Resource Materials in determining school performance and quality education: A case study of Isiphosemvelo Secondary School**, is my own work in both design and execution, and that all used or quoted sources have been duly acknowledged by means of complete referencing.


SIGNATURE

5 MAY 2013.
DATE

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Dedication

I dedicate this work to my late parents, Maria Fikile (Ma- Ndima) and Petros Velabenyanye for the educational inspiration they spurred me with and for giving me a springboard to actualise an infinite destiny. All my educational missions are squarely accredited to their firm belief to the role of education for personal freedom.

ABSTRACT

The focus of the study was to investigate the role of Learning and Teaching Support Materials (LTSMs) in determining a school performance and quality education. For sampling purposes, a rural disadvantaged school was selected to reveal how such schools organise and implement their instructional programs devoid of LTSMs. A school library, school laboratory and computer technology were prioritised for their bearing on National Curriculum Statement (NCS) implementation.

According to the study's findings, the prioritised LTSMs were found to be vital in modernising, appropriating and improving a school performance and the quality of education. The study argued that without relevant LTSMs, schools can neither hope nor manage to successfully implement outcomes based education. Hence, learners in those schools are still excluded from quality education.

KEY TERMS

For the sake of understanding this study, the following key terms have been used quite frequently, thus getting acquainted with them will be useful.

School performance

Instructional programme

Resource materials

Quality education

Computer technology

School climate

Outcomes based education

Learner-centred approach

Annual National Assessment

LIST OF ABBREVIATIONS AND ACRONYMS

The following list of terms and acronyms have been used as indicated below:

ANA: Annual National Assessment

BAFS: Business, Accounting and Financial Studies

CMC: Computer Mediated Communication

EMS: Economics and Management Sciences

FEMSA: Female Education in Mathematics and Science in Africa

ICT: Information and Communication Technology

MDG: Millennium Development Goals

LTSM: Learner and Teacher Support Materials

OBE: Outcomes Based Education

SGB: School Governing Body

SMT: School Management Team

IQMS: Integrated Quality Management System

NCS: National Curriculum Statement

CAPS: Curriculum and Assessment Policy Statement

GET: General Education and Training

FET: Further Education and Training

LOLT: Language of Learning and Teaching

REQV: Relative Education Qualification Value

UNICEF: United Nations Children's Fund

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CHAPTER 1

GENERAL ORIENTATION TO THE STUDY

1.1 Introduction

This chapter presents a general orientation on the study of the role of Learning and Teaching Support Materials (LTSMs) in determining school performance and quality education. The chapter highlights the problem statement, research questions, study purpose, study significance, motivation underpinning the study being done, and ethical considerations.

Many studies maintain that methods of teaching employed by teachers are largely influenced by the resources and facilities available in the school (O' Connor 1997:1). This statement is echoed by Hallack (1990 as cited by Adeogun (2008:145), who emphasises that the availability, relevance and adequacy of education resource items contribute to academic achievement and that unattractive school buildings, crowded classrooms, non-availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic performance.

One of the major tasks of the new democratic government in South Africa that came to power in 1994 was to promote racial equity in the state education system (Fiske and Ladd 2005:4). One such task was to change the curriculum from one that was subject and content-based to the one that is outcomes-based (Mda and Mothata 2000:88). The introduction of the National Curriculum Statement, an outcomes-based curriculum, received numerous critiques (Jacobs, Vakalisa and Gawe 2004a:58). Such objections were based on reasons inter alia, that black schools have large classes and poor resources and therefore, lack the capacity to implement the curriculum (Jacobs et al, 2004: 59).

According to Botha (2002:361-371), since 1996 when the outcomes-based education (OBE) was introduced in grade one, many rural and under-developed schools still struggle in terms of accessing adequate educational resources. South Africa's schools are divided into five categories or "quintiles", according to their poverty ranking. The poorest schools are included in quintile 1 while the least poor in quintile 5. These low quintiles represent high poverty levels, low levels of education, and

high unemployment rates while the high quintile represents areas with less poverty, high levels of education, and low unemployment rates (Department of Education (2008).

The school where the study was conducted falls within quintile 2 since it is among the poorest of the poor (NNSSF 1998). Hence, learners at schools where the study was conducted do not pay school fees. This leaves the department to be the sole source of income. While no-fee schools are part of ensuring access to education, hence, a “resource targeting list” was developed. Informed by physical conditions, available facilities, the degree of overcrowding of the school, educator: learner ratios, availability of basic services, and the relative poverty of the community around the school (Motala 2011: 15). The main impact of the revised formula is that the poorest 40% of schools should receive 60% of the provincial schooling non-personnel budget allocation and the less poor 20% of schools receive 5% of the resources (National Norms and Standards for School Funding).

Despite such measures, Motala (2011: 15) confirms that the level of inequality among the former model C schools and those in rural and under-developed areas is still prevailing. In addition, Fiske and Ladd (2005:11) argue that “the post apartheid South Africa has witnessed at best only limited progress in addressing the shortfalls in school facilities.” Thus, educators have a challenge of implementing self-discovery learning approach due to the lack of libraries, laboratories and other resources through which active participation by learners can be ensured (Gray 1997: 3). In the same way, O’ Connor (1997:1) states that “in general, where resources and facilities, teachers, laboratories, chemicals, tools and equipment, teaching aids stores etc, are inadequate, the teaching approach tends to be teacher-centred”. The researcher therefore argues that learners in disadvantaged schools are still denied effective learning and their quality of education will remain poor. As Gultig, Hoadley and Jansen (2005:78) argue, the introduction of a new curriculum in the context of extreme shortages of resources such as curriculum materials has negatively affected the implementation of OBE. However, the National Curriculum Statement is state-mandated and applicable to all schools in the country regardless of their level of readiness to implement this resource-hungry curriculum.

According to Jimenez-Castellano (2008:173), educational resources impact school achievement by promoting or hindering the ability to develop a school culture and high quality instruction. This study therefore, has attempted to justify this statement by investigating and evaluating the quality of instructional programme implemented by educators serving in rural, disadvantaged and poorly resourced schools. It has scrutinised as well as observed teaching and learning processes carried out without the support of educational resource materials to establish what role resource materials have on the academic performance of learners.

1.2 Statement of the problem

According to the researcher's observation, the school where the study was conducted was without basic educational resources like, a school library, science laboratory, internet access and other facilities. Accordingly, the researcher intended to make an informed response to whether implementing a resource-hungry curriculum without adequate resources does not exclude learners from accessing quality education in terms of skills, knowledge and preparing them for further educational opportunities. Also, what impact such practices have on learner's results.

The constantly changing curriculum in South Africa suggests that the provision of educational resources should match the demands of each and every approach required for the implementation of the newly introduced curriculum. The researcher therefore posits that failure to acknowledge this requirement is, and will continue to bring confusion in terms of what counts between quantity and quality. Hence, gross shortages of skills required in vital economic and scientific fields still persist. As noted in other studies, the researcher has also noted that since the democratic dispensation came to power, the quality of education continues to deteriorate. What seems evident to the researcher is that education administrators do not know how to deal with the current challenges in education.

Due to a pressure exerted by political leaders in haste to realise the success of their policies, the schooling system has not been able to focus on improving quality

education (Ramphele 2012: 1), she further refers to the 30% pass in most learning areas as “degrading education standards and is used for political purposes”.

To use data on the outcomes of education as the sole basis of accountability, however, is to lose sight of the fact that aspects of provision (for example, school buildings, curricula, educational materials, teachers’ instructional techniques, and preparation activities) are also relevant in assessing quality. These factors are important if for no other reason than that the quality of student learning depends on them. Students “cannot be expected to become proficient unless and until the content and process of their classroom instruction well prepares them to do so” (Haertel and Herman 2005: 21).

From the researcher’s experience, he concludes that the political-cum educational leaders determine a good performance of a school by the percentage of learners who pass, particularly (matric) grade 12. According to the Department of Basic Education (2011: 20), for many years the South African schooling system has had only one credible objective measure of learner performance: the National Senior Certificate Examination. “Any system that hinges the evaluation of the entire school on one test score average from one group of students at one grade level cannot hope to accurately assess that school” (Guilfoyle 2006 :1300). This emphasis on quantity has brought a trade-off between quality and quantity. Hence, quality education in terms of skills, literacy and numeric levels of competency continues to decline. This increase in the number of learners who pass grade 12 amid poor quality offers no solution to the needs of our country. Ramphele (2012:1) launched one of the most stinging critiques of the most vaunted matric pass rate saying it is deceptive, consigning thousands to a life that promised neither further education nor employment. Similarly, Bernard (2000) stresses that quality counts.

According to Education for All (2005: 30), it could be judged unfortunate that the quantitative aspects of education have become the focus of attention in recent years for policy makers. Ramphele (2012:1) says “the country’s education is worse today than the ‘gutter education’ that the youth of 1976 gave their lives to overthrow’. In a statement on the release of the Annual National Assessment (ANA), Motshekga (2011) pointed out that ANA results have clearly demonstrated that the teachers

need an effective monitoring and evaluation system through which the quality of education can be continuously enhanced. This is a rather tactical admission on the part the Minister of Basic Education that the quality of education in South Africa is a cause for concern.

The 2011 ANA results for grades three and grade six have shed some light regarding the performance of South African learners (Motshekga 2011). In mathematics grade three, the national average pass percentage was 35% and in literacy was 28%. In grade six, mathematics was 30% while literacy was 28% (ANA Results 2011). Gernetzky (2011:1) concludes that such performance on these learning areas which are considered the foundation of learning, proves that a challenge still exists with which South Africa has to contend.

The 2011 ANA results have also confirmed that there is a gap between formerly advantaged schools and those which were and still experience resources challenge. Motshekga (2011:32) states that the picture indicates that many schools are clearly struggling. For instance, 45% in the poorest quintiles have almost all their learners performing at the 'not achieved level' in grade six mathematics. Motala (2011:15) reiterates that while significant strides have been made in universalizing access and distribution and reallocating resources, 5. 4% of the country's gross domestic product is spent on education and 60% of schools are no-fee schools. As a result, tackling the deep-seated endemic inequalities in education continues to be a challenge. These inequalities are even more evident between the rural and the former model C schools. Kobus (2007:43-45) confirms that a general perception from among all participants was that former model C schools were able to offer their learners a 'variety,' better' and 'useful ' resources, facilities and equipment.

Although there are arguments that the difference between rural and urban areas is political, van der Berg (2006:18) states that research has widely accepted that lack of resources hampers effective teaching and learning. He is supported by Whittle (2010) who reiterates that the research has repeatedly shown the importance of textbooks and other learner and teachers' material resources in delivering quality education. William (2011) said, 'research has maintained that teaching and learning becomes more positive, interesting, varied and therefore more effective through the

frequent and selective use of resources', and the (Education For All Global Monitoring Report, 2005:29) insists that it is obvious that schools without teachers, textbooks and materials will not be able to do the job.

Against the given background, this study is addressing main research question: How do Learning and Teaching Support Materials influence the school academic performance and quality of instructional programmes in rural and under-resourced schools? McGowan (2007:92) argues that," by assessing a school's facility condition and comparing it to performance outcomes, researchers may be able to develop the ability to identify the components of school facilities that can best predict student and staff performance".

The study examined at least three basic resources i.e. (library, computers and laboratory) which are directly linked to classroom performance as well as the role of extra-curricular resources.

1.3 The purpose of the study

The purpose of this study was to single out the role of the Learners and Teachers Support Materials in determining the school performance and the quality of education using the selected school as a case study. Given the fact that there are many variables that account for a school performance, this study's midpoint has been to explore and explain the potential and established roles of a school library, a school laboratory and the use of computer technology in influencing school performance and what should be considered quality education. Hence, the main purpose of the study was to establish and explain the role of resource materials in determining a school performance and quality education in rural and under-resourced schools. The said purpose was pursued through the following specific objectives:

- To investigate the impact of the lack of Learners and Teachers resource materials in the implementation of teaching and learning styles that are associated with effective instructional programmes. This objective was meant to investigate the first sub-question of the study which is: **How does lack of**

resources restrict teaching and learning styles which are associated with effective instructional programmes?

- To probe the limitations imposed by the lack of Learning and Teaching resources on the academic performance of learners. This objective probes the second research question: **How does lack of Learners and Teachers resource materials impinge on learners' academic achievements?**
- To determine the link between the shortage of resources and the poor school culture and school climate in the selected school. To examine this third objective, the research question was: **How does lack of resources disrupt the school culture and the school climate in the selected school?**
- To determine the extent to which a learner-centred approach is implemented without the required resources. This objective had to be determined through the fourth research question: **How does lack of Learners and Teachers resource materials deter the learner-centred approach?**

Responses to these probes should in turn assist the study to suggest intervention mechanism that can be used to address the challenges faced by the rural and under-resourced schools?

1.4 Research questions

The main research question of this study was: How do Learning and Teaching Support Materials influence the school academic performance and quality of instructional programmes in rural and under-resourced schools?

The following sub-questions were therefore considered essential to evaluate the role of resources in determining a school performance and the quality of teaching and learning in the selected school:

- How does lack of resources restrict teaching and learning styles which are associated with effective instructional programmes?
- How does lack of Learners and Teachers resource materials impinge on learners' academic achievements?

- How does lack of resources disrupt the school culture and the school climate in the selected school?
- How does lack of learners and teachers resource materials deter the learner-centred approach?

1.5. The significance of the study

This study has analysed the skewed policies of both the apartheid and current regimes of education provision. While the apartheid regime based their policy on race, the current policy is failing to aggressively address inequalities of the past. As indicated in the study, the introduction of the OBE should have been accompanied by its corresponding tools of implementation. Also, understanding the curriculum demands should have informed educators to reconsider their teaching styles. Hence, the first beneficiary of this study will be the educational providers. The significance of this study intends to alert the Department of Education of the loopholes that affect the possibility of providing quality education to all South Africans regardless of their race, colour or background. This will cause them to appropriate resource provision such that all schools have access to basic Learning and Teaching resources.

The second beneficiaries will be the Learners. The availability and adequacy of educational resources enable educators to accommodate learner differences in their respective classes by addressing their different learning styles. This further improves their skills, knowledge acquisition and their achievements. By using computer technology, learners will be able to access knowledge within their culture of using devices which has become part of their daily practices. Through school libraries, the performance challenges in science subjects could be effectively addressed. As noted, scientific knowledge is best acquired through conducting experiments in a science laboratory. Hence, learners become motivated and well served when laboratory facilities are available and used.

The main beneficiaries however will be the previously disadvantaged schools. Understanding the importance of LTSM will encourage them to secure and integrate their instructional programmes to those resources which will improve their

performances. As noted in the study, they will be able to implement the outcomes based education which is almost impossible without such resources.

1.6. The motivation for conducting the study

The researcher's experience, both as a learner and as an educator in a rural and disadvantaged school has made him realise that there is a difference in terms of education quality between the rural and the affluent (urban) former model C schools. He therefore decided to investigate about the role of Learning and Teaching Support Materials in determining school performance and quality education.

Also, the researcher wants to make a contribution towards the realisation of one of the Millennium Development Goals (MDG). According to EFA Global Monitoring Report, (2005:28), the sixth goal of the (MDG) aims to "...improve all aspects of quality education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills". Given the declining quality of education in South Africa, the researcher intends to draw the attention of the education providers to the gaps in education provision which are still undermining the progress made in addressing educational challenges since the dawn of democracy in South Africa.

This study should be understood as an advice to all educators, particularly to those serving in rural and under-resourced schools to improve their instructional programmes by making use of teaching aids. Moreover, the study seeks encourage educators to improvise and network with those schools which are better resourced. By this study, the education stakeholders like the School Governing Bodies (SGBs) are urged to allocate more funds towards the acquisition of Learner Teacher's Resource materials.

Finally, the researcher intends to make an informed response to the argument that the difference between rural and urban schools is political by further affirming that equity in terms of resources and other educational facilities has not been attained in South Africa.

1.7 Ethical considerations

Since educational research does not occur in a vacuum, educational researchers are constantly interacting with a complex and demanding socio-political environment that influences their research decisions both formally and informally. For this reason, the researcher sought permission from the Provincial Department of Basic Education KZN, and the permission to use the school and its facilities was requested from the School Principal.

A consent form was designed and distributed amongst all the participants in this study. By the use of the consent forms, the researcher was able to gain the informed consent of all the participants. It was stipulated in the consent forms that any information so obtained from the participants would remain confidential between the two parties. The purpose of this was to ensure that anonymity and confidentiality were strictly adhered to. During the time of data collection, analysis was safeguarded as data were locked up in the researcher's office on the computer by using data protection passwords. The purpose of this was to make sure that nobody had access to it.

In complying with the research ethics, the following issues were strictly observed, and the following information was disclosed to the participants:

- Participation in this study was voluntarily;
- Participants were guaranteed their right to withdraw from the study without any penalty;
- The researcher refrained from anything that might physically or emotionally harm the participants;
- The findings of the research will be treated with strict confidentiality and will be used for research purposes only;
- Support will be available after the investigation should the participants need to talk to someone.

1.8 Delimitations and limitations of the study

Every study has a set of limitations (Leedy & Ormond, 2005), or “potential weaknesses or problems with the study identified by the researcher” (Creswell, 2005, p. 198). In this study, the researcher also identified some uncontrollable threats which impacted to its internal validity of a study. Leedy & Ormond, 2005) refer to delimitations as “what the researcher is not going to do”. Focussing on the case school meant that some factors associated with a school performance had to be left out.

1.8.1. Limitations of the study

The first limitation of this study was that participants did not fully accept that the researcher was conducting a study because they sometimes thought he was performing his duties as the Deputy Principal. This was particularly noted when the researcher was performing lesson observations. However, to solve this, over and above explaining his purpose, the researcher provided and discussed his observation tool with the educator before and after each lesson.

The second limitation was the time factor, given the curriculum demands the school had been subjected to due to its underperformance, participants were not fully genuine in answering the interview questions. To resolve this, the researcher had to limit the number of participants by targeting those who were willing to be interviewed even after school hours. This also led to the third limitation, which was the sample size, this could have meant that the findings could not be generalised to other schools in the same vicinity. However, given the homogeneous nature of the surrounding schools, the researcher maintains that the objectives of the study were partially achieved.

The final limitation was the scarcity of recent literature relating to the role of resources in underperforming schools. While some variables are usually investigated, resources were not fully considered as they were not regarded as that critical for the previous curricular in South Africa. For this reason, the researcher opted to prioritise the three resources the school library, the school laboratory and the use of computer technology.

1.8.2. Delimitations of the study

Since the study focused on the instructional programme of the case school, its findings may not be applicable to other schools or even those in the same area. This is informed by among other things, that schools in the same vicinity do not always fall in the same quintile. This means that the support received from the Department of Education in terms of funding allocations varies. This is determined among other things by the size of the school. Smaller schools in terms of learner numbers receive smaller allocations. Also, schools are divided into two sections, section 20 and section 21. This means that sections 20 schools do not receive their allocations in the form of money but they have to place their orders to the Department of Education which in turn buy school requirements on their behalf, while section 21 schools are given money to buy according to their own budgets. This further involves the priorities of the schools' respective governing bodies and school management teams in terms of resources they consider essential for their instructional programmes. This could be understood from the fact that not all rural and previously disadvantaged schools have an identical performance. Given the poor school climate, the researcher could not get the views of the SGB members which inform their acquisition policy. Hence these findings could not be understood to be safely applicable to other schools.

1.8 Definitions of terms

Annual National Assessment: This refers to a standardized assessment programme to assess competency levels in numeracy and literacy for grades 3, 6 and 9. For this study, ANA is used as a tool to determine the quality of education that learners in South Africa can demonstrate.

Resource materials: According to The Oxford (South African) Concise Dictionary (2010: 1006), resource means a stock or supply of materials or assets. **Materials:** The Oxford (South African) Concise Dictionary (2010: 723) describes materials as denoting or consisting of physical objects rather than the mind or spirit. In the context

of the study, Resource materials refer to the teaching aids or the physical tools to support teaching and learning in a school.

Quality education: In this study, quality refers to the level at which teaching and learning enables learners to reach their fullest potentials in terms of cognitive, emotion and creative capabilities.

Quintile: The Oxford (South African, 2010: 968), Concise Dictionary defines a quintile as Statistics of each of five equal groups into which a population can be divided according to the distribution of values of a variable. For this study, quintile refers to a framework used by the Department of Education to categorise schools in terms of the level of education and the level of unemployment rates of the communities around the school. The lower quintiles (1 & 2) are the most deserving in terms of funding.

School culture: Phillips (1993: 3) states that school culture are the beliefs, attitudes and the behaviours shared and demonstrated by school members. According to Barney (1986 in Naluwemba 2007), culture is a complex set of values, beliefs, assumptions, and symbols that define the way in which an organization conducts itself to achieve its goals. In this sense, culture has a strong influence on an organization like a school. The core element of organizational culture is shared values (Daft, 2002; Wiener, 1988). For this study, the school culture will be understood to be the modus operandi which is informed by the school policies and the code of conduct for all stakeholders.

School climate: According to Loukas (2007: 3), a school climate refers to the feelings and attitudes elicited by the school environment; this refers to a multidimensional aspect of a school encompassing both characteristics and perceptions of the school as a place of work.

School performance: In the context of this study, school performance encompasses the full range of activities that would characterize a school as being successful. This would, in addition to academic performance, also include well motivated and committed teachers, learner satisfaction and involvement, parental

involvement, a clean orderly school environment and strong principal leadership, amongst others. The definition is thus wider than merely academic performance in terms of pass rates and success in national examinations.

Self-determination: Deci and Ryan (2009: 3) define self-determination as a theory of motivation which is concerned with supporting our natural or intrinsic tendencies. In the context of this study, this refers to educators' self-confidence and the ability to make correct decisions without outside interference.

1.9 The summary of the chapters

Chapter 1: Orientation to the study

This chapter covers the introduction, background, problem statement, limitations, delimitations, ethical considerations, and chapter organization. The significance and the motivation of conducting the study are also discussed.

Chapter 2: Literature review

This chapter concentrates on the reflections of authors and scholars regarding the role of resources in education. A particular attention is given to the three basic resources the school library, the school laboratory and the use of computer technology in teaching and learning. The chapter starts by conceptualising and explaining the meanings of the key terms central to the study, that is, school performance and quality education. Also, the chapter looked at the possible role of resources in formulating a school culture and climate.

Chapter 3: Research design and methodology

Chapter three discusses the research design and methodology employed in the study. The motivation for conducting the study has also been explained. Population, sampling, sampling techniques, data collection instruments, data analysis and reliability and validity modalities are also discussed. Three approaches have been employed in collecting data, namely interviews, observations and viewing of documents. Finally, a profile of the school where the study was conducted is briefly explained.

Chapter 4: Presentation and interpretation of the findings

Chapter four focuses on the presentation, analysis and the interpretation of the findings. A brief description of the school environment and the participants is also provided. Participants' responses on interview questions and their views on the role of resources are presented, analysed and interpreted.

Chapter 5: Summary, recommendations and conclusions

Chapter five gives the summary of the findings as supported by literature reviewed regarding the benefits of educational resource materials in teaching and learning. The chapter further recommends the fast tracking of resources provision in under-resourced schools, the fine-tuning of curriculum delivery approaches in accordance with generation's culture. It also explains the roles of resources in motivation, quality assurance and learners performance in various learning areas.

CHAPTER 2

LITERATURE RIVIEW

2.1. Introduction

This chapter focuses on a review of the literature related to the role of resource materials in determining a school performance and quality education. It begins with a detailed conceptualization of key concepts central to the study; the school performance and quality education. Finally, this chapter looks at the possible role of resources in formulating a school culture and school climate.

Day (2001 as cited by McGowen 2007:56) suggests that “modern schools should contain elements such as teaching museums, ecological landscapes, technology studios and flexible furniture systems to meet the special needs of all students. Flexible classroom space increases the capability for the students to interact in participatory learning exercises. Increased classroom size and flexibility will allow teachers to utilize modern educational strategies such as project-based assignments and interactive laboratories in an environment that allows for multiple group sizes and well as individual investigation”. Hence, critical points of current knowledge regarding the benefits of integrating resources to improve a schools’ instructional programme are discussed. Therefore, the researcher looked at the roles of a school library, school laboratory and the role of computer technology in education. Finally, a link between the role of resources and a school culture and climate had been looked into.

2.2. The definitions of a school performance and quality education

For the purpose of this study, a broad meaning of school performance is not limited to the current understanding and practice whereby the only consideration is the number the grade 12 learners who pass the National Senior Certificate examination. Nsubuga (2008: 4) refers to performance in a school environment in terms of test scores, examination results, student’s ability to socially apply what is learnt and the rate at which students move to higher institutions of learning. This is further

confirmed by Brumbach (1988) and Armstrong (2001 as cited by Nsubuga 2008:3) who contend:

“Performance refers to both behaviours and results, and adjusting organizational behaviours and actions of work to achieve results or outcomes. Behaviours are outcomes in their own right and reactions to the product of mental and physical effort applied to tasks. In school environments therefore, performance should not only be defined in terms of test scores, examination results, students’ ability to socially apply what is learnt, and the rate at which students move on to higher institutions of learning, but should consider the achievements of the school in other areas like equipping the learners with the requisite skills for survival. ”

While this study acknowledges a sensible link between school performance and quality of education, as interrelated and categorised by the level of access to the relevant resources which in turn inform that particular school’s instructional programme, it argues that school performance in terms of learners’ scores, does not necessarily reflect the quality of education it offers. In the whole, school performance encompasses the full range of activities that would characterize a school as being successful. This would, in addition to academic performance, also include well motivated and committed teachers, learner satisfaction and involvement, parental involvement, a clean orderly school environment and strong principal leadership, amongst others.

The definition is thus wider than merely academic performance in terms of pass rates and success in national examinations. The underlying assumption of the theoretical framework is that when the inputs are present; student achievement will be positively impacted. Therefore, where the inputs are inadequate or compromised, neither good performance nor quality can be attained. Hanushek (2007 as cited by Roblin 2011) argues that “the output of the educational process—the achievement of individual students—is directly related to inputs that are both directly controlled by policy makers (for example, the characteristics of schools, teachers, curricula, and so forth) are not so controlled such as families and friends and the innate endowments or learning capacities of the students”.

Figure 1: The inputs and processes of determining school performance

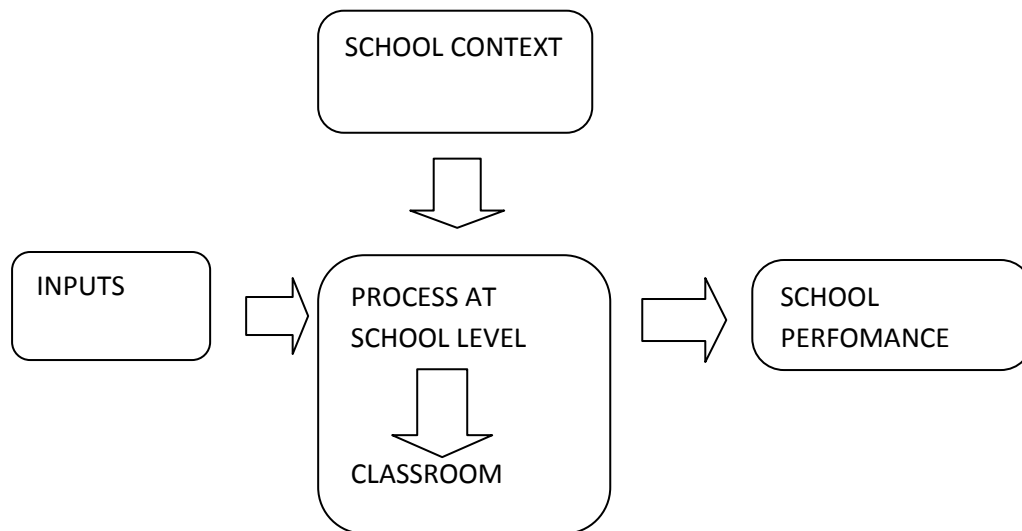


Figure 1: The diagram cited by Nsubuga (2009: 67), illustrates how the inputs and processes determine school performance.

Figure 1 above identifies the following as the characteristics of good school performance:

- student learning which entails academic progress and general development;
- parent satisfaction, which entails sustaining public confidence, support and taking into consideration the students opinions;
- staff satisfaction, which has to do with program quality and performance, working conditions, productivity and morale;
- cost control which includes financial planning, management and control.

Historically, literature on education does not explicitly define what educational quality means although there is a generality of understanding that education systems around the world are always structured around a common vision of quality or standards (Leu 2005). However, in recent times, the terms efficiency, effectiveness, equity, and quality have been used synonymously (Adam 1993). According to UNICEF (2005: 5), quality education is defined by five key dimensions: “what

learners bring, environments, content, processes and outcomes” suggesting a focus on adequate number of schools, books and learning materials, trained teachers, and the number of children who complete the full school cycle. UNICEF emphasizes that the definition “encompasses education for human security, for community development and for national progress” (p. 5). What seems obvious is that quality cannot be determined by the test scores or the learners’ results only. Serbessa (2006:5) has noted that researchers have suggested that the concept of educational quality is complex and multidimensional. Moreover, the general concept of quality education is made up of three interrelated dimensions:

- the input to the system. (the quality of human and material resources available for teaching);
- the process (the quality of teaching process);
- the output, this refers to the quality of results.

Due to the subjectivity of the two terms, that is, school performance and quality education, this study will refer to a school performance as the extent to which the school meets the standards set by the Department of Education or the school itself as well as the expectations of all stakeholders. Arguably, the set standards should define the quality of education that is envisaged. For the purpose of this study, the said quality can be located in the vision statement of the Kwa-Zulu Natal Provincial Department of Education, namely: ‘A well educated, skilled and developed Citizenry’.

2.3. The link between educational resources and learner’s achievement at a school

The question of whether educational resources have impact on learner’s attainment has been a contested issue among scholars. Contrary to a conventional understanding, Hanushek (2002, 2003 as cited by Mangan, Hurd and Adnett, 2007:4) concludes that the total level of school resources is not closely related to student performance, though Krueger (2003) challenges this interpretation of the research evidence for the case of smaller class sizes. Vignoles et al.’s (2000) survey of UK research also concludes that the link between educational expenditure and

outcomes has not been proven, though they point out that research has suffered from poor quality data and failed to fully examine interactions between school inputs and resources. Mangan et al. (2007: 4) argues that, 'the apparent absence of resource effects is at odds with conventional economic reasoning'. This range of empirical research that failed to find a link between educational resources and school performance, are countered on grounds that school inspections are mainly output focused. Woods and Jeffer (1998: 5) state that there has been a general assumption that inspection is ultimately output focused.

Evidently, in the school where this study is conducted, almost all visits by departmental officials concern themselves on whether the required scope of work has been covered (quantity). The input which involves the resources used and the processes involved in teaching and learning are not even examined. Kellaghan, Greaney, and Scott Murray (2009: 7) argue that to use data on the outcomes of education as the sole basis of accountability, however, is to lose sight of the fact that the aspects of provision (for example, school buildings, curricular, educational materials, teachers' instructional techniques and preparation activities) are also important.

Hallack (1990 as cited by Adeogun, 2008: 145) emphasized that the availability, relevance and adequacy of education resource items contribute to academic achievement and that unattractive school buildings, crowded classrooms, non-availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic performance. This provides a conclusive role of resources. This argument is supported by Fuller (1985 as cited by Servaas van der Berg 2010:16) when he states that such absence of basic resources and extreme overcrowding in many developing countries' schools means that other factors that are crucial for quality education (for example, teacher subject knowledge) may initially play a smaller role. But as the budget situation improves, more resources do not always generate a similar educational improvement, perhaps because school and classroom organisation does not adjust to use the additional resources well, or because there may be threshold levels beyond which adding further resources do not yield significant additional benefits for learning.

In a study by Yara (2010) entitled: Teaching and Learning Resources and Academic Performance in Mathematics in Schools secondary in Bondo Nigeria, the findings are in consonance with the findings of Yadar (2007) and the report by UNESCO (2008) which opined that teaching/ learning materials such as textbooks, class rooms, teaching aids (chalk, board, ruler and protractor), stationeries and laboratories affect academic performance of the learners. Also, the results of the findings agreed with that of Mutai (2006) who asserted that learning is strengthened when there are enough reference materials such as textbooks, exercise books, teaching aids and classrooms while he further asserted that academic achievement illustrates per excellence the correct use of these materials. These are also affirmed by Jimenez-Castellano Oscar (2008:173) when he says educational resources impact school's achievement by promoting or hindering the ability to develop a school culture and high quality instruction. He is indicative that lack of resources prohibits the quality of instructional programme.

In another study on Teacher's Effectiveness and students' Academic Performance in Public Secondary Schools (Delta, Nigeria), Ordein (2000 as cited by Agharuwe, Akiri, Nkechi and Ugborugbo 2009: 1), says: "It has also been observed that conditions that would make for effective teaching such as resources available to teachers, general conditions of infrastructure as well as instructional materials in public secondary schools in Nigeria are poor. These prevailing conditions would definitely show a negative influence on the instructional quality in public schools, which may translate to poor academic performance, attitude and values of secondary school students.

Servaas van der Berg (2010:32) states that poor schools also often suffer from having fewer resources, due either to budget limits or to inequitable resource allocation among schools. Additional resources are important, but it is also important to ensure that they are available in the right combinations and that school and classroom organisation adjusts to use these resources well. This was further noted in the report on *Equality of Educational Opportunity by Robin (2011: 56)* who found that black students attended schools with fewer of the resources that seemed most related to student achievement. Their schools had fewer laboratories and books in their libraries, and insufficient quantities of textbooks compared to white counterpart

schools (U.S. Department of Health, Education, and Welfare, 1966). Schools attended by black students had fewer instructional resources and lower achievement levels than their white counterparts; this suggested a link between resources and achievement.

In a study on the National Assessment of Educational Achievement, the Kuwait Ministry of Education 2008 as cited by Kellagen, Greaney and Scott Murray 2009: 90) state that, in Kuwait, findings that showed that students in classrooms with libraries or “reading corners” scored higher on a literacy test (the Progress in International Reading Literacy Study test) than did students in other classrooms were used as evidence to support the policy of the Ministry of Education to install classroom libraries.

Given the fluctuating nature of performance of the selected school, and several aspects of provision accounted for school performance, this study isolates one aspect, i.e. the role of Learner Teachers’ Resource Material and attempts to determine their role in influencing the school’s performance. This should therefore serve as a targeted intervention to highlight a gap in the provision of education in poorly resourced schools.

2.4. The role of resources in promoting teaching and learning.

Simelane (2010:70) posits that, resources are a pre-requisite for the effective implementation of OBE. Consequently, the Department of Education should make provision for such needs in schools in order to motivate learners to attend school regularly. This will also improve the learners’ performance. For any relevant and effective implementation of OBE then, a school library, computers and a laboratory have a critical role in promoting learners’ active participation which in turn will maximise their achievements. O’ Connor, (1997:1) states that, “in general, where resources and facilities-teachers, textbooks, laboratories, chemicals, tools and equipment, teaching aids stores are inadequate, the teaching approach tends to be teacher-centred. The inadequacy of resources therefore hampers not only effective teaching and learning but also derails a critical mode of implementing self-discovery learning, which is an integral part of OBE. Smartt (2008) defines self-discovery

learning as the ability of an individual to learn through personal experience and natural exploration, often motivated by curiosity. Self-discovery can also be prompted by an external teacher such as a parent, or school teacher. Through the active use of our senses, and the ability to make mental connections, learning takes place.

If the child is encouraged to experiment, and exercise his mental processes by asking questions and connecting facts, his learning will go far beyond what just a teacher can teach him. The child is actually teaching himself. Unlike learning from lecture and reading, experiential learning is retained at a very high rate. Hoadly and Jansen (2005) claim that there is little chance of OBE becoming successful in poorly resourced schools. For the purpose this study, the focus is on the following resources:

2.4.1. The role of school library

Prestebak (2001, as cited by Lonsdale 2003:10) points out, the three elements of libraries, 'information, education, and recreation', have changed little since 1918. Abell (1999) suggests that research tradition that exists in Australia had no parallel, as it centres on students' achievements in reading, study skills, and several aspects of the school library programme. In that review, student achievement has accordingly been broken down into:

- academic achievement (as represented in standardised tests);
- reading literacy (including reading for pleasure);
- broader learning (such as information skills, improved self-concept); and
- other (such as impact on particular sub-groups).

In this day and age, the entire continent of Africa still suffers from the old the challenge of educational resources; this has also been confirmed by (Dzvimbo 2012) who stated that, "in this the digital age of e-books many schools and universities are struggling to provide libraries to support their students"

Haycock (1995a, 1995b, as cited by Lonsdale 2003:12) presents a useful overview of the evidence that links school libraries and student achievement. Although the focus of his review was completed before 1990, his findings indicated the following:

- In schools with good libraries and the services of a school librarian, students perform significantly better on tests for basic research skills;
- Students perform significantly better in reading comprehension and in their ability to express effectively ideas in relation to their reading;
- More reading occurs when there is a school library;
- The guidance of a librarian appears to exert significant influence on student achievement in information-gathering;
- In schools with good libraries and full-time librarians, students perform better at higher levels in reading comprehension, and in knowledge and use of reference materials than students in schools with minimal or no library service;
- Student achievement in reading, study skills and use of newspapers was significantly greater at seventh grade level in schools with professional librarians than in schools without them.

The absence of libraries has deeply affected school life, and in some cases has made it almost impossible to pursue educational goals.

The National Education Infrastructure Management Systems [NEIMS] Report (2009) revealed that South Africa's learner outcomes rank poorly on the international stage, not only compared with learners from developed countries, but even among those from less-developed parts of sub-Saharan Africa. At the root of this problem lies the issue of illiteracy which, Equal Education argues, can be combated, to a significant but not complete extent, by ensuring that every public ordinary school has a stocked library serviced by a qualified full-time librarian .

When releasing the Annual National Assessment results (Motshekga 2011 :9) confirmed that it is widely recognised that the country's schooling system performs well below its potential and that improving basic education outcomes is a prerequisite for the country's long-range development goals. Hence the 2008

election manifesto refers to the need for a major renewal of South Africa's schools. Such challenges are partly due to the absence of libraries in those schools.

According to Equal Education (2010), major international studies have determined that, all other things being equal, the provision of a functional school library (stocked, staffed and fully funded) will add between 10% and 25% to average learner outcomes. In assessments and studies conducted in 2000 and 2001, in Massachusetts and Texas, it was found that the highest achieving students [were those who] attended schools with good libraries.

Local research has determined a strong correlation and causal relationship between the presence of a staffed library and higher academic performance. Borat and Oosthuizen (2008:3) state that "...the presence of school libraries is associated with higher performance ... The mean pass rate for schools without a library...is 47% compared with 66% for those with a library," which applies consistently to schools across the spectrum." It is generally accepted that the presence of stocked school libraries and qualified school librarians improves the average performance of learners at all levels of schooling. This shows that the provision of a school library cannot be considered a luxury, rather than a necessity. Nevertheless, the current state of school libraries in South Africa is dismal. Graeme Bloch, an education policy analyst of the Development Bank of South Africa was quoted by (Kgosana 2006:25), arguing that creative educators do experiments with baking powder. He believes that each school is entitled to a good library and computer lab; however, sometimes facilities without committed educators are just not good enough.

In 2006, the former Minister of Education, Naledi Pandor stressed the need for these resources in schools by arguing that: "Anecdotal evidence suggests that the high schools with the worst results are surrounded by primary schools that do not have the resources to teach effectively. It is important to stress that resources does not refer to money; it may refer to teacher competence, to an inadequate or absence of a library."(2010:10)

The continuing critical backlog in schools infrastructure in South Africa and admission by the Department of Education that ' progress is inadequate and uneven'

led to the development of the National Policy for an Equitable Provision on an Enabling School Physical Teaching and Learning Environment (and the National Minimum Norms and Standards for School Infrastructure. The Department of Education drafted and tabled the National Policy and the Minimum Norms and Standards, in November 2008, both of which were tabled in the Government Gazette, No. 31616, Notice 1438 and Notice 1439 (respectively) of 2008.

EE Report (2009 :9) states that since 1997, six consecutive drafts for a national policy on school libraries have fallen short of adoption and implementation. Without a National Policy to deal with this backlog, it is no wonder that there has not been much progress in the last 15 years.

It was stated in the draft Minimum Norms and Standards that “these norms and standards will be fully adopted by the end of 2009 and will be implemented in a phased manner starting from 2010.” As was the case with the National Policy, this document remains a draft, despite the deadlines for adoption and implementation already having lapsed. There has also been no public official communication from the Department of Basic Education regarding the status of this draft.

It is submitted that the Minister of Basic Education must publicly pronounce on the status of the Minimum Norms and Standards and provide reasons to the delay in adopting them. As is the case with the National Policy, this must be dealt with as a matter of urgency.

2.4.2. Computer technology in teaching and learning

Research on the influence of classroom computer use on student achievement has reported mixed findings. It is however crucial to understand the actual variable(s) behind the findings of every study. Some of the factors that influence the findings, for example, the frequency of access and use of a computer, learners’ background, and the task should be considered so as to verify the validity of the findings. This section begins by explaining the pitfalls of establishing the actual benefits of computer-aided instructions by some researchers. Thereafter, it will discuss the

advantages which are the imperatives of incorporating computers in school curriculums.

2.4.2.1. Studies which did not find the link between computer technology and learners' performance

Haung (2008: 76) posits that using computers for students to learn on their own do not show a significant relationship to students' reading performance on exams. Teachers need to explain the subject and guide the students through the computer activities, not just let them use the computer on their own without proper guidance. This is supported by Smith (2012:1) when he says "from research, it can be concluded that computer assisted instruction (CAI) is best used when it is in addition to the instruction of a teacher and not when it replaces the teacher. Huang (2008) has cited the following studies which arguably missed to identify the actual role of computers in learners' academic achievements:

- (Dynarski, Agodini, Heaviside, Novak, Carey, Campuzano and Means 2007) did a study on the effectiveness of reading and math software products on elementary first and fourth grades students and found that the students' test scores were not significantly higher in classrooms using selected reading and math software products and teachers were not very well trained about the software they were using. In this study, the cause is the level of educators' literacy on the use of computers. It can therefore be argued that the success of CAI relies on the level and the relevance of educators' computer skills. These will include inter alia, the teacher's computer training, software application training, training on the use of internet and integrating technology in curriculum.
- A federal study finds no edge for students using technology-based reading and math products (Trotter, 2007). The \$10 million study of 15 educational software products is the most extensive federal study, but the study showed students who used technology had no significant difference in math and reading achievement compared to other kinds of teaching practices. The study raised many questions about the impact of computer technology on

students' learning on both sides of opinions. The Software and Information Industry Association (SIIA) as well as the principals association of the software and digital content industry debated that this study does not diminish the critical role that technology plays as an essential skill set for the twenty-first century (eSchool News, 2007). SIIA indicated that most teachers from the study said they would like to continue to use the products. They also learned from the study that implementation of educational software is crucial to the success of any technology. There is a need for an appropriate match of technology design to the local curriculum. This study by (Dynarski, Agodini, Heaviside, Novak, Carey, Campuzano and Means (2007), highlighted the importance of developing and using computer software which will address the curricular needs of the school.

Yildirim and Fakültesi (2006) did a study on second-year pre-service teacher education students in Turkey to find the impact of hypermedia authoring on knowledge acquisition and retention. Forty-eight second-year pre-service computer teachers who enrolled in a course called Instructional Technology and Material Preparation participated in this study. Their results showed that the use of hypermedia as a cognitive tool resulted in a similar level of student achievement as those who were enrolled in traditional instruction. They concluded that Turkish students had been exposed to traditional teaching for a long time. They were not used to the technology way of teaching. Such a conclusion does not capture the purpose of learning as vehicle of change. Also, it is in direct contrast with what is perceived to be a 21st century learner. Rodgers, Runyon, Starret and Von Holzen(2006 :1) point out that: 'There is a mounting evidence that today's traditional students- those born after 1982-have a different relationship with information and learning than do previous generations, as a result of their access to the internet and computer technology'. Nobody can reject the reality that computers are at the centre of today's youth. Adults and educators are at times surprised at the level of technological literacy by their children and fast rate at which they learn to operate computer gadgets. Rogers et al. (2006 :1),say, 'Terminology such as 'Chat',' Blog', ' Blogging', 'IM', 'ON_LINE' ' to Google',' Text messaging' are used un-self consciously by the 21st Century learners.

2.4.2.2. Studies supportive of integrating computer technology in education

Other studies about the effectiveness of computer use for instruction had found positive relationships between computers use and students' academic achievements (Fuchs & Woessmann, 2004; Salerno, 1995). These results supported the argument that instructional activities that involve the use of technology capture the interest of students, which facilitate their understanding of the content and provide different way of expressing knowledge and therefore have a positive influence on performance. Mokgehle (2012:4) said that technology is the best thing to have happened to teaching, it has revolutionised the profession and brought energy and innovation. McGowan (2007:52) refers to the role of technology in the classroom as actually an issue of literacy. The term "literacy" now refers to concepts beyond reading and writing. Literate students must be knowledgeable of and skilful with globalization, automated social interaction, the World Wide Web, and new cultural dynamics (Stokes, 2000). Furthermore, Stokes (2000) provides examples of the way in which technology will transform education: from augmenting traditional textbooks to providing Web-based tutorials outside of the classroom. Commenting on South African schools, Carrol (2003: 15) concludes that 'two thirds of our schools lack infrastructure to connect internet. Nesane (2008:44) alludes that in many South African schools, instructional media are neither used nor available although teachers regard such media as necessary and useful. Carrol (2003: 18) contends that teachers should be trained to use this technology in classroom where it can be available.

2.4.2.3. The benefits of integrating computer technology in teaching and learning

Emanuel (2007:1) posits that technology, in acquiring knowledge and skills, is an extremely essential component of education and training at all levels: primary, secondary higher and professional education. This is also supported by Hamel (2011), who further clarifies some of the benefits of computer technology by saying, "computers enable storage of data in the electronic format, thereby saving paper. Memory capacities of computer storage devices are in gigabytes; this enables them to store huge chunks of data. Moreover, these devices are compact. They occupy very less space, yet store large amounts of data. Both teachers and students benefit

from the use of computer technology. Presentations, notes and test papers can be stored and transferred easily over computer storage devices. Similarly, students can submit homework and assignments as soft copies. The process becomes paperless, thus saving paper. Plus, the electronic format makes data storage more durable. Electronically erasable memory devices can be used repeatedly. They offer robust storage of data and reliable data retrieval.

Computer use by teachers and students is getting more and more common every year. Students and teachers use computers for different tasks and reasons; they are tools in today's academic environment. Hokanson & Hooper (2000 as cited by Siskos 2005:61) report that students are expected to learn more through computer use: test scores can rise, and students would learn at a faster rate. Moreover, computer-assisted education could assist students in their preparation to enter and compete in a modern, global workforce (Oppenheimer, 1997). In addition, Soong (2005: 596) posits that a computer mediated medium is sufficiently rich to allow for meaningful knowledge co-construction and negotiation between students. Hence, well-designed Computer Mediated Communication (CMC) environments should not impede learning. Secondly, the studies show that getting students to work collaboratively on solving problems in asynchronous CMC environment could provide a rich field for gleaming students' conceptions in a "naturally occurring" context. Hai-Jew (2008: 1) argues that sophistication of automation in pedagogy, rich authoring tools for multimedia and faster Internet connectivity, various opt-in learning spaces offer more effective learning opportunities for users.

Rose and Meyer (2007: 522) argue that new digital media (versus traditional media of textbooks and lecture) facilitates a more universally designed environment because the new media is inherently flexible. They outline four characteristics of digital media that are particularly beneficial for classroom application: digital media are versatile, are transformable, can be marked, and can be networked. Indeed, these are potentially valuable characteristics of learning environments or materials mediated by technology.

2.4.2.4. Educational theories underpinning the use of computer technology in education

The use of computer technology in teaching and learning relates effectively with most learning theories. Alkalai (2007:259) states that digital literacy is seen as consisting of six skills: photo-visual thinking, reproduction thinking, non-linear thinking, information thinking and real time thinking. This elucidation fairly relates to Kolb's experiential learning theory. Kolb's four-stage cyclical theory of learning combines experience, perception, cognition and behaviour. By integrating computer technology in teaching and learning, diverse learning abilities and learning styles are therefore accommodated. Hitchcock (2001) posits that technology enables teachers to pay more personal attention to each student to ensure that every learner functions within his or her "zone of proximal development. He further avers that the number of bored and frustrated learners has been significantly reduced and school has become a place of high productivity and achievement for almost everyone.

Bucci, Copenhaver, Lehman and O' Brien (2003: 36) point out that the combined research of Piaget, Vygotsky, Dewey, and Bruner supports learning environments and activities that are developed to allow for whole to-part learning with big ideas, pursuit of student questions, use of manipulative materials, and the viewing of students as thinkers who are emerging at different rates (Brooks & Brooks, 1993). A great deal of research exist connecting instructional design to positions on constructivist learning (Ertmer & Newby, 1993; Cooper, 1993). If instructors hold the constructivist orientation of learning, they are more likely to create learning environments that provide opportunities for students to create or construct knowledge. According to Pasugui (2010), 'many constructivists' models of technology use the concepts of scaffolding and developing each individual's potential. Many of the visual tools are used under the assumption that they can help bring the student up from their level of understanding to a higher level by showing graphic examples and by giving them real-life experiences relevant to their individual needs.

Dewey's emphasis on the need for cooperative learning would mesh well with technologies used for developing group projects and presentations (Pasugui 2010).

This is further confirmed by Hussain (2008:51) by pointing out that students have access to extensive databases and share their own work through networked communications to work on collaborative projects. Teachers guide the students on how to share and interact in networked collaborative learning environments.

2.4.2.5. Technological impact on specific learning areas

Ena (2011) confirms that studies showed that integration of ICT could improve students' language skills such as reading and writing (Voogt & McKenney 2007; Shalmani & Sabet 2010) and also skills on language elements such as vocabulary (Şahin 2009). The research showed that synchronous CMC was likely to increase language learners' ability to understand and produce new vocabulary items (Şahin, 2009). Also, Lee (2000 as cited by Haung 2008:80)) suggested that computer-based learning is more individualized, student-centred, greatly extending ELL students' language skills, and reducing their embarrassment. Oak (2012) said "I don't think I am making an overstatement in saying that computer education is as fundamental as learning English. Yes, it is." Given an embarrassment in literacy and numeracy levels faced by South African schools, computers become a critical necessity to alleviate this challenge.

Soong (2008: 596) has illustrated the role of CMC in the teaching of Physics and Maths by citing two studies;

- Hung (1996) investigated how the use of basic synchronous computer mediated technology help to uncover students' physics preconceptions and thought processes.
- In another CMC study involving physics collaborative problem solving, Soong & Chee (2000) demonstrated how the discussion logs (which were saved and printed out for analysis) of physics student dyads participating in synchronous computer mediated, problem solving learning provided them with sufficiently rich data about the students' thought processes, thereby enabling rich insights into how the students were thinking, and exposing their misconceptions of various science concepts in the process.

Two important observations were drawn from the two studies described above.

- Firstly, a computer mediated medium is sufficiently rich to allow for meaningful knowledge co-construction and negotiation between students. Hence, well-designed CMC environments should not impede learning.
- Secondly, the studies show that getting students to work collaboratively on solving problems in asynchronous CMC environment could provide a rich field for gleaning students' conceptions in a "naturally occurring" context. More specifically, because cognitive and metacognitive activities are normally hidden and private, the use of computer mediated collaborative tools can "force" the students to put more effort into making explicit their thought, since body language and other forms of intangible communication means are no longer viable. This would make students' cognitive and metacognitive activities overt and subject to our analysis (Hung, 1998), thereby allowing us to obtain deeper insights into students' current knowledge and understanding.

The role of computer technology in poor and under-resourced schools seems to be critical. It is relatively clear that computers are a multipurpose resource for teaching and learning. The flexibility and dynamism of computers in accommodating, enriching and mediating instructional programmes arguably singles it out to be a must have in all schools. Of critical importance is that computer technology has the ability to make up for the absence of other resources. In the absence of science laboratories, computer can and are able to substitute some of its requirements, for libraries it also provides almost everything that school libraries do.

2.5. The school laboratory and science teaching

Hofstein and Lunetta (2003:35) refers to the science laboratory as a unique learning environment, and a setting in which students can work cooperatively in small groups to investigate scientific phenomena. Also, they suggested that laboratory activities have the potential to enhance constructive social relationships as well as positive attitudes and cognitive growth.

The reason for prioritising science subjects is that advances in medicine and technology would not be possible without the brilliant and dedicated scientists and researchers. Many of them developed their lifelong interest in the field while they perform their first experiment in the lab of their respective schools. Yet these subjects generally are the most challenging; most schools consider them as killer subjects as most learners struggle to pass them. Kriek and Grayson (2009:1) alluded that international measures also indicate that South African learners are performing poorly in science. For example, of the 38 and 50 countries that participated in the Trends in Mathematics and Science Study (TIMSS) in 2001 and 2003, respectively, some of which are developing countries, South African learners came last in Mathematics and Science (Howie 2001; 2003:1-20). Furthermore, Reddy (2004), who co-ordinated the study in South Africa, explained that there are multiple, complex problems that contribute to learners' poor performance. These include poverty, resources, learning cultures, infrastructure of schools and low teacher qualifications. This makes it necessary to provide relevant resources that can enhance, simplify and improve teaching and learning of these subjects. Since the study investigates the role of resources, it singles out one critical resource, obviously a school science laboratory, noting that the school where the study was conducted has neither a school laboratory nor a science kit. Johnstone and Al-Shuaili (2001 as cited by Hofstein et al 2008:61) maintain that the school science laboratory can offer students opportunities to have more control on their activities, enhance their perception of ownership and motivation. These benefits are also consistent with OBE which encourages learners to be in charge of their learning, and to decide how they want to learn.

Hofstein, Kipnis and Kind (2008:60) believe that laboratory activities have long had a distinctive role and central role in the science curriculum, and science educators have suggested that many benefits accrue from engaging learners in science laboratory activities. The school laboratories are also a basic tool for implementing self-discovery learning in line with the constructivist learning theory. Teaching and learning becomes learner- centred thereby a required fit with the National Curriculum Statement is realised. Besides the hands-on experience in lab research and experimentation, students also learn how to make a scientific argument. Writing, reviewing information, using the right language, constructing a logical line of

reasoning, and responding to analytical comments are a few of the skills necessary to do this. These are valuable skills to have because of their usefulness in any discipline (Hofstein et al 2008:1).

Lazarowitz and Tamir (1994 as cited by Hofstein et al. 2008:61) describe laboratory as the only place in the school where certain kind of skills and understanding can be developed. This is further corroborated by Kriek and Grayson (2009) who posit that when the teachers use the kit to perform experiments, both their conceptual understanding and experimental skills are developed. In addition, when the science kit is used in their classrooms to demonstrate phenomena and explain concepts to their learners, both their teaching skills and the learners' understanding are improved.

The absence of science laboratories in most disadvantaged schools has not only compromised the implementation of this new curriculum (NCS) but also frustrated educators such that the balance of their teaching still remains traditional, (teacher-centred). Science teaching is through lecture thus, learners have to memorise scientific terms and processes instead of conducting experiments. In a study on 'Reasons why educator-parents based on townships transfer their own children from township schools to former model C schools, Lombard (2007 : 52) found out that a general perception amongst all participants was that former Model C schools were able to offer their learners "*a wider variety*", "*better*" and "*useful*" resources, facilities and equipment. Comments from some of the participants included: "*Like in Science. Everybody have (sic) access to equipment for experiments.*"

Niewenhuis and Maree (2008) insist that schools that pride themselves on their innovative approach to teaching know that classroom instruction combined with laboratory experience derives the best results. Evidence shows this method increases mastery of the subject, aids in developing scientific reasoning, and cultivates interest in this subject.

2.6. The role of educational resources on a school culture and a school climate

The terms “school climate,” “school culture” and “learning environment” have been used in overlapping but sometimes, quite different ways in educational literature (Pickeral, Evans, Hughes and Hutchison 2009 :3). This overlapping is mainly due to the context in which these terms commonly apply; a school and, or an educational institution. Other researchers had however provided an identical and focused definition of each term.

Loukas (2009:1) acknowledges the difficulty of providing a concise definition off school climate. However, he pointed out that most researchers agree that it is a multidimensional construct that includes physical, social and academic dimensions. The contextual meaning of school climate derived from Loukas (2009) refers to the feelings and the attitudes elicited by the school environment. For this study then, the emphasis is on the academic dimension. The researcher argues that it is this very dynamic (academic) which closely relates it to a ‘school culture’. The aspects of this dynamic, namely, the quality of instructions, teachers expectations and the monitoring and reporting of learners results, are defined by the quality and the use of educational resources available in a particular school.

Gary Phillips (2003) refers to a school culture as the beliefs, attitudes and behaviours that characterise a school in terms of:

- how people treat and feel about each other;
- the extent to which they feel included and appreciated;
- the rituals and traditions reflecting collaborative and collegiality.

It is fair to note that even if understood or applied separately, a common thread between school culture and climate involves feelings and attitudes within a school environment. Bush 1995 and Bottery (1992, as cited by Janhangeer 2004:248) argue that the common values and beliefs shared by the different members of the organisation help to contribute to its effective running and uniqueness. Furthermore, Handy and Aitkin as cited by Janhangeer 2004:248) posit that “the shared norms and

meanings lead to the development of a monoculture in the school: that is ‘the way we do things here’.

The environment, atmosphere as well as the tradition reigning in the school especially among heads, staffs and pupils, and the values shared by all of them accounts for the success or failure of the school to attain its educational goals. Therefore, the availability and the use of teaching and learning resources enable to enrich the instructional programme of the school. The environment under which teaching and learning occurs is also critical in defining collaboration, team spirit, the expectations as well as the mutual trust among the stakeholders in a school.

As indicated above, when it was pointed out that the use of computer technology that is sufficiently rich to allow for meaningful knowledge co-construction and negotiation between students. This enforces a culture of collaboration among students and educators. The supports provided by the teaching and learning resources, which are the critical ingredients of a supportive culture of the school bring about the ease and confidence to both teachers and learners.

In 2008, Howard conducted four case studies from four schools to determine the relationship between school library and the school culture. Using various methods, each of these schools has established a process of collaboration, and through these activities they have established a collaborative culture that is present throughout the school. Collaboration for these four schools indicated a willingness to work together, either informally with other members of the staff or formally through a school improvement method. He found that each school discussed collaboration, but the term had different meanings and was used with different connotations. The word “collaboration” was used in reference to students completing inquiry projects in which the teachers and librarians worked together to create the lesson. It was used to describe the teachers working together in teams both with members of their grade level and with vertical teams having different teachers representing different grades. It was used to describe the school librarians interacting with the teachers in a variety of ways.

Collaborative culture has multiple dimensions that work in combination with one another to ensure success at each of the schools (Coulstock as cited by Hongsa-Ngiam 2006:35). Research indicates that students are more likely to engage in the learning task when they are in a supportive and friendly classroom, and the teacher is interested in their ideas and discoveries. In the case of science subjects, Physics in particular, a school laboratory play a significant role in providing learners both a supportive environment and to discover information by conducting experiments. Reddy (2004), who co-ordinated the study in South Africa, further explained that there are multiple, complex problems that contribute to learners' poor performance. These include poverty, resources, learning cultures, infrastructure of schools and low teacher qualifications. It is also important to note that two of the variables that Reddy mentions, that is, resources and learning cultures are always considered as the cornerstones of a school performance.

Echoing the findings of research aimed at connecting facilities with student achievement, the survey commissioned by the *National Clearinghouse on Educational Facilities* (Schneider, 2003) notes that teachers report inadequate lab space, lack of fine arts accommodations, and small classrooms as deterrents to their jobs of educating children. This leads to so called 'scarce subject' educators to transfer to better resourced schools. Chisholm (2004:6) states that the racial dynamics of South African society determined the way in which the teacher rationalisation and redeployment policy actually took effect. Teachers in the better-resourced parts of the system did not move to the poorer-resourced parts of the system. Therefore, poor resourced schools fail to retain maths and science teachers, at times leaving learners for a long time without a teacher; this frustration does not only strain relations between parents and learners, but has been a cause for violent behaviour among students. This has impacted negatively on the culture of learning in most schools.

Heneveld and Craig (1996 as cited by Mbayo, 2011: 63, 64) believe in a school climate which includes high teacher expectations, positive teacher attitudes, and a system of rewards and incentives. These elements may be important in the context of Africa where teachers' conditions of service remain largely unsatisfactory. The elements are important because of their potential cumulative effect on many of the

other variables. It is critical to realise that the degrees of differences among African countries are also different, in the case of the school being investigated. The situation has further been aggravated by its historical background of apartheid. Closely associated with these factors are a number of intervening variables which include the school's culture on recognition of accomplishments for students and teachers, organized curriculum, school discipline, teachers' conditions of service, and teacher motivation.

2.7. Synthesis

This chapter began with conceptualization of key concepts central to the study, the school performance and quality education. Literature review was conducted in order to establish the role of educational resources in promoting an effective instructional programme. The roles of specific resources, that is, computers, a school library and a school laboratory were investigated. Both the dissenting and cooperative views on the role of resources were explained, compared and constructed so as to reach empirical decisions of the study.

The chapter also looked into the theoretical implications that suggest the need of educational resources in promoting learning. The chapter also highlighted the impact of resources on the school culture and climate. A brief explanation of a school performance and quality education was provided. An attempt was also made to give subjective differences between the two terms. To reach an informed decision on the role of resources, a link between education resources and a school performance has been investigated. Both the proponents and opponents views were compared and contrasted. Thereafter, the role of resources in promoting teaching and learning has been deliberately investigated. For the study to be able to respond to the research question, the following resources were prioritised: the school library, the role of computer technology and the role of a science laboratory.

The above resources were also linked to the educational theories, that is, how educational theories emphasise the need of integrating resources to improve an instructional programme? Finally, this chapter looked at the possible role of resources in formulating a school culture and climate.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter provides a description of the research design, methodology used to investigate research questions on which the study was based, discussion of data collection instruments, population, sampling and data analysis techniques used. It also explains how the study was piloted to investigate the feasibility of the project. Finally, the profile of the school where the study was conducted has been provided.

3.2. Research design

Henning, Van Rensburg and Smit (2004:36) define research design as a conceptual imagery or an architectural impression of what the product of research is expected to look like. A research design determines and outlines the methods and steps a researcher follows in finding out information about the area he or she is investigating (McMillan & Schumacher 2010:20). Similarly, Nensane (2008:56) also refers to research design as a plan for selecting subjects, research sites and data-collecting procedures to answer a research question, and its main function is to enable the researcher to anticipate what the appropriate decisions should be so as to maximise the validity of the eventual results.

As mentioned, the school to be investigated is one of those which are regarded as disadvantaged in that it is a rural, poorly resourced and situated in a remote environment. The data were obtained mainly from the educators, learners as well as the documents found in the same school.

Case studies are preferred strategy when 'how or why' questions are being posed. Since the purpose of this study was to investigate how poor resourced schools organize their instructional programmes; the researcher will therefore use case study method. Creswell (2008 as cited by McMillan& Schumacher: 345) refers to a case study as "an in-depth exploration of a bounded system based on extreme data

collection". By using case studies, researchers seek to understand the larger phenomena through intense scrutiny of a specific case or situation. Case studies are therefore described as being "descriptive, holistic, heuristic and inductive" (Rossman & Rallis, 2003: 104). The key principle in the use of case studies by researchers is the specificity of the context and its relevance to the study objectives. According to Yin (1999), a case study approach by its nature and substance "tolerate(s)" ambiguities in the boundary between a "phenomenon" and the context (Yin, 1999: 1211). Yin emphasizes that the "all-encompassing feature of a case study is its intense focus on a single phenomenon within its real-life context" (p. 1211). A case study approach allows for "flexibility" for researchers to study the phenomenon or "case" and the context, as they unfold over time. The case to be investigated in this study was how resources influence the instructional programme of Isiphosemvelo Secondary School.

Stake (2008 as cited by McMillan & Schumacher: 345) distinguishes between an intrinsic and instrumental case. An intrinsic case is one in which the focus is on the case itself. An instrumental case provides insight into a specific theme or issue. This study therefore is an instrumental case as its focus was to investigate the quality of teaching and learning in a single setting (specific school). The intention was to develop a holistic understanding of the variables affecting quality teaching and learning in an under-developed and poorly resourced school. In addition, Stake (1995 as cited in McMillan, and Schumacher 2010: 344) states that the case studies are intended to provide detailed, specific accounts of particular circumstances rather than offering broad, generalisable findings. This design method will enable the researcher to bring out the details from the viewpoint of the participants, their experiences, perceptions and decisions with regard to the phenomenon being investigated.

According to Stenhouse, (1978) there are four styles of case studies:

- Ethnography
- Evaluation
- Educational and
- Action research

The purpose of an educational case study is to improve educational practice, and that is what this research is all about, which is to improve the acquisition and use of learning and teaching materials.

3.3. The approach

Selection of the research approach is a critically important decision (Creswell 2003). The research approach does not simply inform the research design but it gives the researcher the opportunity to critically consider how each of the various approaches may contribute to, or limit, his study, allow him/her to satisfy the articulated objectives and design an approach which best satisfies the research's requirements (Creswell 2003).

The study used qualitative research methods. Qualitative research generally attempts to understand the issues from the viewpoints of the participants, Bryman (1988 as cited by Struwig and Stead 2007: 12). Since the participants in this study were the Educators, Learners including the School Management Team (SMT), the researcher has attempted to see through the eyes of the participants (Struwig and Stead 2007: 12). A qualitative research method is characterized by its natural setting; the setting was the school which included classrooms, sports fields wherever and resources could be necessary to support the schools instructional programme. This was more appropriate as the researcher attempted to understand the participant's behaviour as it occurs without external constraints and control.

Qualitative approach maintains that the situational context is important in understanding behaviour, and that human actions are strongly influenced by the setting in which they occur (McMillan & Schumacher 2010: 322). The setting in this regard was a rural under-resourced school and the participants (teachers and learners) were observed engaging in teaching and learning activities. By describing the social setting of the participants, the researcher attempted to ensure that their views are not isolated from their context. Struwig and Stead (2007: 12) emphasise that, "often the behaviour of individuals are inextricably related to the environment in which they are situated".

As a teacher (Deputy Principal) in the school where the investigation was conducted, I was able to directly observe and interview the participants and study the documents where teachers record their work. As I am permanently attached to the school, I was able to spend considerable time in direct interaction with the setting, the participants and the documents to be studied and analyzed. Qualitative research encompasses process orientation because it wants to know why and how the behaviour occurs. The behaviour in this regard was how effective teaching without basic resources takes place if at all it does, and why learners perform poorly than those who have resources? It tried to understand how teachers self esteem; teaching methods become affected by the lack of resources. Ncono (2006:64) maintains that qualitative research is an important part of contextual analysis for the purpose of penetrating beyond the facts and the figures about institutions. It is for such reasons that finding out the quality of education or what should be considered as a school performance cannot only be provided by the learners' scores or the number of learners who pass a test or an examination.

When conducting this study, all details had been observed and recorded as they occur naturally in the school context. This will in turn provide the researcher with a complete understanding of both the setting and the behaviour. This involved all formal and informal interactions within the school as well as curricular and core-curricular activities. This has been in compliance with rich narrative descriptions of a qualitative study

While attempts were made to investigate all factors that might provide explanations to the problems under investigation, admissions had been made central to the belief that the world is complex and there are few explanations for human behaviour. Qualitative researchers admit that it is not always possible to account for all the complexity present in a situation. A school as an organization and as it constantly attempts to adapt to change, poses more complexities to be easily understood and explained.

Since the aim of this research study is to investigate the relationship between the role of LTSM and school performance, the researchers' physical presence and by using qualitative research, the purpose is for the researcher to ascertain the extent

to which the whole school and indeed the school performance were affected by the lack and thus the non-use of LTSM.

3.4. Reason for using qualitative research approach

De Vos, Strydom, Fouche, and Delpont (2007: 74) provided the following guidelines on situations where the qualitative approach would be a preferred one:

- Research that cannot be done experimentally for practical or ethical reasons;
- Research that delve in depth into complexity and process;
- Research for which relevant variables have yet to be identified;
- Research that seeks to explore where and why policy, folk wisdom and practices do not work;
- Research on unknown societies or innovation systems;
- Research on informal and unstructured linkages and processes in organisations;
- Research on real as opposed to stated organisational goals.

The above guidelines seem to be quite relevant for the current education in South Africa. The introduction of the new curriculum (NCS) and its instability due to numerous changes it has, and still undergoing can be argued that it has not yet worked. Also, the fact that the study is based in a school located in a rural area where service delivery is lagging behind, and where such societies believe their needs are not fully understood by their government and thus are not prioritised. This study has attempted to clarify what quality education entails. This is partially informed by the poor performance in Mathematics and Literacy as shown inter alia by ANA results 2011. While the two subjects are the basis and the tools for learning, within the OBE system, learners have failed to acquire literate and numerate skills. Gultig, Hoadley and Jansen (2005:78) argue that introducing a new curriculum in the context of extreme shortages of resources such as curriculum materials have affected the implementation of OBE negatively, this could be the reason why literate and numerate skills have taken a nose-dive since the introduction of the OBE. This is also echoed by Simelane (2010:70) by saying 'resources are a pre-requisite for

the effective implementation of OBE. Consequently, the Department of Education should make provision for such needs in schools in order to motivate learners to attend school regularly.

The study had intended to examine and describe the meanings of lived experience. The focus had been to investigate the experiences of teachers and learners in a school situation engaged in an instructional function without the supporting resources. The experiences will then be transformed into a description of its essence allowing for reflection and analysis. When data were collected on how the learners and teachers make sense of their situation, all prejudgments were put aside and the interpretation was based purely on what was gathered.

3.5. Sampling

A purposeful sampling strategy was employed. McMillan and Schumacher (2010:489) define purposeful sampling as a type of sampling that allows choosing small groups or individuals who are likely to be knowledgeable and informative about the phenomenon of interest; selecting cases without needing or desiring to generalize to all such cases. De Vos et al. (2005: 329) hold that in purposive/purposeful sampling, the researcher must first think critically about the parameters of the population and then choose the sample accordingly. For this study, participants were selected on the basis of their ability to contribute to the development of the theory. The lessons and classes to be targeted were those that were more reliant on resources like Life sciences, Physical sciences and others that are research based. Since the main purpose of the study was to investigate teaching and learning in an under resourced school, a theory/concept sampling strategy was more appropriate for targeting educators and learners who are considered information-rich, in a school where the instructional programmes were deprived of the supporting resources.

3.5.1. Sampling criteria

McKay (2005:12) posits that certain characteristics for inclusion in the target population should be considered. When deciding on the size of the population,

Schulz (2002b: 31-32) believes that time and cost considerations would usually make it impossible to include the whole population in the study. Therefore, the use of smaller numbers results in accurate information because with a sample time and effort can be concentrated to produce better quality research. A purposive sampling was used for this study; this means that participants were selected for their exceptional ability to provide rich data. The selection of participants for this study was informed by the researcher's judgement based on the fact that as an educator in the very same school where the study will be conducted, the researcher is better positioned to identify data- rich informants.

3.5.2. The sample size

De Vos et al. (2005:74) maintain that a qualitative study is concerned with non-statistical methods and small samples, often purposely selected. For this reason, it was envisaged that from the entire population, a total of eighteen participants would be interviewed; the characteristics and the sample size was as follows:

1. Two educators from the Natural science department;
2. Two educators from the department of social sciences;
3. Two educators from the department of languages;
4. Two educators from the economics management sciences;
5. Four learners from the FET band (grade 10 to 12);
6. The school's sports convener;
7. One Head of department from each stream;
8. The Principal of the school.

Although qualitative studies involve gathering a range of in-depth answers to semi-structured or open-ended questions. Barnes (2006:2) argues that 'data saturation is not necessarily an appropriate method for all kinds of qualitative research. For example, it tends not to be an analytical aim in case studies'.

3.6. Data collecting procedures

The procedure for collecting data entails gaining access to the research site, presentation of oneself and becoming acquainted with the research subjects, the data collection procedure, and data collection instruments.

• Gaining access

Schulze (2006:19) indicates that for research conducted at an institution, such as a school or University, approval for conducting for the research should be obtained before any data are collected.

Since access to the research site could be an issue, and since the researcher is attached to the school where the research was conducted, it became necessary to negotiate permission from the principals and the Department of Education so that rules and regulations in public schools concerning permission to conduct research are complied with. Permission was therefore requested from the Principal who in turn, informed the ward manager of both the request and the internal arrangements to accommodate the said research to take place. (Refer to appendix A and B: a letter requesting permission to conduct a study and the response giving permission) Time schedules were drawn and agreed upon with research participants. The sampled learners' parents were consulted individually by the researcher at their respective homes to ask their permission and agree on the time of their choice (Denzin & Lincoln, 1998:57).

Depending on the contingencies of the setting and the research problem chosen, there are two kinds of research access that may be obtained (Denzin & Lincoln, 2000):

- “Covert” access without subjects’ knowledge of researchers’ presence
- “Overt” access which is based on informing participants and getting permission from all of them often through ‘Gatekeepers’. In this case, gatekeepers are the Department of Education officials and the principals. In this study, the possible kind of access was the “Overt access” which was relevant to this study due to the fact

that the participants had the choice to participate or not (Denzin & Lincoln 2000), also because the researcher is attached to the same school.

• **Becoming acquainted:**

Although the researcher is a member of the school, it still became important to create a relaxed atmosphere with the participants. The presentation of oneself is very important because it leaves a profound impression on the respondents and has great influence on the success (or failure) of the study. Sometimes, inadvertently, the researcher's presentational self may be misrepresented, as Johnson (1976) discovered in studying a welfare office, when some employees assumed that he was a "spy" for management despite his best efforts to convince them of the contrary. For such reasons, also since the researcher is the deputy principal of the school, participants were informed beforehand whether the researcher was performing his duties as the school deputy principal or he was conducting a research. A determined attempt was persistently done to distinguish the two. The explanation of the research's purpose was explained, which was to investigate the role of LTSM in determining the school performance. They were also informed that their participation was voluntary and the collected information would be strictly confidential.

3.7. Data collection instruments

Data collection instruments are the tools that the researcher uses to collect data. The researcher used several instruments to collect data so that almost all issues can be covered in this study. For the purpose of this study, the researcher gathered whatever information so as to provide an in-depth understanding of the phenomenon being investigated. This is a critical requirement of a case study. Noor (2008:4 as cited by Ellis and Levy 2009: 4) says "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context using multiple sources of evidence". Hence, the phenomenon the study is investigating is the role of resources in determining learners' performance and quality education in the selected school. To meet this requirement, multiple data collecting methods will be used. Jacob (1988) categorized the typical roles a qualitative educational researcher takes. The researcher approached this research as a human ethnologist and cognitive anthropologist. A human ethnologist uses observational data (analyzed quantitatively) to understand human behaviour while a cognitive anthropologist uses

interview data (analyzed qualitatively) to understand “underlying schema or categories that participants employ in making meaning of their experiences” (Wilson, 1998, p. 6). Using this guiding principle, the researcher chose only the student and teacher interview questions to provide additional depth and context. Therefore, data have been collected through the use of interviews, observations and by viewing the documents (MacMillan & Schumacher 2010: 345).

3.7.1. Interviews

Interviews are the most important methods for gathering information in case studies (Yin, 1994 and Stake, 1995). As in every qualitative study, interviews are regarded as the primary data collecting strategy. Kakinda (2000) writes that 90% of the research in the social sciences is conducted using questionnaires. However, the questionnaires were found to be disadvantageous in that many people who received them did not return them on time. According to Amin (2005), the disadvantage of the questionnaire is a low rate of return. Furthermore, it is not at all uncommon for respondents to simply tick of response options without reading or considering them (Sekaran 2003). Accordingly, research scholars advise researchers to carefully select their respondents, ensure that they are, indeed, willing participants in the study and will answer the questions with the minimum degree of bias (Hair et al., 2005). To ensure that this, indeed, is the case, when in-putting the questionnaire data, the researcher should carefully read through them to ensure that there are no logical flaws and that the responses given by any one respondent are not contradictory (Hair et al., 2005). To avoid the challenges of questionnaires, the researcher has opted to use questionnaires.

For this study, both structured and semi-structured interviews were used. The selection of strategy and forms depended on the context. Individual face-to-face interviews were used and thus, strengthening the clause of confidentiality. This assisted the researcher to understand the closed worlds of participants, the factors affecting learner’s performance in their respective subjects, educators’, principals’ and parents’ comments and opinions regarding learners’ performances (Refer to Appendix C). However, learning about these ‘closed worlds’ depends on the ability of the interviewer to maximise the flow of valid, reliable information while reducing the

distortions in the interviewee's recollection of events. Open-ended interviews enabled the interviewer to obtain an inside view of the social phenomenon that also explored other avenues that emerged from the interaction. The use of open-ended interviews encourages two-way communication. This kind of interview confirms what is already known but also provides the reasons for the answers and often interviewees may more easily discuss sensitive issues (De Vos 2001:298). The advantage of using interviews is that interviewers do not have to be particularly skilled in the art of interviewing.

The semi-structured interviews were asked primarily for the participants, their views, beliefs, attitudes and experiences about the nature of teaching and learning taking place in the school.

For the interview guide approach, topics were selected in advance. Niewenhuis and Maree (2008: 87) state that 'a structured interview is characterised by its structured format in that questions are detailed and developed in advance and are asked in a rather structured manner. With these interviews, the researcher targeted those issues which were purposefully planned to cover, and were also used for the information rich participants. Questions asked involved views on school performance, the role of resources, procurement processes, teaching styles, educators' beliefs on the importance of LTSM, their ability to use them, the level of educator's satisfaction with their duties (Refer to appendix C).

In between the structured and unstructured interviews, the semi-structured interviews were used. In these interviews, the researcher made use of questions that were part of the interview guide; not a schedule and or questionnaires. Questions about each issue were asked in an open-ended manner and the sequence in which the questions were posed was more flexible. The informal interview strategy was crucial in this study as the researcher has been a participant observer. Career and life history interviews were used amongst the educators to obtain their career history and the narratives of their professional lives. These helped to elicit their experiences, feelings and aspirations regarding their work situation. Elite interviews were used when interviewing the Principal and the Heads of Departments (SMT) as the management of the school has the overall view of the school's instructional

programme. They were responding to question regarding the culture of the school. The school's instructional programme and relate to the school's vision and the mission statement.

3.7.2. Direct observation

Data were also collected through intensive observation. Researchers applying the qualitative approach use observations quite often. According to Rammala (2009:41), this method produces especially great rigour when combined with other methods. The strategy is used as a principal data-gathering strategy in qualitative research because researchers are interested in the ways in which people usually make sense of or attach meaning to the world around them (De Vos 2001:277-281). The observation method is unobtrusive and does not require direct interaction with participants; the observation can be conducted inconspicuously. In fact, there are settings and types of behaviour which could not be studied through other more blatant methods. Another strength associated with observational research lies in its flexibility to yield insight into new realities or new ways of looking at realities (Rammala 2009:41).

As the researcher is an educator in the same school where research has been conducted, his role became that of a participant observer. The researcher therefore had an advantage of being familiar with the setting of the study and had built the rapport with the participant in advance. However, the researcher had to adjust his role as a researcher and not the Deputy Principal of the school. During and after observations, the researcher took field notes on what he saw and heard. Although there are risks of researcher bias in personal observation (Cohen, Lawrence & Morrison, 2007), when the data are triangulated, it can provide an insight about the context that may otherwise be lost. In an effort to reduce observer error, observational notes were typed within a few hours of the events (Cooper & Schindler, 2001).

Sometimes the researcher had to reflect on what he experienced while teaching without the required resources. Part of observing was to conduct class visits as a direct observation of educators conducting lessons without using appropriate and

required teaching resources. The goal was to see the teachers in their natural setting and informing them in advance would have made such teachers prepare for my visit. In other words, the researcher was attempting to minimize the Hawthorn effect (Wikipedia, 2007 as cited by Mbayo 2011: 112), a psychological response in which subjects alter their behaviour because they are aware of their participation in a study. This strategy proved very helpful to assess the instructional practices of the teachers and have insights into the specific learning opportunities that existed in each school. These were not part of routine monitoring as the Deputy Principal, permission was asked from the educators to be observed and the purpose of visit was clearly explained. Since one of the objectives of the study was to investigate the whole instructional programme of the school, the researcher had to extend his observations to the sports fields and other school venues where extra-curricular activities were taking place. The researcher videotaped and took pictures of the developments within the classrooms.

3.7.3. Documents analysis

Data were collected from the school's official documents. Ormond (2005:213) argues that a case study does not have to be a narrative; learners, teachers and children's artefacts (for example student's short stories, class notes, teacher's syllabi, handout quizzes) provide equally viable connections to real world classroom context. Gall (1989) adds that documentary evidence is necessary because it provides a rich discourse of facts punctuated with opinions making it useful in cross referencing of present findings.

For the purpose of this study, the documents analysed included minutes books, log books, internal departmental policies, school assessment policies, educators work plans, educators lesson plans and learner's portfolios and reports. The researcher also took the liberty to examine financial statements and minutes of the school governing body, the intention being to establish which plans and ideas the SGB propose with regard to the provision of resources. By going through the minutes of all school internal departments, the researcher wanted to find out requisitions of materials by educators through their respective departments. Documents analysed

also included school improvement plans which are as a result of the integrated quality management system (IQMS).

3.8. Validity and reliability

Worthen, Borg and White (1993) define reliability as the measure of how stable, dependable, trustworthy and consistent a test is in measuring the same thing each time. Therefore, it is important that the researcher maintains a comprehensive protocol of his study, in case others may be interested in checking its reliability (Sekaran, 2003). According to McMillan and Schumacher (1997:404), qualitative researchers commonly use a combination of mechanisms to enhance reliability in the collected data. Hence, all interviews were recorded and precisely transcribed. McMillan and Schumacher (1997) regard validity of a qualitative research design as the degree to which interpretations and the concepts have mutual meaning between the participants and the researcher. Hence, the research and participants should agree on the descriptions and the meanings of the different occurrences. Therefore, to enhance validity in this study, the following were strictly observed:

- Participants' words were transcribed as they were spoken;
- Multi-data collecting techniques were used;
- Data collected was compared to check its validity.

Each participant was given a copy of the transcriptions of the interview to check its validity.

3.9 Piloting the study

Pilot study is defined as the "miniaturised walk-through of the entire study design" (Babbie 1990: 220). The purpose of the pilot study is the investigation of the feasibility of the planned project is to bring possible deficiencies in the measuring procedure to the fore (Huysamen, 1993: 205). Pilot testing is crucial as Cohen et al. (2000) have observed because the benefits include increased reliability, validity and practicability of the questionnaire. The questions were then modified for use in generating live responses.

The questionnaires were initially drafted based on the objectives of the study:

- to evaluate how educational resources promote or inhibit quality instructional programmes;
- to highlight the importance of technology in maximising the quality of educational instructions, while maximising their load;
- to determine the extent to which a learner-centred approach is implemented without the required resources.

The draft was thereafter given to two senior members of the staff to check for typing and language errors. This was done to determine if participants will understand instructions and questions asked. Based on the recommendations of the pilot persons, necessary adjustments were done. Four participants were drawn from the population to verify whether the instructions were:

- clear;
- correctly formulated;
- able to elicit meaningful response;
- able to determine the average length of interview.
-

The results from the pilot study brought up the following changes:

- It became clear that the use of the questionnaires will not only be time consuming, but there was a risk that many participants were not going to return them;
- Learner participants in particular, seemed to have a challenge of understand the questions in their context;
- Educators in the school became concerned that questionnaires could interfere will learners time for their studies.
-

For the above reasons, the researcher discarded the questionnaires and only the interviews and observations remained the basic tools for data collection.

3.10 Summary

This chapter began with the description of the research design, methodology used to investigate research questions on which the study was based, discussion of data collection instruments, population, sampling and data analysis techniques used.

Also, a brief description of how the study was piloted to test the feasibility of conducting the full project has been included. Finally, a brief description of the school profile has been made to disclose the environment which arguably needs more resources.

CHAPTER 4

PRESENTATION AND INTERPRETATION OF THE FINDINGS

4.1. Introduction

This chapter presents the findings of the study as gathered through the researcher's observations, unstructured and focused group responses as well as document analysis. The participant's responses, their actual comments and statements were quoted verbatim, analysed and interpreted. Hence, the chapter is divided into four sections, data presentation, and analysis of interview responses, observations and documents analysis.

4.2. Biographical data

The aim of this case study was to investigate the role of resources in determining a school performance and the quality of education. Hence, the main research question was: How does the lack of Learning and Teaching Resource Materials influence the quality of instructional programmes. The National policy and Minimum Norms and standards states that:

“Inadequacies are stark in some aspects like the provision of school libraries where nearly 80 percent of schools are still without science laboratories, lack of computers for teaching and learning in 68 percent of our schools, and inadequate classrooms leading to overcrowding in nearly a quarter of our schools” Hence, three basic resources had been prioritised, these being the school library, laboratory and the role of computer aided learning.”(Equal Education 2010:10)

For the sake of lucidity and context, a brief description of the school environment inclusive of the availability of key resources as well as the demographic description of the participants seemed logical.

4.2.1. The school environment

The selected school is under Amajuba district, one of the districts in Kwa-Zulu Natal's provincial Department of Education. It is located in a deeply rural community. In terms of its poverty level, it has been alternated between quintiles one and two due to apparently inconsistent criteria for determining school quintiles. A clear fact is that, the majority community members are not employed and have no stable income. Hence, the school was among the first to be declared a no-fee school.

The school also struggles to solicit the required support from the members of the community, particularly the parents. Hence, discipline remains educators' responsibility. In general, learners show neither commitment nor motivation in their learning. The challenges of large scale drop-out, pregnancy, absenteeism and late coming are on a higher dimension. Most learners who had since matriculated from the school do not pursue further learning. This is apparently due to low quality of their results, lack of finance or even poor guidance from parents. Due to an unstable performance of the school, it gradually experiences a decline of learner enrolment; this also leads to a reduced number of posts allocated to the school. As Chisholm (2004:6) states, the racial dynamics of South African society determined the way in which the teacher rationalisation and redeployment policy actually took effect. Currently, the school has 700 learners, all coming from the community where the school is situated. The number of educators in terms of the Post provisioning norms is 24; the Principal, Deputy Principal, three HODs and nineteen post- level one (PL1) educators. In terms of subject streams it offers three streams: General stream, Science stream and Economics and Management Sciences stream.

The medium of instruction at the school is English. However, educators and learners use IsiZulu, which is their first language. Appallingly, this also happens even during those lessons that are supposed to be taught in English. Most importantly, educators are fairly committed to teach, the rate of absenteeism is very low, they volunteer to give extra classes, and during teaching hours they honour their periods as per school composite timetable. However, the commitment by educators is not complimented as learners come late, bunk classes and very lethargic in doing their

work. Teaching is mostly teacher-centred. There are no core-curricular activities. This environment is however common in many other previously disadvantaged schools. It is apparent that such environment is not conducive to effective learning. Although a variety of factors could be ascribed to such an environment, one of them is the lack of educational resources.

These disparities among schools were confirmed by the previous Premier of Gauteng Province, Mbazima Shilowa on Monday the 19th of February 2007 during his State of the Province Address. His speech was titled: 'Education Action. Promise to Black kids'. This is what he said:

“The education of the Black child continues to be compromised 13 years into democracy. We have made important strides in redressing the inequalities of the education system of the past, we have not yet succeeded in ensuring that the quality of the education of the African child is up to scratch’ hence, ‘ there is a need for enormous state assistance to close the gap between such disparities in most cases when learners are not performing, the issue that is always raised is the lack of facilities and inadequate resources like learner support materials” (Motala & Pampallis, 2001:55-56).

4.2.2. The age range of the participants

The findings revealed that the age range of all participants interviewed was between eighteen and fifty eight years. Hence, the opinions that dominated this study were based on this age group. Educators and learners were selected because they are affected by the lack of resources. The subject specialists were selected to share their views of managing an instructional programme in an environment which is not conducive to a quality learning and teaching situation. Learners were expected to share their experiences of learning without supportive resources and the principal was also involved to share his experiences of managing a resource-hungry curriculum without required resources.

4.2.3. Educators' qualifications

It should be emphasized that in South Africa, the minimum qualification is M+3, which is RQV 13, which means that an educator should have a minimum of three years of training specialising in those subjects he or she has to teach.

What the study revealed was that of the two Physical sciences educators in the Further Education Band (grades 10 to 12), one meets the minimum qualifications, for Life sciences also, one out of three meets the minimum qualification, and the other two's qualifications are not relevant for post primary teaching. In mathematics, one educator has a three year diploma for the subject while the other qualifies for the intermediate phase, that is, grades 4 to 6. For all other subjects, educators meet the minimum qualifications.

4.2.4. The status of resource materials in the selected school

Since this study looks at the role of resources in determining the school's performance, it is logical to look at which resources the school has, and how the school implement its instructional programme amid the shortage of basic resources. This information will help as a response to the sub-questions posed by the study:

- How does lack of resources restrict teaching and learning styles which are associated with effective instructional programs?
- How does lack of Learners and Teachers resource materials impinge on Learners' academic achievements?
- How does lack of resources disrupt the school culture and the school climate in the selected school?
- How does lack of Learners and Teachers resource materials deter learner-centred approach?

The study has prioritised three basic educational resources which the researcher considered critical, namely:

Computer (s): only one computer is available for the entire school. This computer is for the exclusive use of the school's administration. The activities performed include storing information on learners and educators. Basically, it is used for typing documents, reports and examination papers. Therefore, both learners and educators do not benefit from computer technology as it has no role in the academic content of the school.

School library: There is neither school library nor library material to assist in enriching the school's instructional programme. The absence of this critical resource could be understood through understanding Saiful's affirmation (2009) that a school library is primarily concerned to pro-create an urge for reading amongst the children who get a first-hand-knowledge to use the library resources most effectively in their future careers. This institution serves to build up a strong mental base and character of the children. Given the demands of OBE, teaching and learning without this resource could spell a lost course. Hence, self-discovery learning in this school could hardly crop up.

School laboratory: The school offers both Physical sciences and Life sciences from grades ten to twelve. In the General education phase (grade eight and nine), all learners do Natural sciences. Hofstein and Lunetta (2003:49) maintain that school laboratory activities have special potential as media for learning that can promote important science learning outcomes for students. However, in the case school, there is neither laboratory nor a science kit to assist in the teaching of all science subjects. Hence, Physical sciences and Mathematics remain the killer subjects in the school results.

4.2.5. The demographic details of the participants

It was important to analyze the background characteristics of the participants; the Principal, teachers, learners and Heads of departments who participated in this study. Their characteristics have a strong bearing on the study's findings. A total of eighteen participants were purposively selected and interviewed for the study. All the interviews were recorded and transcribed.

4.3. Unstructured interviews on the roles of a school library, laboratory and computer technology.

The researcher conducted a minimum of two sessions with each interviewee. Participants were interviewed on the role of the prioritised resources in the teaching and learning of the subject he or she was teaching at the time. Individual interviews were conducted with five science subjects (Mathematics, Life sciences, Physical sciences Mathematics) educators, two English language educators, two Economical and management sciences educators and the school Principal focus group interviews were conducted with four Subject specialists and four learners. The participants were initiated by asking them the following question: “How does lack of resources limit their teaching styles in terms of improving learners’ performance and ensuring that quality learning prevails?”

4.3.1. Unstructured interviews for sciences educators

To reveal the limitations imposed by the lack of resources, the participants were asked the following question: “How does lack of resources limit your teaching and learning styles in terms of improving learners’ performance and ensuring that quality learning prevails in the teaching and learning of your subjects?”. The response included the following:

At times, I find it impossible to sustain the interest and attention of the class if all I have to do is talking and writing on the board. In most cases I have to spoon feed learners and hope that they will memorise what I say. However, in most cases they fail to grasp and apply basic scientific concepts. Learners have to memorise scientific terms and processes instead of conducting experiments.

Learners rely on what I say in the class, this does not accommodate all learners as it does not give them many options to take in information since they learn differently. Without resources, it is also impossible to create opportunities where they can learn on their own. Sometimes when given assignments or other activities where they have to find out information on their own, they use notes or prescribed textbooks. In

the absence of science equipments, rote learning does not adequately prepare learners to apply scientific concepts.

4.3.1.1. Analysis of results findings

The responses revealed that teaching and learning of science subjects is mainly textbook dependent. Other than that, learners have to rely on their educators' lectures. Hence, rote learning is the only learning style left for learners. This type of learning is ineffective for science subjects, as pointed out by the Female Education in Maths and Science in Africa (FEMSA document, 2010:3) which stressed that: "A teaching approach that centres on the teacher is bad for science teaching and learning and soon kills the interest of students in the subject." Where resources are available, a science teacher will deploy methods that centre on the learner. Such an approach emphasizes practical activities and has the pupils experimenting, solving problems, discussing with each other and involved in practical hands-on-activities. Tobin (1990:405) wrote that "Laboratory activities appeal as a way of allowing students to learn with understanding and, at the same time, engage in a process of constructing knowledge by doing science. In accordance with the self-discovery learning, the use of science resources in teaching and learning enables learners to construct knowledge on their own. This approach does not only optimise learners' understanding but also gives confidence and motivation to learners. In the selected school, the opposite is true in that all science subjects are taught without use of these resources. As a result, learners always perform poorly on them.

4.3.2. The school laboratory

On the question: "How can the availability and use of a science laboratory (science kit), school library improve your teaching styles and the performance of learners?"

The following responses were made:

Unlike other subjects, science subjects are practical subjects which require conducting experiments. Rote learning does not help them to acquire scientific facts. In addition to classroom instructions, learners can have laboratory experience. This can improve their understanding of the subject, and help them develop scientific reasoning, and cultivate interest in these subjects. This will also give learners

opportunities to use scientific apparatus for creating information on their own. They believe by conducting experiments, learners will be actively involved in their learning. The participants stated that when the science kit or laboratory equipments can be available for use in their classrooms to demonstrate phenomena and explain concepts to their learners, both their teaching skills and the learners' understanding are improved. They claim the reasons for poor performance in science subjects are largely due to conditions under which they teach.

4.3.2.1. Analysis of results findings on school laboratory

Hofstein, Kipnis and Kind (2008:60) believe that laboratory activities have long had a distinctive role and central role in the science curriculum, and science educators have suggested that many benefits accrue from engaging learners in science laboratory activities. The school laboratories are also a basic tool for implementing self-discovery learning in line with the constructivist learning theory.

For learners to have maximum benefit from learning science subjects, a school laboratory supports several learning styles to benefit the whole class according to their learning abilities. This could be better explained by Kolb's four stage learning cycle:

Figure 2: Kolb's four stage learning cycle

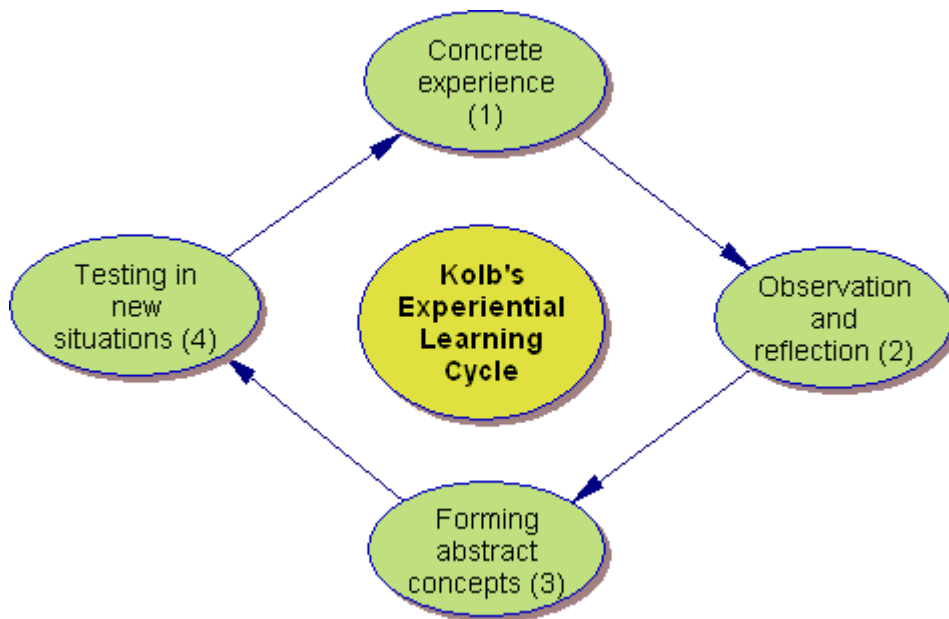


Figure 2: Kolb's four stage learning cycle

The first stage, **concrete experience** (CE), is where the learner actively experiences an activity such as a lab session or field work. The second stage, **reflective observation** (RO), is when the learner consciously reflects back on that experience. The third stage, **abstract conceptualization** (AC), is where the learner attempts to conceptualize a theory or model of what is observed. The fourth stage, **active experimentation** (AE), is where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience.

The researcher's analysis identified the hopelessness of science educators of offering a relevant science instruction to learners through lecture. Educators perceived the absence of a laboratory as the main limitation towards effective teaching of science. Kriek and Grayson (2009:193) confirm this assertion by stating: "When the teachers use the kit to perform experiments, both their conceptual understanding and experimental skills are developed. In addition, when the science kit is used in their classrooms to demonstrate phenomena and explain concepts to their learners, both their teaching skills and the learners' understanding are improved." Another rational conclusion is that, without laboratory work or use of its apparatus, self-discovery learning or learner-centred approach cannot be implemented. Hence, traditional learning remains the only option. This fact is

supported by Smartt (2008) by stating that: “Educational professionals would do well to develop ways to maintain a high level of self-motivating educational materials and projects for the classroom that will encourage hands on learning and real life interaction experiences with the subject of the class”. Without a school laboratory, teaching largely remains teacher-centred and learners remain passive listeners. In addition, Johnstone and Al-Shuaili, (2001 as cited by Hofstein et al. 2008:61) maintain that “the school science laboratory can offer students opportunities to have more control on their activities, enhance their perception of ownership and motivation.” Of significance is that learners will have opportunities to discover information on their own. This will decrease the amount of time explaining and increase the time devoted to the student-centred strategies. Since laboratory work involves conducting experiments, this will involve multidimensional learning and relieve them from rote learning which is both strenuous and counterproductive.

This approach is in direct contrast with an OBE approach. Hence, the study questioned the rationality of introducing NCS as a resource-hungry curriculum without basic educational resources like a library, science laboratory, internet access and other facilities for the core-curricular activities. It is on the basis of such disparities that the researcher posits that such scenario exclude learners in rural and under-developed schools from accessing quality education in terms of skills, knowledge and further educational opportunities. This further puts a strain on those learners with learning barriers. As stated by Hall, Strangmann and Meyer (2009), “a student without a well-developed ability to see, decode, attend to, or comprehend printed text is compelled to adapt to its ubiquity as best as he or she can.”

4.3.3. The school library:

To determine the role of a library in determining a school performance in the teaching and learning of Physical science, participants were asked the following question: “How can the availability and use of a school library improve your teaching styles, learners’ performance and the quality of instructions in Physical science?”

The following responses were made:

A school library can provide numerous resources for learners to find information on their own. Learners can be able to access references for their assignments, projects and other activities. The availability of a library is vital in encouraging learners to read extensively on topics that were learned in the classroom. Learners can be able to compare different books and other materials on certain topics and opt for those that serve them better. Teachers will be comfortable to cause learners to find information for their assignments knowing that sources are available in the school library. Learners will be able to work together in groups to find out answers on particular questions.

4.3.3.1. Analysis of results findings on school of the school library

Given that learners are not all alike, a variety of books and other materials is important to offer learners choices of books that can suit their level of understanding. Hall et al. (2009) stress that: "Helping students to find a book that is challenging, yet not too difficult. This helped to keep students work and learn in their "zone of proximal development" when obtaining background information for the lesson". Schools without libraries are not able to cater for such learning abilities among their learners. This inability to contain, motivate and challenge learners impact negatively on the performance of the school. Learning under such conditions lack quality dimensions available in schools where libraries are available.

4.3.3. Use of computer technology

To determine the role of computer technology in teaching and learning of science subjects, the following question was asked: "How can the availability and use of computer technology improve teaching and the performance of learners?"

The following responses were captured:

All participants pointed that computers are flexible and can make up for the absence of other resources. Other responses were as follows:

Computers are more flexible in presentations, better management of instructional techniques, and easier record keeping. Their availability can therefore go a long way to relieve us of extra duties that we perform manually.

Computers are easy to use and to access information. The advantage of using computers for teaching purposes is that they provide both audio and visual information and will therefore suit learners on their learning styles. And because of its interactive nature, all sources and information necessary for teaching and learning can be consolidated in one location. Hence, saves time an offer and interactive learning experience.

They felt computers can do part of their work by providing information on everything through internet like, *"teaching chemistry problem solving"* and *"on-line problem solving"*. in that way computers and internet will alleviate the stress of doing everything for learners as they are capable of providing information on every topic, answer the questions learners might have, give instructions of performing a task and provide practice and revision exercises for the learners. By the use of computers, learners will able to perform numerous tasks like reading, exploring, problem solving and drawing and by so doing improve their performance

Most mentioned the advantage of the possibility of downloading model lessons from the internet which can help to consolidate class lessons. .

One Physical science educator's response was that *"For science, computers have sites in "problem solving in chemistry, "teaching chemistry problem solving, "on-line problem solving, also, there are computer programs called PALs (Personal Assistants for Learning) in which computers and students alternately coach each other."* He also mentioned that: *"Computers offer students a very important resource for learning the concepts and processes of science through simulations, graphics, sound, data manipulation, and model building.*

Through programmes like KidSmart, available in well resourced schools, learners are able engage in programmes that support physics and maths through question and answer exercises, in that way they work ad discover information on their own.

Since most learners have cell phones and use internet for enjoyment, it can make sense to tap into such experiences, by encouraging them to use internet for Learning

purposes, however not all of them have cell phones, and those who do have excuses for not using their cell phones for school work. ”

4.3.3.1. Analysis of results findings on computer technology

The analysis of participants' responses proved that they do not only envy but are very much aware of the benefits of computer technology for their work. This is attested by Nesane (2008:44) who alludes that in many South African schools, instructional media are neither used nor available although teachers regard such media as necessary and useful. Such benefits involve the following:

- **Storage of information**

As part of record keeping and administration, computers are the most safe and reliable tools. Also, they can reduce burdensome paper work that teachers have to deal with. Hamel (2011) clarifies some of the benefits of computer technology by saying: “Computers enable storage of data in the electronic format, thereby saving paper. Memory capacities of computer storage devices are in gigabytes; this enables them to store huge chunks of data. Moreover, these devices are compact. They occupy very less space, yet store large amounts of data. Both teachers and students benefit from the use of computer technology. Presentations, notes and test papers can be stored and transferred easily over computer storage devices. Similarly, students can submit homework and assignments as soft copies. The process becomes paperless, thus saving paper. Plus, the electronic format makes data storage more durable. Electronically erasable memory devices can be used repeatedly. They offer robust storage of data and reliable data retrieval.”

- **Quick data processing**

Hai-Jew (2008: 1) highlights that sophistication of automation in pedagogy, rich authoring tools for multimedia and faster Internet connectivity, various opt-in learning spaces offer more effective learning opportunities for users.

- **Audio-visual aids in teaching**

Alkalai (2007:259) states that digital literacy is seen as consisting of six skills, namely: photo-visual thinking, reproduction thinking, non-linear thinking, information thinking and real time thinking.

- **Better presentation of information:**

The Internet can be used to refer to information on different subjects. Both teachers and students benefit from the Internet. Teachers can refer to it for additional information and references on the topics to be taught. Students can refer to web sources for additional information on subjects of their interest. The Internet helps teachers set test papers, frame questions for home assignments and decide project topics. Apart from academic activities, teachers can use web sources for ideas on sports competitions, extracurricular activities, picnics, parties and more.

Access to the Internet

- The Internet facilitates quick communication between students, teachers and parents. Mokgehle (2012:4) said: “technology is the best thing to have happened to teaching, it has revolutionised the profession and brought energy and innovation.”

Given the flexibility *“in presentation, better management of instructional techniques, and easier record keeping, their availability can therefore go a long way to relieve us of extra duties that we perform manually.”* Rose and Meyer argue that new digital media (versus traditional media of textbooks and lecture) facilitates a more universally designed environment because the new media is inherently flexible. Many times, however, students find that the use of technology enhances their lessons and improves their learning. For example, they find that when they create Microsoft Excel charts to demonstrate mathematical graphs that students can see immediate differences between the values of a particular criteria.

Given their multipurpose character, and their ability to perform all educational tasks, computers are even more required in poorly resourced schools since they are capable to make up for other resources like the library and a laboratory. The

KidSmart program, with certainty can provide learners to discover information on their own. This is also confirmed by Soong (2005: 596) when he argued that “a computer mediated medium is sufficiently rich to allow for meaningful knowledge co-construction and negotiation between students.”

In chapter 2, reference was made to two studies whereby, Soong (2008: 596) has illustrated the role of computer mediated technology (CMC) in the teaching of Physics and Math:

- Hung (1996) investigated how the use of basic synchronous computer mediated technology help to uncover students’ physics preconceptions and thought processes.
- In another CMC study involving physics collaborative problem solving, Soong & Chee (2000) demonstrated how the discussion logs (which were saved and printed out for analysis) of physics student dyads participating in synchronous computer mediated, problem solving provided them with sufficiently rich data about the students’ thought processes, thereby enabling rich insights into how the students were thinking, and exposing their misconceptions of various science concepts in the process.

Two important observations were drawn from the two studies described above.

- Firstly, a computer mediated medium is sufficiently rich to allow for meaningful knowledge co-construction and negotiation between students. Hence, well-designed CMC environments should not impede learning.
- Secondly, the studies show that getting students to work collaboratively on solving problems in asynchronous CMC environment could provide a rich field for gleaning students’ conceptions in a “naturally occurring” context. More specifically, because cognitive and metacognitive activities are normally hidden and private, the use of computer mediated collaborative tools can “force” the students to put more effort into making explicit their thought, since body language and other forms of intangible communication means are no longer viable. This would make students’ cognitive and metacognitive activities overt and subject to our analysis (Hung, 1998), thereby allowing us to obtain deeper insights into students’ current knowledge and understanding.

The two cited studies are just part of the testimonies of how computer mediated instructions can improve the teaching and learning of maths and science. Brown as cited by Soog (2008:607) affirms the role of computer technology, by saying: “I believe there is a potential for computer mediated, collaborative problem solving to be widely used in schools because it could slot neatly into a hallowed "classroom niche" of in school revision for the natural sciences (e.g. physics, chemistry, biology).

The availability and use of cell phones by learners is supported by Rodgers, Runyon, Starret and Von Holzen (2006:1) who point out that there is a mounting evidence that today's traditional students- those born after 1982-have a different relationship with information and learning than do previous generations as a result of their access to the internet and computer technology. They further state that “terminology such as ‘Chat’, ‘ Blog’, ‘ Blogging’, ‘IM’, ‘ON_LINE’ ‘ to Google’, ‘ Text messaging’ are used unconsciously by the 21st Century learners. This provides an advantageous opportunity for education system to integrate this by providing access to suitable cell phones for educational use.”

4.3.4. Unstructured interviews for English language educators.

Two educators were interviewed to unearth their perceptions on the role of a school library and the role of computer technology in teaching English language. The intention was to find out whether they believe the absence or lack of the two mentioned resources are seen to have a role in their performance and how they believe such resources can benefit their teaching as well as the performance of their learners.

On the question: How do your learners perform in English?

The following responses were given:

The General education training (GET) phase educator, said: *“It is far below average, they lack even basic language skills, and one wonders how they passed in previous grades. They can hardly construct a simple sentence on their own. They could neither spell nor correctly copy words, let alone express themselves in English. To make things even worse, they are very much reluctant to read.*

This response is supported by numerous studies, one them is the Annual National Assessment Report (2011 ANA results, in grade six, where the national average was 28 %. Motshekga (2011:32) stated that the picture indicates that many schools are clearly struggling, for instance 45% in the poorest quintiles have almost all their learners performing at the 'not achieved level' in grade six mathematics. However, poor performance is not unique to the case school only because surveys have revealed that South Africa's learner outcomes rank poorly on the international stage, not only compared with learners from developed countries, but even among those from less-developed parts of sub-Saharan Africa. At the root of this problem lies the issue of illiteracy which, Equal Education argues, can be combated, to a significant but not complete extent, by ensuring that every public ordinary school has a stocked library serviced by a qualified full-time librarian.

In 2006, the former Minister of Education, Naledi Pandor stressed the need for these resources in schools when she said: "Anecdotal evidence suggests that the high schools with the worst results are surrounded by primary schools that do not have the resources to teach effectively. It is important to stress that resources do not refer to money; it may refer to teacher competence, to an adequate or absence of a library." This finds credence from the GET phase educator regarding in learners in grades seven and eight have just been in primary schools, and even those primary schools do not have resources to inspire learning to their learners. While their linguistic skills are below average, they also have neither inspiration nor love for books. As mentioned in this study commenting on the school profile, which is quintile rotates between 1 and 2, also learners get government sponsored free meals. As Douglas and Wilkinson (2010:7) posits, "children on free school meals are less likely to own books and less likely to enjoy reading." This correlates with the GET phase educator who mentioned that her learners are reluctant to read.

The Further education and training (FET) band educator:

The same question was posed to the FET English educator: How do your learners perform in English? The responses were as follows:

Their performance is not good; very few are performing at a satisfactorily level. It appears they taught differently because some lack even basics like tenses, vocabulary even the correct use of the parts of speech.

The slight improvement in the senior grades can be attributed to the fact that another entry point in the school is grade 10. Learners from a variety of schools are admitted and some come from other provinces although most come from school with better resources. However, lack of basic skills still remains until upper grades. Evidently, for the past four years, the average pass rate in grade twelve has remained moderate in terms of percentage. But, most learners scored below level 4 (50%), a level not accepted by most tertiary institution.

4.3.4.1. Investigating the role of a school library in language teaching

To elicit response from the participant, the following question was asked: How can the availability and use of a school library or library facilities support your teaching and benefit learners' performance?

The responses were as follows:

"Learners can benefit by using library to search for additional information that is not found in their textbooks. As educators we can be able to refer them to the library for assignments and other activities. Instead they are restricted to textbooks and notes that we compile for them. This practice limits them from developing researching skills. They can be able to compare information from various books in the library and use a wide variety of authentic reading materials available in the school library media centre."

"They can have access to a variety of reading material like newspaper articles, dictionaries, magazines and pamphlets in the library both their academic needs and personal interests which will serve as the basis and motivation to become lifelong readers."

"A well stocked school library can provide them with a variety of sources and books thus enabling them to choose resources that suit them, hence making it feasible to understand tasks and assignments more easily."

"As teachers we are not able to plan opportunities for planned library use to enable learners to identify, analyze, and synthesize ideas and information by using a wide range of materials in a variety of formats and media, neither do we manage to plan

learning experiences that offer whole classes, small groups, and individual learners an interdisciplinary approach to literacy learning.”

“The availability of a school library and its services can be made more focused on supporting the educational objectives of the school by promoting literacy and access to knowledge as a way of prioritising literacy and knowledge acquisition which are the core business.”

4.3.4.1.1. Analysis of results findings on the role of a school library in the teaching and learning of English language

In a study on the National Assessment of Educational Achievement, the Kuwait Ministry of Education (2008 as cited by Kellagen, Greaney and Scott Murray 2009: 90) state that in Kuwait findings that showed that students in classrooms with libraries or “reading corners” scored higher on a literacy test (the Progress in International Reading Literacy Study test) than did students in other classrooms were used as evidence to support the policy of the Ministry of Education to install classroom libraries.

Douglas and Wilkinson (2010: 4) maintain that all the recommendations aim to make school libraries more focused on supporting the educational objectives of the school by promoting literacy and access to knowledge. They regard a school library as the powerhouse of reading within the school which plays a full and active part in raising literacy levels and creating an innate love of reading. In a paper on: Learning to speak Web 2.0, De Groot and Branch (2009:64) noted one person who wrote “I spend my days, at present, in the middle of a busy library, surrounded by stimulating, boisterous adolescents. There is a **lot** of noise and most days, **lots** of learning. Learning to think, compose, and produce coherent prose in the midst of chaos is a life skill required for 21st century living.”

The above views on the role of a school library are correctly corroborated by Haycock (1995a, 1995b, as cited by Lonsdale 2003:12) who presented a useful overview of the evidence that links school libraries and student achievement. Although the focus of his review was completed before 1990, his findings indicated the following:

- In schools with good libraries and the services of a school librarian, students perform significantly better on tests for basic research skills;
- Students perform significantly better in reading comprehension and in their ability to express effectively ideas in relation to their reading;
- More reading occurs when there is a school library;
- The guidance of a librarian appears to exert significant influence on student achievement in information-gathering;
- In schools with good libraries and full-time librarians, students perform better at higher levels in reading comprehension, and in knowledge and use of reference materials than students in schools with minimal or no library service;
- Student achievement in reading, study skills and use of newspapers was significantly greater at seventh grade level in schools with professional librarians than in schools without them.

English language should not only be perceived as one of the subjects offered at school. Its significance should also be viewed in that it is the Language of Teaching and Learning (LOLT). Competency in English should therefore be encouraged as it affects the whole school curriculum. Douglas and Wilkinson (2010:7) hold the view that English as an additional language must be integrated in library planning. The level of literacy in English determines the level at which learners can be able to understand schools' academic content hence, it determines their performance. Meltzer (2001:10) refers to a literate learner as having the ability to use "reading, writing, speaking, listening and thinking to learn what they want to learn and communicate and demonstrate that learning to others who need or want to know". Improving learners' literacy, competency and proficiency levels in English is therefore a critical necessity for them to improve their performance in school. For this reason, a well co-ordinated library programme to compliment classroom activities cannot be regarded as a privilege but a basic need.

4.3.4.2. Investigating the role of computer technology in English language teaching and learning

This interview was grounded to identify the needs analysis of the participants regarding the technological aspects that could possibly enable learners to make

meaningful connections between literacy and their learning. Also, the interview aimed to identify participants' perceptions on the role of technology in improving English language teaching and learning processes.

To draw out teachers' views and expectations on the significance of access to computer technology and the role it might have to improve their practice, the following question was asked: How can the availability, access and the use of computer technology improve the teaching and learning of English language so as to improve learners' performance?

Responses, views and expectations

The participants remarked that: *“learners spend most of their time on computer related tools, like cell phones, mp3 stereos, and laptops. Therefore, by integrating computer technology in language curriculum could tap into their life world and suit their style of knowledge.”*

“Multimedia computer technology can facilitate auditory skills development by integrating visual presentation with sound and animation, thus enhancing the learners' language proficiency.”

“They believe computers are able to accommodate learners' different learning styles, as they provide pronunciation, spelling and graphics hence learners have options to see, hear or imitate.”

They responded that the central benefit is that: *“computer technology can provide wider range learning and teaching activities and access to quality materials through internet and its components.”*

They have also pointed out that: *“access to computer technology will make up for other resources which they aspire for their instructional programmes.”*

The other benefit which they emphasized is that: *“access to computer technology will provide learners various educational websites to enable easier link to educational information.”*

They also believe: *“word processing software stimulate learners to interact more closely with their work and audio and video recording can give students instant feedback on their story-telling skills and can help them develop them further. When*

learners use a word processor such as Word for Windows to develop a class project, it can stimulate learning in a number of areas and provide motivation through the students' sense of accomplishment at producing a high quality document in English."

When learners work in groups to develop a report on the computer they are:

- improving fluency through discussion of an "authentic" task;
- improving spelling, grammar and lexical skills through the use of various computer tools;
- deepening student knowledge and communicative ability in one subject which the student enjoys;
- increasing vocabulary knowledge specific to chosen topic;
- indirectly improving computer skills through the "hands-on" aspect of the exercise.

4.3.4.2.1. Results analysis

From participants' views, it becomes clear that they consider that computer use can support and augment the learning and use of English by promoting the use of language in an authentic environment.

Evidently, many learners have more access to cell phones and other digital gadgets which defines the way they live and communicate. Hence, Rodgers, et al. (2006 :1) point out that "there is a mounting evidence that today's traditional students- those born after 1982-have a different relationship with information and learning than do previous generations, as a result of their access to the internet and computer technology". Nobody can reject the reality that computers are at the centre of today's youth. Adults, educators included, are at times surprised at the level of technological literacy by their children and fast rate at which they learn to operate computer gadgets. Furthermore, Rogers et al. 2006 :1),say, 'Terminology such as 'Chat',' Blog', ' Blogging', 'IM', 'ON_LINE' ' to Google',' Text messaging' are used un-self consciously by the 21st Century learners. Therefore, integrating this mode of living and communication will make learning more appealing and friendly to learners. This is also confirmed by Solomon and Schrum (2007:24) by stating: "We can take

advantage of the features that new tools offer and tap into students “natural affinity for these tools in order to create learning experiences that expand their worldview and enhance what they learn.”

With regard to the participants’ belief that computers stimulate learners to interact closely with their work, Beare (2012) confirms such belief by contending that “the strongest argument for the use of the computer in the classroom environment is that of student self-pacing.” The example he gives is with regard to the field of pronunciation, whereby students can employ a computer to record themselves to compare their pronunciation to a target pronunciation. This can be repeated endlessly until a student is satisfied with his/her result. These pronunciation exercises are often combined with visual aids (such as intonation graphs) to help the student recognise how his/her pronunciation compares to the target pronunciation. Common tools such as spell checking can also provide the student with valuable self-analysis instruction.

Beare (2012) maintained that “for some tasks, computers can provide distinct advantages over more traditional approaches. The use of a computer for listening exercises often provides not only sound, but also visual input providing students with more contextual clues. Students interacting with a computer are also using motor skills as well, which can have a strong reinforcing effect on the learning process by connecting physical actions (clicking, typing) with desired results. Students are also allowed more control over their own learning process as they make the decisions when to repeat questions, exercises and sequences based on their own progress.”

With the aid of the Internet and CD-Rom-based materials, teachers can quickly access documents addressing individual student needs. This is especially effective when teaching English for Specific Purposes such as Business English. An example would be white papers put up on a company website discussing certain technologies in English that students are currently employing. Another example is glossaries provided for specific business sectors (port, banking, insurance, etc.). Using these materials, the teacher can often provide content addressing specific student needs, thereby improving motivation and effectiveness.

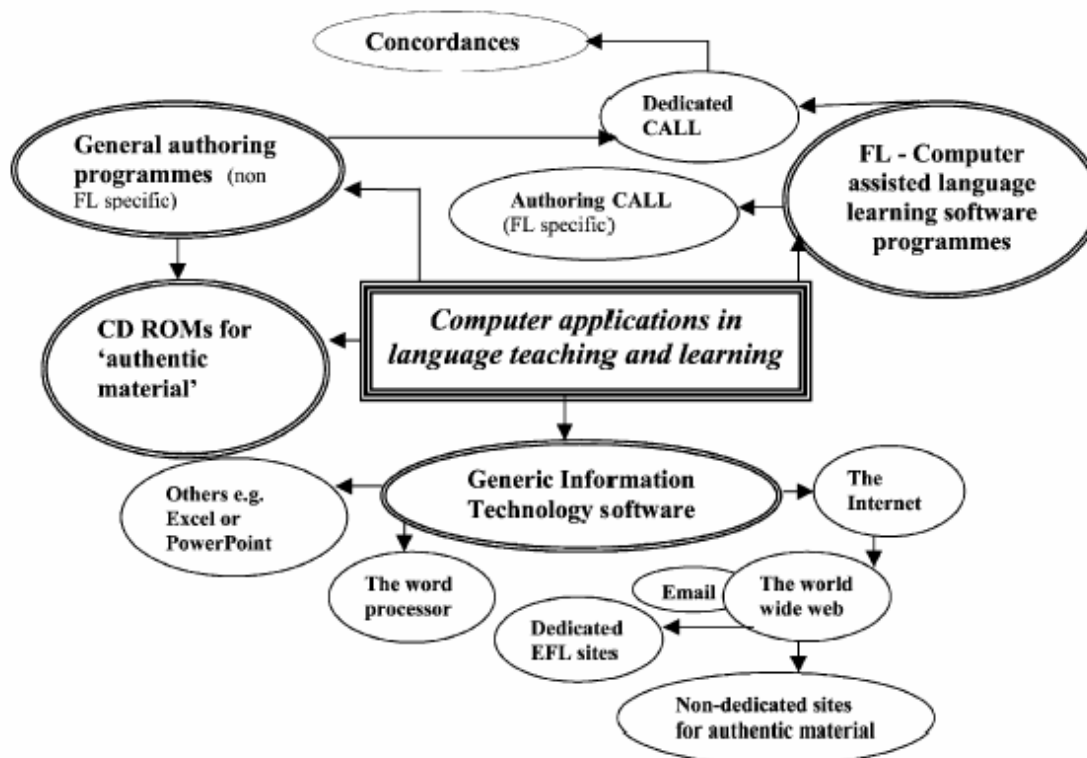
Confirming that computers make up for the shortage of other resources, Shawcross (2004:4) affirmed that technology at the centre of language teaching allowed for a “greater range of integrated activities, wider access to authentic material as well as enabling a learning continuum”.

Since the school where the study was conducted has neither library nor laboratory, the availability of or access to computer can at least improvise for the predicament of the absence of other resources.

The National Assistive Research Institute (2006:2,) asserted that ICT provides access to knowledge and resources on a wider range of topics. The Internet and its World Wide Web components is the most prominent example of information technology. The Education Resources Information Centre (ERIC) is another example. The ERIC system enables people to search and locate much of the world’s educational literature on any given topic. This further suggests that access to internet should at least be prioritised especially where other resources are not available.

Below is a diagram indicating the framework of investigating computers in language teaching and learning by Jarvis (2004:177). This framework as shown helped to understand a broader use of computers in language teaching and learning in the English second language class as well as conceptualize the use of computers in the language classroom.

Figure 3: A framework for investigating computers in language teaching and learning



A framework for investigating computers in language teaching and learning (Jarvis, 2004: 177)

4.4. Unstructured interviews for the economics and management sciences educators

For the purpose of the study, Economics and Management Sciences (EMS) refers to Accounting, Economics and Business Studies. These learning areas are offered at the FET phase of the school selected for this study. These three subjects are alternatively taught by two educators.

Like all other participants, the first question that they had to respond to was: How do your learners perform on your subject?

Responses were one way or another varied in that with regard to Economics and Business studies they seemed to be satisfied with their learners' performance as compared to Accounting. The Accounting educator was a bit concerned with the performance of her learners.

In relation to Business Studies the response was as follows:

“Their performance is average, some learners are doing a good job but there are those who perform below average. Others seem to have chosen a stream that does not fit their abilities.”

In Accounting, the response was as follows:

“They struggle a lot, such that I doubt that most will especially grades 10 and 11. They are playful and most do not complete their tasks in time while others do not submit their assignments at all.”

Analysis

The responses for both Business Studies and Economics revealed that teaching styles of the educator do not cover all learners. Those who are not co-operative are not engaged by the way they are being taught. This is due to the lack of resources that will be supportive of their learning styles and also motivate them to learn. William (2011) reports that research has maintained that teaching and learning becomes more positive, interesting, varied and therefore more effective through the frequent and selective use of resources.

4.4.1. Investigating the role of a school library for teaching and learning of Economics and Management Sciences

To extract responses from the participant on the role of a school library, the following question was asked: How can the availability, access and the use of a school library improve the teaching and learning of Economic and Management Sciences so as to improve learners?

A précis of responses from EMS educators

“A school library can provide more resources for me and other to prepare lessons.”

“Learners can be able to use other books and materials for their activities.”

“Learners will be able to research on their own.”

“I can be able to compare books on particular topics so as to refer learners to those that I recommend.”

“In a school library learners can be able to work in groups or individually to collect information for a given issue, to analyze and evaluate the information obtained, and to draw conclusions.”

“A school library can provide learners with up-to-date information of the business world which are useful supplementary materials for the textbooks.”

“The availability of a school library can also reduce learners’ reliability to prescribed textbooks.”

“As EMS educators we may be able to co-ordinate curriculum-related resources and help to develop students’ information literacy through library use.”

“Learners might be able to use library material to consolidate what they learnt in the class to deepen their thinking and understanding.”

Analysis

Douglas and Wilkinson (2010: 21) noted that “as the curriculum is increasingly divided thematically, it was felt that Schools Library Services can supply schools with a far greater range of resources for the curriculum than individual schools are able to purchase, aiding the development of this type of learning.” In that way, the Membership of the CDC-HKEAA Committee on Business, Accounting and Financial Studies (2007:2) are convinced that:

“Students could be given opportunities to develop ethical and responsible behaviour so that they can fulfil their roles effectively as consumers, investors, employees and/or entrepreneurs in adult life. Students are expected to take social and ethical considerations into account in analysing and evaluating business issues. In a fast-changing and knowledge-based local and global economy, they need to possess a variety of intellectual and communication skills, as well as positive values and attitudes, so that they can act competently, confidently, and ethically in both familiar and novel situations. They also have to be conversant with the business environment, so as to make effective decisions, not only as members of the business world, but also as socially responsible citizens.”

As known that resources, library included, are neither available nor accessible in most rural disadvantaged schools, it is therefore logical to conclude that the quality of instructions and learning experiences available to their learners, do not equal those learners who have resources. Schools like the one selected for this study, are obviously financially restricted to supply individual learners with multiple resources for knowledge acquisition. A school library therefore, has a potential to intercede for such requirements. Douglas and Wilkinson (2007: 10) reiterate that “Schools Library Services could be a cost effective way of ensuring that all schools, but particularly primary schools, have access to the expertise and resources they may not have on site or may not be able to afford in the future.”

In line with the fast-changing local and global social and economic circumstances, the Business, Accounting and Financial studies (BAFS) curriculum is built upon a contemporary business curriculum structure; hence, extensive reading beyond a textbook content is critical for providing learners with a wide and up-to date information. Therefore, a BAFS curriculum should be linked to a well stocked school library for learners to stay in touch with changes and developments in the commercial world. Moreover, students should be encouraged to read news and articles on business issues and form a habit to collect these news and articles in files or scrap books. An analysis and comment on the issue recorded should also be made by the students themselves.

4.4.2 Investigating the role of computer technology in the teaching and learning of commercial subjects

To find out participants views regarding the role of computer technology in the teaching and learning of commercial subjects, the following question was asked: How can the availability, access and the use of computer technology improve the teaching and learning of Economic and Management Sciences so as to improve learners?

The participants responded by stating the following:

“Technology can bring a variety of learning and teaching resources (e.g. the Internet) instead of relying solely on textbooks.”

“Information technology can ensure self-directed learning for learners in which they consult not just textbooks but also other up-to-date resources such as business journals, magazines and newspapers.”

“Through the use of information technology learners can be able to search data through the Internet, Intranet and CD ROM.”

“As part of the curriculum, learners should be trained to apply computer skills and knowledge to search and process raw data into information for business decision making relevant to their daily lives, in accounting, the section: computerized accounting and filing, enhances the teaching and learning because students learn by doing and they don’t forget easily what they have done”.

“Information communication technologies (ICT) motivate and engage students in learning.”

“The use of IT complements the learning of BAFS.”

“The use of computer technology encourages students to access world-wide information any time and even outside school hours for self-directed learning.”

“Computer technology provides audio-visual aids for understanding difficult concepts.”

“Digital resources can enhance the learning and teaching process and promote the exchange of views as well as self-directed learning.”

4.4.2.1. Results analysis

The Curriculum Development Council, Hong Kong (1998:21) has noted that “the diversity and complexity of business activities cannot rely only on printed materials. The use of audio-visual aids can make the learning of the theoretical and practical phases of business more meaningful.” This defines the extent to which computer technology should be integrated to the teaching and learning of business-related studies. This finds credence in Hai-Jew (2008: 1), who maintains that “sophistication of automation in pedagogy, rich authoring tools for multimedia and faster Internet connectivity, various opt-in learning spaces offer more effective learning opportunities for users.” Relying on textbooks or printed media not only limits the modes through which people relate to information, but also lacks the ability to inspire today’s youth to whom technology is at the centre of their daily life.

Rose and Meyer (, 2007:523) outlined four characteristics of digital media that are particularly beneficial for classroom application: digital media are versatile, are transformable, can be marked, and can be networked. The integration of computer technology of teaching and learning benefit both teachers and learners in that, it eases the burden of collecting, marking and storing of learners’ scripts or exercise books, as through computers this becomes a paperless exercise. In addition, Sharma (2009:21) avers that technology hardware material works as tools to enhance the effect of a teacher and teaching, thereby providing an extension to his/her persona. On the part of learners, among hundreds of studies that show positive benefits from the use of technology, two are worth noting for their comprehensiveness:

- The first, a U.S. Department of Education-funded study of nine technology-rich schools, concluded that the use of technology resulted in educational gains for all students regardless of age, race, parental income, or other characteristics. The second, a 10-year study supported by:

- Apple Computer Incorporated concluded that student provided with technology-rich learning environments “continued to perform well on standardized tests but were also developing a variety of competencies not usually measured. Students explored and represented information dynamically and in many forms; became socially aware and more confident; communicated effectively about complex processes; became independent learners and self-starters; knew their areas of expertise and shared that expertise spontaneously." Hussain (2008:51) pointed out that students have access to extensive databases and share their own work through networked communications to work on collaborative projects. Teachers guide the students on how to share and interact in networked collaborative learning environments.

Participants' responses that technology ensures self-directed learning, is informed by the fact that the 21st century learners look to be engaged in their learning, and want to have firsthand experience, they want to reach their own conclusions and find their own results. This change in knowledge acquisition is basically informed by the growing amount of information. Hence, the 21st century learners tend to be selective in what or how they learn, they want to learn what matters. They also prefer visual and kinaesthetic activities over printed material and listening to lectures.

While textbooks and lectures are considered traditional, they still have an important role in teaching, especially where explanation and demonstration are required to provide basic concepts and understanding to enable students to study issues further through enquiry. It is desirable to complement it with new technologies that are available in the field of education so as to compliment a culture in which learners experience enhanced interactivity and connections with their life world.

Due to technology, learning could no longer be confined into a classroom, by using information technology, e.g. online quizzes, message boards, wireless networking, video conferencing, online collaborations, blogs, wikis, chats and blogs learning happens inside and outside classrooms. The central issue now is: How do we position and provide these technological gadgets to our learners to maximise their learning?

4.4.3. Interview with the school principal

The purpose of interviewing the principal was to get his views regarding the quality of his school's instructional programme and get his views on: How does lack resources affect the school's performance, finally to determine how has the lack of resources affected the school culture and the school climate? To get his views, the following questions were asked.

- How do you rate your school in terms of its functionality and performance as per departmental requirements?
- How do link the shortage of resources to the performance of your school?
- How has the lack of resources affected the school culture and the school climate?

The Principal's responses

Silverman (2003: 77) defines "functionality" as being able to work properly, especially if there are guiding principles that are effectively and efficiently followed. The functions of the school as a social institution should be carried out according to the principles laid down in the *Educators' Policy Handbook*. From the principal's response, it was his admission that there is lack of commitment from educators and learners; it became obvious that the school does not match the departmental criteria.

Poor functionality cannot be separated from poor performance. While there are many variables that inform poor performance and non-functionality of the school, the researcher had to find which role does lack of resources affect the functionality and the performance of the school. This had to be pursued through one of the study's sub questions, namely: How does the shortage of Learners and Teachers resource materials affect Learners' academic achievements? Although the principal mentioned lack of commitment and absenteeism as the causes of poor performance, the study found that lack of resources is one of the reasons that lead to absenteeism and lack of commitment by educators and learners. Hallack (1990 as cited by Adeogun, 2008:145) emphasises that the availability, relevance and adequacy of education resource items contribute to academic achievement and that unattractive

school buildings, crowded classrooms, non-availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic performance. Lack of resources and the physical conditions in the school do affect educators' confidence. One teacher indicated that without resources, they become frustrated when expected to implement OBE without relevant resources. Hence, Simelane (2010:70) posits that "resources are a pre-requisite for the effective implementation of Outcomes Based Education." Consequently, the Department of Education should make provision for such needs in schools in order to motivate learners to attend school regularly. This will also improve learners' performance.

This affect teacher's self-esteem and they find themselves unable to do justice to the learners. This makes them to conclude that their role is not critical as education providers to learners as a result their presence or absence from school is not so critical. Watking (2000) concludes that learning opportunities are reduced when teachers are unable to foster child-centred learning environment. High rates of teacher absenteeism reduce rate of attendance and undermine parental confidence in the school.

In the study on learners migration Lombard (2009:52) cited some parents confirming that they send their learners to former model C schools because they assume educators at these schools were *"more dedicated"*, *"act more responsibly and in the best interest of learners"* and *"have a higher regard for discipline because they themselves are disciplined."*

Because educators in well resourced schools have relevant tools to implement OBE, they are empowered and confident to do their work. According to Mapasa (2005:102), traits such as co-operation, dedication and enthusiasm are related to commitment as manifested in teachers' attitude towards their work. It is therefore unfortunate that the same could not be said on those educators working in disadvantaged schools.

In accordance with the objectives of the study, the principal had to respond to the question: How do link the shortage of resources to the performance of your school?

In his response, he revealed that lack of resources has a role to the poor performance of the school. He admitted that teachers and learners struggle to find information. He also mentioned that twining with other neighbouring schools is not productive as they are also struggling with resources. He even confirmed that lack of resources make it almost impossible to implement OBE, as it requires learners to do substantial research on their own. This response is entrenched by Hoadly and Jansen (2005) by noting that there is little chance of OBE becoming successful in poorly resourced schools. He further indicated that he regularly get complaints from educators of learners who do not submit their assignment or submit them in a poor quality, and that the excuse from learners is that they did not know where to find the information.

When analysing these responses, the researcher identified three detriments of the lack of resources:

- the inability to implement a resource-hungry curriculum;
- frustration of learners and educators;
- exclusion from information.

The final question was: How has the lack of resources affected the school culture and the school climate? Fidler, et al. (1997, as cited by Jahangeer and Jahangeer 2004:248) believe that one of the major roles of leaders is to understand the existing culture of their institution before they can adequately manage both the organisation and its culture. The terms “school climate,” “school culture” and “learning environment” have been used interchangeably but sometimes, in quite different ways in educational literature (Pickeral, Evans, Hughes and Hutchison 2009 :3). Alexandra Loukas (2007:1) considers the feelings and attitudes that are elicited by a school’s environment are referred to as school climate. Starfire (2010-2011) considers a positive school climate as consisting of all of the following attributes: strong academic performance; high English-Language Arts proficiency rates, high student attendance; high rate of student engagement in extra-curricular activities; high student, teacher, and administrator perception of positive climate; low bullying, truancy, and/or suspension rates.

As the Principal alluded that there is a high rate of absenteeism by educators and learners, this confirms that the school climate prevailing has a bearing to the poor performance of the school. The researcher as a participant observer can further confirm the prevailing climate by adding that the school has challenges of truancy, suspensions and that almost no extra-curricular activities take place.

Heneveld and Craig (1996 as cited by Mbayo 2011: 63, 64) believe school climate which includes high teacher expectations, positive teacher attitudes, and a system of rewards and incentives to be important elements in the context of Africa where teachers' conditions of service remain largely unsatisfactory. This depicts a thread that runs from lack of resources to poor instructional programme and leading down to poor performance. Gary Phillips (2003) refers to a school culture as the beliefs, attitudes and behaviours that characterise a school in terms of:

- how people treat and feel about each other;
- the extent to which feel included and appreciated;
- the rituals and traditions reflecting collaborative and collegiality.

It is fair to note that even if understood or applied separately, a common thread between school culture and school climate involves feelings and attitudes within a school environment.

Coulstock(as cited by Hongsa-Ngiam, 2006:35) indicates that students are more likely to engage in the learning task when they are in a supportive and friendly classroom, and the teacher is interested in their ideas and discoveries. In the case of science subjects, Physics in particular, a school laboratory plays a significant role in providing learners both a supportive environment and to discover information by conducting experiments. The absence of resources in the selected school insignificant opportunities exist where learners make their own discoveries, learners cannot conduct experiments, collaboration barely exist. It is therefore evident that the school's culture is not conducive for effective functioning hence, the performance is poor.

4.5. Focus group interviews

The purpose of this study was to find out the role of resources in determining a school performance and quality education. As has been explained that quality education and school performance even though related, in essence are not the same. The researcher decided to interview the SMT members to find out their views on the role of resources as a variable for effective teaching and learning.

4.5.1 Focus group interviews with the heads of departments

The selected school has the compliment of four heads of department (HOD), better known as subject specialists. The main function of the HOD's is to be accountable for the effective functioning of the department and organise relevant/related extra-curricular activities so as to ensure that the subject, learning area or phase and the education of the learners is promoted in a proper manner. In a school context, their main duty is to manage educators under their respective departments. Lombard (2009:54) stated that SMTs and teachers are pivotal stakeholders in the provision of quality education at school level.

To find out their perspectives on the role of resources, the following questions were asked:

What impact does the lack of learners and teachers resource materials (LTSM) have on teachers' motivation?

Some of the responses were as follows:

- *The lack of LTSM negatively affects teacher's motivation,*
- *Teachers are frustrated; they don't know how to implement self-discovery learning without relevant resources.*
- *They no longer show dedication to their work, at time one has to push them to honour their classes.*
- *They feel helpless.*

Fry (2002:33) posits that having no textbooks or supporting materials left teachers feeling that their possible approach to teaching are limited and inadequate. As a

result, they struggle to manage in the classroom. The following responses reflected that the absence of resource materials in the selected school is one of the causes of demotivation. Educators in this situation feel like soldiers dispensed to a war without weapons. When Klang (2006:5) argues that 'if you don't feel well, you don't work well, if you don't work well, your full potential is never realised', it becomes clear that educators in this school no longer dedicate themselves to the core mission of their responsibility. According to Masitsa (2003: 1832), unmotivated teachers can neither perform in accordance with their ability nor motivate their learners effectively.

From what Masitsa is saying, the researcher concludes that the absence of resources leaves both educators and learners de-motivated which also means that neither educators nor learners are inspired to perform. In education, motivation is very important for effective learning. There are many theories and techniques of motivation involved with the teaching and learning process. A very important notion is that motivation in education is based on the teachers' ability to challenge and encourage students to take on an active role in their learning (Fergus 2000). The conclusion is that demotivation is to the detriment of any school and learners performance.

The second question was: Which roles do you think the availability and use of a school library and access to computer technology can improve teaching and learning in your respective departments? The responses from the participants included the following:

Social sciences HOD

"Library and access to computer technology can play a crucial role in not only boosting the educators' morale, but also to improve teaching and learning in my department. Learners are required to do research for assignment and projects. The accessibility to these resources can facilitate their research and improve their research skills which will also improve their performance."

Natural science HOD

"Science subjects are practical subject, access to a school laboratory and computer technology can go a long way in strengthening the teaching of these

subjects. These can also save us from the poor performance in these subjects.”

Languages HOD

“A school library can provide sufficient reading materials required for improving literacy levels particularly in English. Educators can also be able to refer learners to library for their assignments and other activities.”

Economics management sciences HOD

“Computer technology is an integral part of commercial subject. Therefore, computer literacy compliments learning in these subjects. It is important that learners get experience of using computer.”

4.5.1.1. Analysis of the HOD’s responses

The views of the subject specialists confirm that the lack of the three prioritised resources in this study have a role in the poor performance of the school. The absence of these prioritised resources limits educators in their respective departments to teach effectively and according to appropriate approaches that will motivate and engage learners. Abdo (2001:115) explained the role of resources by saying “good instructional resources assist the teachers in choosing, arranging and sequencing the curriculum. They also act as a direct incentive by decreasing the amount of time required for the presentation of knowledge and mastering the difficulty of his/her teaching task.” The correctness of this assumption is that in implementing the current curriculum (NCS), educators are aware that their role is to facilitate learning as expected in a self-discovery approach. However, in the absence of resources, the practice is not practicable.

To sum up the benefits of the resources under discussion, the following should be noted:

- School laboratory activities have special potential as media for learning that can promote important science learning outcomes for students;
- Teachers need knowledge, skills, and resources that enable them to teach effectively in practical learning environments. They need to be able to enable

students to interact *intellectually* as well as *physically*, involving hands-on investigation and minds-on.

Emanuel (2007:1) posits that technology in acquiring knowledge and skills is an extremely essential component of education and training at all levels: primary, secondary higher and professional education. Integrating teaching and learning to computer technology is not only a matter of improving teaching styles but also to ease access to information. This arguably places the role of computer technology above all resources to cater for a wide variety of educational needs.

Saiful's (2009:1) explains the relationship between education and library by saying "Education' and 'library' are two inseparable—indivisible concepts, both being fundamentally and synchronically-related to co-existent with each other. One cannot be separated from the other, and the existence of one is impossibility without the other. None of them is an end in itself; rather both of them together are a means to an ultimate end." This practice raises a question regarding the rationality of denying an educational institution access and use of a library and expects such an institution to perform at an acceptable level.

4.5.2. Focus group interviews with learners

The purpose of interviewing learners was to find out their experiences of learning without basic resources. Four learners were interviewed; each learner was selected from the four streams, namely: commercial stream, natural sciences, general and languages.

The following questions were posed to learners:

Library

1. How can the availability of a school library help you in your school work?

Learner 1: *"the availability of will help us a lot, I can be able to go through many things because I have noticed that commercial subjects focus on general knowledge, I saw that from previous examination papers."*

Learner 2: *"I will be able to easily complete assignment and research projects while benefiting a lot by referring to different types of books in the library."*

Laboratory

2. How can the availability of a school library help you in your school work?

Learner 1: *“It easily forget things that I have been told but do not easily forget things that I have seen happening practically, so this will help me in the examination because I will have had practical views of the experiments in Physical science.”*

Learner 2: *“I can be able to test many scientific theories so as to improve my understanding.”*

Learner 3: *“It can improve my chances of passing Physical sciences, because I would have had an opportunity to conduct experiments”*

Computer technology

3. How can the availability of computer technology help you in your school work?

Learner 1: *“I will be able to find almost everything from the internet.”*

Learner 2: *“I will be able to download question papers and other reading materials to prepare for examination.”*

4.5.2.1. ANALYSING LEARNERS VIEWS ON THE ROLE OF A SCHOOL LIBRARY

From learners' responses, it becomes noticeable that they feel they have opportunities of accessing a wide range of reading materials by pointing out that Commercial subjects focus on general knowledge. This perception is also confirmed by Syllabuses for Secondary Schools, Hong Kong (1998:19) by stressing that: “It is also emphasized that the teaching of Business Studies should be related to real life situations as far as possible. By real life situation, an implication is that current issues are part and parcel of Business Studies. Hence, the newspapers, magazines and periodicals which most libraries have on their stock are the critical references that commercial learners should have.

The role of a school library as convenient place to conduct research cannot be over-emphasised. Participants in this study have also noted that the absence of a school

library excludes them from accessing information to complete their assignments and other activities. This also settles the clock backwards by making it impossible to implement self-discovery learning. O' Connor, (1997:1) states that, "in general, where resources and facilities-teachers, textbooks, laboratories, chemicals, tools and equipment, teaching aids stores etcetera, are inadequate, the teaching approach tends to be teacher- centred."

4.5.2.2. Analysing learners views on the role of a school laboratory

The main role of integrating laboratory activities in the teaching and learning of science subjects is that it promotes mastery of the subject, aids in developing scientific reasoning, and cultivates interest in this subject. Kriek and Grayson(2009) posits that: "When the teachers use the kit to perform experiments, both their conceptual understanding and experimental skills are developed. In addition, when the science kit is used in their classrooms to demonstrate phenomena and explain concepts to their learners, both their teaching skills and the learners' understanding are improved". Over and above that, through conducting experiments, learners construct knowledge on their own. This also ensures that self-discovery learning resonates with the constructivist learning theory. A logical exposure from the participants is that they realised that the availability and use of a school laboratory can improve their chances of passing the science subjects. Petroselli (2009) insists that schools that pride themselves on their innovative approach to teaching know that classroom instruction combined with laboratory experience derives the best results.

4.5.2.3. Analysing learners views on the role of computer technology

The reason the researcher prioritised computer above other resources particularly in this poorly resourced school, refer to 4.4.1) is the fact that it can do almost everything that a library and a laboratory can do. In terms of its ability to provide information and knowledge, Hai-Jew (2008: 1) confirms that sophistication of automation in pedagogy, rich authoring tools for multimedia and faster Internet connectivity, various opt-in learning spaces offer more effective learning opportunities for users. When one learner said: "I will be able to find almost

everything from the internet”, this revealed the concern of learners that they are starved of information as the study has revealed that the school has neither library nor a school laboratory. Hussain (2008:51) affirms this by pointing out that students have access to extensive databases and share their own work through networked communications to work on collaborative projects.

4.6. LESSON OBSERVATIONS

As indicated in paragraph 3.7.2 of the study, data were also collected through intensive observation. Since the researcher is an educator in the same school where research has been conducted, his role became that of a participant observer. The researcher therefore had an advantage of being familiar with the setting of the study and had built the rapport with the participant in advance. The researcher visited four class lessons to observe how educators conduct their lessons. The purpose was also to spot the spaces in lessons where resources could have improved those lessons.

The first class to be observed was a grade ten English class. There were 40 learners seated in rows. The seating arrangement was inconsistent with OBE format where by learners should sit in groups. The educator on the day was doing a comprehension test. He prepared handouts and gave each learner a copy of the comprehension text. For a quarter of an hour he read for the learners. After that he asked learners to answer questions on their exercises as homework. For the other 45 minutes he roamed around the class checking for the previous work.

The following tool was created to record a summary of the lesson proceedings

Grade: **learning area: English language** **Topic: Comprehension**

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
<ul style="list-style-type: none"> • Reading from a handout • Gave no room for learner participation 	Listening only	Learners had no opportunities to participate Seating in rows	Chalkboard Handouts	Computer; <ul style="list-style-type: none"> • Self pacing • Correct pronunciation Provide sound & visual input: <ul style="list-style-type: none"> • spell-checking, online dictionary, thesaurus capabilities, and grammar check

This lesson proved to be a disaster, no evidence can prove that learners benefited from such a lesson. Except the handouts, no other resource was used and there was no activity or role played by learners during the entire lesson. One would have expected learners to read the passage, discuss themes from it, and use dictionaries for new words. The educator should have asked questions to test learner's concentration. Furthermore, the educator should have divided learners into groups and assign each group a question to work on and give feedback to the class. The English language curriculum emphasizes a shift from students being totally dependent on the educator to being independent or autonomous learners. However, in this lesson, learners remained passive.

For this lesson, computer use could have accommodated learners with audio-visual effects to accommodate different learning styles.

The second class visited was a grade 10 Life sciences class

Grade: 10 Learning area Life sciences Lesson Osmosis

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecturing	Listening	Learners did not manipulate materials	Chalkboard	Laboratory/ science kit Potato Potassium permanganate Water(dyed)

The lesson was about the process of osmosis. The educator explained to learners that they had to understand his explanation of terms. He verbally explained the process of osmosis.

The researcher believed that the lesson might have been well presented in a library. Chemicals like potassium permanganate, water, and a potato he talked about should have been brought for conducting an experiment. The learners should have given an opportunity to conduct this experiment. By handling the apparatus, seeing water passing through learners might have a satisfaction of having constructed knowledge and discovering for themselves what osmosis entails.

The third lesson observed was a business studies class

Grade: 11

Learning area: Business studies

Lesson:

Employment Equity

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecture questions	Listening Chorus answers	Taking notes Referring to textbooks	Chalkboard textbooks	Library materials <ul style="list-style-type: none">• business journals• magazines• newspapers

The lesson was about the Employment Equity. The educator explained the origin and the meaning of the Employment Equity ac. He asked questions on the Bill of Rights but learners could not give answers. Learners were caused to open their textbooks at the examples of companies that are bound to implement Employment Equity. Towards the end of the lesson, the educator explained how the structure of the buildings should comply with the legislation.

The researcher noted that the lesson was not as elaborate and informative for the level of the grade. Learners were very passive. Given the fact that the topic was on an issue that is current and very broad, access to library was needed. The researcher felt in case library was available, learners would have benefited by accessing more information from library materials they had to read Business Journals, Magazines and newspapers to find out the types of companies that are required to implement Employment Equity and also read more on human rights.

The fourth lesson to be observed was Mathematics grade 10

Grade: 10

Learning area: Mathematics

Lesson: The theorem of

Pythagoras

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecture Give instructions	Listening Draw and measure	Listening Draw and measure	Chalkboard Protractors Rulers calculators	Computer Library

The educator gave instructions to learners to draw a right-angled triangle. Name each angle of a triangle e.g. $\triangle ABC$. Angle B must be 90° $AB=3\text{cm}$ $BC=4\text{cm}$. Then use a ruler to measure AC. Then construct squares on each side made up of 1cm squares. Then add squares on AB and BC. Count the number of squares on AC and write their conclusion.

To complement the lesson, the educator might have asked learners to visit a school library and research on the theorem of Pythagoras and find out who invented it, how it was invented, where this theorem could be applied, and its relevance to real life situations. This information could also be goggled by using the Internet. However, these opportunities could not be created since the school has neither computer nor a school library.

4.7. Summary

In this chapter, an analysis of the research findings was done, and the data collected were interpreted. Data were collected from (18) participants; individual interviews were conducted with five Natural sciences, two English Language educators, two English language educators, two EMS educators and the school Principal. The focus group interviews were conducted with four learners and four subject specialists (HOD'S). Data were also collected through observations, part of such observations involved observing educators teaching in their classrooms.

CHAPTER 5

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.1. Introduction

This chapter presents a summary of the findings of the study, the recommendations and the conclusions. The general overview of the findings is aimed to show whether the aims of the study as articulated in the first chapter had been addressed or accomplished. The main purpose of the study was to investigate the role of Learners Teachers Resource Materials in determining a school performance and quality education. As mentioned in chapter 3, the school under study was one of those which were regarded as disadvantaged in that it is a rural, poorly resourced and situated in a remote environment. Hence, this is a case study for Isiphosemvelo Secondary School.

Creswell (2008 as cited by McMillan& Schumacher: 345) refers to a case study as “an in-depth exploration of a bounded system based on extreme data collection”. This study categorised as an instrumental case as its focus has been to investigate the quality of teaching and learning in a single setting (specific school). The intention was to develop a holistic understanding of the variables distressing quality teaching and learning in an under-developed and poorly resourced school.

5.2. Summary of the research

This section is an overview of the study presented in the light of the main research question: How do Learning and Teaching Resource Materials influence the quality of an instructional programs in rural and under resourced school? To further unpack the views of the participants on the role of resources in determining a school performance and quality education, the following sub-questions were considered important to evaluate their perceptions and experiences.

- How does lack of resources restrict teaching and learning styles which are associated with effective instructional programmes?
- How does lack of Learners and Teachers resource materials impinge on Learners' academic achievements?
- How does lack of resources disrupt the school culture and the school climate in the selected school?
- How does lack of Learners and Teachers resource materials deter learner-centred approach?

The study examined at least three basic resources, namely; library, computers and laboratory which the researcher considered are directly linked to classroom performance. An actuality adopted in the Equal Education report (2010) states that there is a significant body of research that demonstrates a clear link between improvements in school infrastructure and higher learner performance.

An intensive literature study provided a conceptual framework for the study. Furthermore, the views, aspirations and concerns of the participant were explored through enquiry using the educators, learners, education specialists and the school principal from the selected school.

5.2.1. Literature review

The literature review (chapter 2) began with a detailed conceptualization of key concepts central to the study. However, the chapter mainly focused on the reviewing of the literature related to the role of resource materials in determining a school performance and quality education. Finally, the chapter looked at the possible role of resources in formulating a school culture and school climate.

The literature review revealed that although a school performance and quality education are understood to be overlapping, on their individual contexts, these are not the same. The researcher declares that a quality performance leads to quality education. He further rejected the notion of assessing quality education by only looking at learner's scores. This notion is also shared by Education for All (2005: 30),

when it reiterates that “it could be judged unfortunate that the quantitative aspects of education have become the focus of attention in recent years for policy makers.” This also has been criticised by Guilfoyle (2006:1300) by pointing out that “Any system that hinges the evaluation of the entire school on one test score average from one group of students at one grade level cannot hope to accurately assess that school.” The researcher strongly believes Hanushek’s (2007 as cited by Roblin 2011), when he asserted that the output of the educational process—the achievement of individual students—is directly related to inputs that are both directly controlled by policy makers. It is in this line of reasoning that the conceptualisation of the study was based. Hence, until this synergic structure, of addressing quality inputs and processes we may not expect quality education. The study therefore, does not buy-in the education officials’ decision of evaluating a school performance through the number of grade 12 learners who pass (Refer to figure 2). McGowan (2007:92) argues that by assessing a school’s facility condition and comparing it to performance outcomes, researchers may be able to develop the ability to identify the components of school facilities that can best predict student and staff performance.

In addressing the central statement of the study, the literature revealed that the roles of the Learner Teachers Support Materials are to a large extent, linked to a school performance and quality education. The findings of the study on the role of educational resources are in consonance with many scholars.

UNESCO (2008) opined that teaching/ learning materials such as textbooks, class rooms, teaching aids (chalk, board, ruler and protractor), stationeries and laboratories affect academic performance of the learners. Also, these results agreed with that of Mutai (2006) who asserted that learning is strengthened when there are enough reference materials such as textbooks, exercise books, teaching aids and class rooms while he further asserted that academic achievement illustrates per excellence, the correct use of these materials. These are also affirmed by Jimenez-Castellano Oscar (2008:173) when he said educational resources impact school’s achievement by promoting or hindering the ability to develop a school culture and high quality instruction. In schools like these the study confirms that the lack of resources hinders the implementation of quality learning and the possibility of developing a positive school culture and climate.

The study was conducted in an archetypical resource-dispossessed school which has to implement a resource-hungry curriculum, (NCS) a scenario not conducive for learner-centred learning, which actually is a self-discovery approach. O' Connor, (1997:1) states that, "in general, where resources and facilities-teachers, textbooks, laboratories, chemicals, tools and equipment, teaching aids stores are inadequate, the teaching approach tends to be teacher-centred". While the implementation of OBE is mandatory to all South African schools, relevant resources were not provided to the disadvantaged schools. Simelane (2010:70) posits that, 'resources are a pre-requisite for the effective implementation of OBE. Consequently, the Department of Education should make provision for such needs in schools in order to motivate learners to attend school regularly. This judgment is further supported by Hoadly and Jansen (2005) who claim that there is little chance of OBE becoming successful in poorly resourced schools.

5.2.2. The role of learners, teachers and materials in determining a school performance and quality education

The study focused on three resources, namely; a school library, school laboratory and computer technology.

5.2.2.1. The school library

All participants considered the absence of a school library as a contributing factor towards a poor performance. For this reason, low levels of literacy are prevalent in South African schools, particularly those in under-developed schools. Therefore, a school library or library materials are critical for addressing this challenge. Meltzer (2001:10) refers to a literate learner as having the ability to use "reading, writing, speaking, listening and thinking to learn what they want to learn and communicate and demonstrate that learning to others who need or want to know". Improving learners' literacy, competency and proficiency levels in English is therefore a critical necessity for them to improve their performance in school. For this reason, a well co-ordinate library programme to compliment classroom activities cannot be regarded as a privilege but a basic need. This highlights the necessity of providing school

libraries in previously disadvantaged schools. Equal Education (2009) argues that this can be combated, to a significant but not complete extent, by ensuring that every public ordinary school has a stocked library serviced by a qualified full-time librarian.

For the implementation of OBE, participants concurred that a library plays a central role in providing resources for researching. The absence of a library therefore deprives learners of accessing information on their own, either for school work or for personal interest. Saiful (2009) maintains that “a school library is primarily concerned to pro-create an urge for reading amongst the children who get a first-hand-knowledge to use the library resources most effectively in their future career”. Saiful’s statement reveals that learners who have to learn without the use or experiences of a school library, cannot be expected to sustain a desire for reading in their future lives. This further explains why the principal said “learners show no commitment in their work”.

5.2.2.2. The school laboratory

The nonexistence of a laboratory and laboratory apparatus in the selected school deters the appropriate teaching and learning of science subjects. Many scholars agree that lecturing as the only way of teaching is not effective for science. Kriek and Grayson (2009:1) alluded that international measures also indicate that South African learners are performing poorly in science. The nonexistence of school laboratories which in turn dictates the way science subjects are taught takes a huge censure in this poor performance. Hofstein and Lunetta (2003) posited that laboratory has been given a central and distinctive role in science education, and science educators have suggested that rich benefits in learning accrue from using laboratory activities. It is through the use of laboratory equipments that the conceptual and experimental skills can be developed. A school laboratory enables learners to develop scientific reasoning as against rote learning. Another benefit is that learners discover information in the process and become motivated in doing science subjects. The availability of a school laboratory can also empower science teachers to implement the learner-centred approach, as against the traditional and non-productive teacher-centred approach.

5.2.2.3. The role of computer technology

The study elevated technology as the most useful requirement resource in education. This is because it covers all aspects of teaching and learning: as an information resource, as a teaching resource and as learning resource. Mokgehle (2012:4) said, 'technology is the best thing to have happened to teaching, it has revolutionised the profession and brought energy and innovation'.

Above the fact that computers are capable of performing all tasks that other resources (library and laboratory) can do, they are also linked to improving performance in individual learning areas.

Beare (2012) maintained that for some tasks, computers can provide distinct advantages over more traditional approaches. The use of a computer for listening exercises often provides not only sound, but also visual input providing students with more contextual clues. Students interacting with a computer are also using motor skills as well, which can have a strong reinforcing effect on the learning process by connecting physical actions (clicking, typing) with desired results. Students are also allowed more control over their own learning process as they make the decisions when to repeat questions, exercises and sequences based on their own progress.

For language instructions, computers increase language learners' ability to understand and produce new vocabulary items. In the teaching and learning of science, Brown as cited by Soog (2008:607) affirms the role of computer technology, by saying: "I believe there is a potential for computer mediated, collaborative problem solving to be widely used in schools because it could slot neatly into a hallowed "classroom niche" of in school revision for the natural sciences (for example, physics, chemistry, biology)".

In the teaching and learning of commercial subject, The Curriculum Development Council, Hong Kong (1998:21) has noted that "the diversity and complexity of business activities cannot rely only on printed materials. The use of audio-visual aids can make the learning of the theoretical and practical phases of business more meaningful." The significance of computers has also been noted in teaching topics

such as computerized accounting, spreadsheets, internet searches and computerized filing (in Office Procedures) as well as PowerPoint.

According to Pasugui (2010), 'many constructivists' models of technology use the concepts of scaffolding and developing each individual's potential. Many of the visual tools are used under the assumption that they can help bring the student up from their level of understanding to a higher level by showing graphic examples and by giving them real-life experiences relevant to their individual needs'. This explains an extent to which technology covers the different learning styles of learners.

According to Sharma (2009:21), technology hardware material works as tools to enhance the effect of a teacher and teaching thereby providing an extension to his/her persona.

5.3. Recommendations

The following recommendations were made based on the literature and the enquiry conducted for producing this study.

In paragraph 1.5, the motivation of conducting the study has been given. In nutshell, given the declining quality of education in South Africa, the researcher intended to draw the attention of the education providers to the cracks in education provision which are still undermining the progress made in addressing educational challenges since the dawn of democracy in South Africa. Hence, the following recommendations were proposed:

5.3.1. Fast-tracking of educational resources

In response to a screwed policy of supply of resources by the apartheid regime, an aggressive, well-targeted supply of resources particularly to previously disadvantaged schools is needed. Thus far, massive improvements in education are undermined by quality that is in offing (Masitsa 2004: 240, as cited by Nesane 2008: 43) said "the euphoria of South Africa's new-found political freedom has been largely replaced by sober reality of limited resources (at all levels) that have to be pitted against a multitude of problems. The government is to a larger extent to blame for its

unaccountability and lack of resources at schools, its averted interest in poor education and its cynical disregard for the interest of the people on the ground.”

Education providers should not be trapped in the quality aspect of education. Using the number of learners who pass grade 12 as the benchmark of good performance is deceptive and derails the focus from what matters. This increase in the number of learners who pass grade 12 amid poor quality offers no solution to the needs of our country. Ramphele (2012:1) launched one of the most scathing critiques of the most vaunted matriculation pass rate saying it is deceptive, consigning thousands to a life that promised neither further education nor employment. Hence, in the midst of thousands of matriculants who pass every year, there is still a shortage of skills in South Africa. This is why McGowan (2007:92) argues that by assessing a school’s facility condition and comparing it to performance outcomes, researchers may be able to develop the ability to identify the components of school facilities that can best predict student and staff performance. In supporting this, Haertel and Herman (2005: 21) insist that students cannot be expected to become proficient unless and until the content and process of their classroom instruction well prepares them to do so.” This refers to a logical need of improving the quality of educational inputs when quality education is expected. This study has concerned itself with resources which it regards as the missing link towards improving instructional programmes in under-resourced schools.

Therefore, there is an urgent need to provide LTSM to all schools, particularly in rural under-resourced schools. This does not only to address the OBE requirements but most importantly, to improve the quality of instructional programmes which are directly linked to quality performance and quality education.

5.3.2. Fine-tuning teaching and learning styles according to the generation’s culture

Rodgers et al. (2006:1) stated that nobody can reject the reality that computers are at the centre of today’s youth. Adults, educators included, are at times surprised at the level of technological literacy by their children and fast rate at which they learn to operate computer gadgets. For this reason, the study fully supports that technology

should be integrated to education. Failing to do that is failure to prepare learners for the 21st century. Over and above that, computers have numerous benefits.

The study, therefore recommends that every school need to slot in technology as an indispensable component of its instructional programme, a recommendation that should no longer be delayed. For a maximum benefit, teachers should be helped out of their traditional mindset by training providing them with relevant computer skills required for use for teaching purposes.

5.3.3. Linking quantity to quality

As mentioned in the study, quantity cannot be elevated over quality. According to Education for All (2005: 30), an indication is made that it could be judged unfortunate that the quantitative aspects of education have become the focus of attention in recent years for policy makers. Hence, Guilfoyle (2006:1300) warns that this emphasis on quantity has brought a trade-off between quality and quantity. Hence, quality education in terms of skills, literacy and numeric levels of competency continues to decline.

Given a huge budget allocated to education in South Africa, a deliberate and precise intercession is missing to ensure that returns for such investments are earned in terms of skills needed for the economy, science, legal and all other challenges needed for survival and prosperity. For this to happen, it is important that together with high pass percentage of learners particularly in grade 12, proficiency, quality and high levels of literacy and numeracy should be maintained. The study finds it irresponsible to lower the pass requirements as a way of improving pass percentage at the expense of quality. Ramphele (2012: 1) referred to the 30% pass in most learning areas as 'degrading education standards and is used for political purposes. It defies logic to claim that knowing 3 out of 10 things is good enough to warrant a pass. This will render South African academics incompetent and unemployable.

5.3.4. Improving curriculum delivery

It is further recommended that all the education stakeholders, especially the subject advisors, subject specialists, principals and all those tasked with curriculum delivery, need to emphasise and monitor schools' inputs, not only to concern themselves with test scores or completion of syllabi. In their inspection visits, departmental officials have to insist that sufficient and relevant resources for curriculum delivery are available. SGBs and SMTs should prioritise resource purchasing in their budgets. Educators also have to support and accommodate their learners' capabilities by integrating teaching and learning resources in their lessons. As the resource provider, the principal should among other things:

- identify the resources needed;
- plan ahead for the resources needed;
- make request from the department for resources needed by educators;
- together with the SMT and SGB, allocate funds for the acquisition of resources.

5.3.5. The role of resources in motivation

When Steyn (1999 as cited by Belle 2007:148) said that “programmes and materials do not bring about quality in schools, but people in the education do”, he omitted the fact is those people need relevant materials and facilities to perform their tasks. Mbatha (2004:37, as cited by Belle, 2007:126) posited that inadequate instructional supplies contribute to frustration for both teachers and learners and impede progress towards instructional objectives. Studies have revealed that lack of resources makes teachers to feel helpless and frustrated. Therefore, Steyn should have known that without adequate materials teachers and learners become demoralised, and that when they are demoralised they cannot work productively. Therefore, the study maintains that adequate resources play a significant role in motivating both teachers and learners. It therefore recommends that the previously disadvantaged schools should be provided with up-to-date facilities. The declining culture of teaching and learning can also be attributed to the lack of resources. Woolman and Fleischer (2006:49) note that most parents were aware that their children were unlikely to pass

matriculation examinations in township schools that lacked the requisite culture of teaching and learning. Lack of resources in rural and disadvantaged schools has led to declining enrolments as most parents prefer to send their children to former model C schools because they have better resources. According to Bischoff and Koebe (2005:159), educators in former Model C schools are "fully involved in activities of the class. On the other hand, teachers in disadvantaged schools are not fully involved; one factor that obstructs their involvement is the lack of materials.

5.4. Conclusions

This study intended to investigate the role of LTSM in determining a school performance and quality education. The literature review revealed that not all researchers and scholars consider resources to have an influence in promoting a school performance. However, it became apparent that there are many variables that account for school performance and quality education, resources is just one of them. As a result, the literature review, the inquiry and the researcher's observation indicated without a shadow of doubt that resources have an important role in school performance. This became clearer in South African context when comparing former model C schools with the previously disadvantaged schools.

Regarding curricular demands also, the study maintained that the applicability of OBE rests on the availability of up-to-date facilities. The study established that schools without relevant facilities and materials are still trapped in traditional teaching and learning. Teaching is still teacher-centred. This unfortunately denies learners the satisfaction of constructing knowledge and information on their own. Hence, they are denied quality education.

The study also revealed that educators' self-esteem is crushed by their inability to be helpful to their learners. This leads to a poor school climate and culture. These manifest themselves through high rate of absenteeism, lack of dedication, poor class attendance and indiscipline among learners. The study concluded that to revive a positive school culture and climate, schools should be empowered by the provision of adequate resources.

In conclusion, it is critical to get returns from the monetary investments poured into our education system. For this to happen, our focus should be on appropriating our energies towards quality education as this and many other studies insisted that quality counts.

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APPENDICES

APPENDIX A1: LETTER TO THE CIRCUIT MANAGER REQUESTING PERMISSION TO CONDUCT RESEARCH

P.O. Box 10238

Newcastle

2940

3 August 2012

The Circuit Manager

Amajuba district

113 Panorama drive

Newcastle

2940

RE: REQUEST PERMISSION TO CONDUCT RESEARCH

I wish to request for permission to conduct a research in one of the school under your jurisdiction.

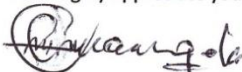
The name of the school I have selected is **Isiphosemvelo secondary school**. Hence, the title of my MED dissertation is **"The role Resource Materials in determining a school performance and quality education. A case study of Isiphosemvelo Secondary school"**

The study is intended to examine the role of resources in determining an effective school's instructional program. Also, it attempts to highlight how resources can enable educators to implement a learner-centred approach as a crucial part of an Outcomes Based Approach.

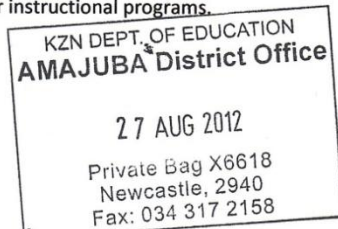
To a limited extent, the study argues the rationality of implementing the National curriculum Statement (a resource- hungry curriculum) amid gross shortage of resources in most rural and disadvantaged schools.

The study findings will be shared by various stakeholders including the policy makers and the education providers. It will also benefit the educators by drawing their attention to the importance of using teaching aids and other resources to improve their instructional programs.

I will highly appreciate your assistant in this regard.



Manqele Clement Mandlenkosi (MR)



27/08/2012
SK → (Mkhams S. D.)
CIRCUIT MANAGER,
PERMISSION GRANTED

APPENDIX A2: A LETTER TO THE PRINCIPAL REQUESTING PERMISSION TO CONDUCT RESEARCH

P.O. Box 10238
Newcastle
2940
3 August 2012

The PRINCIPAL
Isiphosemvelo Secondary school
Private bag 9230
Dundee
3000

RE: REQUEST PERMISSION TO CONDUCT RESEARCH

I wish to request for permission to conduct a research in your school. The name of the school i have selected is **Isiphosemvelo secondary school**. Hence, the title of my MED dissertation is “**the role of Resource Materials in determining a school performance and quality education. A case study of Isiphosemvelo Secondary school**”

The study is intended to examine the role of resources in determining an effective school’s instructional program. Also, it attempts to highlight how resources can enable educators to implement a learner-centred approach as a crucial part of an Outcomes Based Approach.


To a limited extent, the study argues the rationality of implementing the National curriculum Statement (a resource- hungry curriculum) amid gross shortage of resources in most rural and disadvantaged schools.

The study findings will be shared by various stakeholders including the policy makers and the education providers. It will also benefit the educators by drawing their attention to the importance of using teaching aids and other resources to improve their instructional programs.

I will highly appreciate your assistant in this regard.

Manqele Clement Mandlenkosi (Mr)

APPENDIX A3: A LETTER FROM THE PRINCIPAL GRANTING PERMISSION TO CONDUCT RESEARCH

ISIPHOSEMVELO SECONDARY SCHOOL	
Postal Address: P.O.Box 9230 DUNDEE 3000 TEL: 034 366 7250	Physical Address: DORSERT FARM NYANYADU AREA DUNDEE 3000


P.O. Box 10238
NEWCASTLE
2940

29 August 2012

RE: RESPONSE TO YOUR REQUEST FOR CONDUCTING A STUDY

Be informed that a permission to conduct a study in the above mentioned school is hereby granted.

Yours in service


Radebe C.T (Principal)

ISIPHOSEMVELO SEC. SCHOOL
P.O. BOX 9230
DUNDEE 3000
SCHOOL STAMP
29 AUG 2012
TEL: 034 36 6 7250 / 083 520 1591
PRINCIPAL: Mr C.T. RADEBE

APPENDIX B1: A LETTER TO PARTICIPANTS REQUESTING THEIR PARTICIPATION IN THE STUDY

Box 10238
Newcastle
2940
19 August 2012

Dear

I am planning to conduct a study on how learners and teachers resource materials determine school performance and quality education. For this purpose, I will conduct in-depth interviews of about 1 hour each, at selected schools during the third quarter of 2012.

I hereby request your participation in the study as an interviewee. This will be voluntary and you will be free to withdraw at any stage should you deem it necessary. The study will be conducted in line with the guidelines set by the Kwa-Zulu Natal Department of Education and the research ethics prescribed at Unisa. You shall not be exposed to any risk or invasion of privacy, and your identity and views shall be kept anonymous. A summary of the research results will be made available to you after the investigation.

If you agree to participate in the study please sign the letter below and bring it back to me.

Yours sincerely,

.....

Manqele C.M.

APPENDIX B2: A LETTER OF CONSENT FROM THE PARTICIPANTS

Letter of consent

I, (name & surname).....,
hereby consent to participate in the study on the role of learners and teachers
resource materials in determining a school performance and quality education as
proposed by Mr MANQLELE C.M.

.....
Signature

.....
Date

APPENDIX B3: INFORMED CONSENT FORM FOR MINORS

Informed Consent Form for minors

Your child has been invited to participate in a study of the role of Learners and teachers resource materials in determining a school performance and quality education.

We hope also to learn the relationship between instructional resources and student achievement. Your child was selected as a possible participant in this study because they part of the school where the study will be conducted.

If you decide to allow your child to participate, he/she will be interviewed so as to gauge the availability of and utilization of resources in his/he learning the interview will take approximately 90 minutes

There are no risks involved in participating in this study.

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with you and your child's permission.

Your decision whether or not to allow your child to participate will not prejudice your child's future relationship with the school. If you decide to allow your child to participate, both you and the learner are free to discontinue their participation at any time without prejudice. Participation in this study is strictly voluntary. You may request a copy of the findings at the completion of the study.

This study is being completed as part of my dissertation for my (MED) Master of Education in Didactics with the University of South Africa.

If you have any questions, please do not hesitate to contact me at 0728601200. If there are any additional questions, please contact Dr Mpho Dichaba at 0828417533/0735788286

You will be offered a copy of this form to keep.

Sincerely,

Manqele Clement Mandlenkosi

You are making a decision whether or not to allow your child to participate. Your signature indicates that you have read the information provided above and have decided to participate. You may withdraw at any time without penalty or loss of benefits to which you may be entitled after signing this form should you choose to discontinue participation in this study.

Name of Student

Signature of Parent/Legal Guardian Date

APPENDIX C: INTERVIEW QUESTIONS

INTERVIEW QUESTIONS

APPENDIX C1: UNSTRUCTURED INTERVIEWS

. UNSTRUCTURED INTERVIEWS FOR SCIENCES EDUCATORS

1. “How does lack of resources limit your teaching and learning styles in terms of improving learners’ performance and ensuring that quality learning prevails in the teaching and learning of your subjects? “.
2. How can the availability and use of a science laboratory (science kit), school library improve your teaching styles and the performance of learners”?
3. How can the availability and use of a school library improve your teaching styles, learners’ performance and the quality of instructions in Physical science?
4. How can the availability and use of computer technology improve teaching and the performance of learners

UNSTRUCTURED INTERVIEWS FOR ENGLISH LANGUAGE EDUCATORS

1. How do your learners perform in English?
2. How can the availability and use of a school library or library facilities support your teaching and benefit learners’ performance?
3. How can the availability, access and the use of computer technology improve the teaching and learning of English language so as to improve learners’ performance?
4. How can the availability, access and the use of computer technology improve the teaching and learning of English language so as to improve learners’ performance?

UNSTRUCTURED INTERVIEWS FOR THE ECONOMICS AND MANAGEMENT SCIENCES EDUCATORS

1. How can the availability, access and the use of a school library improve the teaching and learning of Economic and management sciences so as to improve learners?
2. How can the availability, access and the use of a school library improve the teaching and learning of Economic and management sciences so as to improve learners?
3. How can the availability, access and the use of a school library improve the teaching and learning of Economic and management sciences so as to improve learners?
4. How can the availability, access and the use of computer technology improve the teaching and learning of Economic and management sciences so as to improve learners?

INTERVIEW WITH THE SCHOOL PRINCIPAL

1. How do you rate your school in terms of its functionality and performance as per departmental requirements?
2. How do link the shortage of resources to the performance of your school?
3. How has the lack of resources affected the school culture and the school climate?

APPENDIX C2: FOCUS GROUP INTERVIEWS

FOCUS GROUP INTERVIEWS

FOCUS GROUP INTERVIEWS WITH THE HEADS OF DEPARTMENTS

1. What impact does the lack of learners and teachers resource materials (LTSM) have on teachers' motivation?
2. Which roles do you think the availability and use of a school library and access to computer technology can improve teaching and learning in your respective departments?

FOCUS GROUP INTERVIEWS WITH LEARNERS

1. How can the availability of a school library help you in your school work?
2. How can the availability of a school library help you in your school work?
3. How can the availability of computer technology help you in your school work?

APPENDIX C3: CLASSROOM PRACTICE OBSERVATION TOOLS

LESSON OBSERVATIONS TOOLS

Grade: learning area: English language

topic: Comprehension

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
<ul style="list-style-type: none"> • Reading from a handout • Gave no room for learner participation 	Listening only	Learners had no opportunities to participate Seating in rows	Chalkboard handouts	Computer; <ul style="list-style-type: none"> • Self pacing • Correct pronunciation Provide sound & visual input: <ul style="list-style-type: none"> • spell-checking, online dictionary, thesaurus capabilities, and grammar check

Grade: 10 Learning area Life sciences Lesson Osmosis

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecturing	Listening	Learners did not manipulate materials	Chalkboard	Laboratory/ science kit Potato Potassium permanganate Water(dyed)

**Grade: 11 Learning area: Business studies Lesson:
Employment Equity**

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecture questions	Listening Chorus answers	Taking notes Referring to textbooks	Chalkboard textbooks	Library materials <ul style="list-style-type: none"> • business journals • magazines • newspapers •

Grade: 10
Pythagoras

Learning area: Mathematics

Lesson: The theorem of

Teacher's role	Learners' role	Activities	Resources used	LTSM SPACES
Lecture Give instructions	Listening Draw and measure	Listening Draw and measure	Chalkboard Protractors Rulers calculators	Computer Library