THE IMPLEMENTATION OF FORMATIVE ASSESSMENT POLICIES IN TWO GRADE 10 LIFE SCIENCE CLASSROOMS IN THE KEETMANSHOOP DISTRICT

ADRIAN RICHERD VAN NEEL

RHODES UNIVERSITY

DEPARTMENT OF EDUCATION

The implementation of formative assessment policies in two Grade 10 Life Science classrooms in the Keetmanshoop district

Submitted by

Adrian Richerd van Neel

In partial fulfillment of the degree Masters in Education
(General Education Theory and Practice)

January 2007

ABSTRACT

This research project investigates the implementation of formative assessment policies in the Life Science curriculum at two schools in the Keetmanshoop District, Karas Education Region. It takes the form of an interpretive case study and adopts a qualitative approach.

Several data collection tools were used: classroom observation, document analysis and semi-structured interviews. Two of the eleven schools in the Karas Region offering Grade 10 Life Science were selected for the study, and the research participants at each school consisted of one Grade 10 Life Science teacher and five of their learners.

The study situates itself in the context of Namibian educational reform by reviewing relevant literature pertaining to learner-centred (constructivist) education and assessment practices in pre- and post-independent Namibia. The study highlights issues pertaining to formative assessment that are at variance with reform policies, identifying six recurring themes that explain how formative assessment policies are implemented. These are teachers' perceptions of formative assessment and its role in teaching and learning, the type of learning being developed, marking/assessing assessment tasks, the integration of formative assessment into classroom instruction, strategies teachers used to implement formative assessment, and types and purpose of activities.

The themes that evolved during the data gathering process provide insight into the ways in which teachers perceive formative assessment in relation to the ideals of Namibian educational reform policies. In the light of these findings, the study makes recommendations concerning the implementation of formative assessment policies so as to render these congruent with the theory underpinning learner-centred education.

ACKNOWLEDGEMENTS

I am genuinely grateful to my Heavenly Father for granting me good health, the necessary wisdom and composure to complete the thesis.

I am also heavily indebted to my supervisor, Ursula van Harmelen who provided insightful feedback and corrections of errors that have greatly improved the relevance and smooth flow of the text. A study of this scope requires a great deal of discourse. I, therefore would like to extend my gratitude to my fellow course participants for being critical friends, and for finding the time to share their thoughts and ideas with me, thereby helping to shape my thinking.

The study leave granted to me by the Ministry of Education gave me ample opportunity to collect data and to fine-tune my chapters. Therefore I would like to offer my sincere thanks and appreciation to my fellow colleagues and Karas Regional Office staff for affording me the environment in which I could reflect and think critically during my studies.

I am grateful to the National Institute for Educational Development for the financial support that made it possible for me to participate in this course. I also thank Jenny Resandt for her endurance and encouragement throughout the entire research process. I also acknowledge and thank all the Junior Secondary Life Science teachers who sacrificed their valuable time to participate in this study and provided me with valuable information.

Finally, I would like to express my sincere thanks and appreciation to my dear wife, Katrina, for the unfailing moral and financial support. No one deserves more thanks than her for her tolerance and uninterrupted hope that sustained me through the study. To Katrina, then, I lovingly dedicate this study.

TABLE OF CONTENTS

CHAPTER ONE

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

I begin this chapter by briefly introducing my research site. Secondly, I describe the context of the study, which centres on Life Science as a subject in the Namibian curriculum. I then introduce my research aims and provide an overview of the study as a whole.

The sub-sections that follow on this one provide a context or background for the subjects of the study. This is essential to the analyses of data undertaken in chapter five. For example, it is common sense that schools that have an intake of learners from 'better' home backgrounds should achieve better than schools that have an intake of learners from less well-off home backgrounds. Aspects of 'home', such as a high parental level of education, wealth, good nutrition and health, possession of books and other educational materials, as well as parental interest in the education of their children, all help to create enabling conditions for learning. Precisely the contrary can be said of children coming from disadvantaged backgrounds.

1.2 GEOGRAPHICAL AND DEMOGRAPHIC CONTEXT

This section locates the schools and the research participants in their respective socio-geographical contexts, and described the size and general characteristics of the research site. It provides insights into the literacy levels and provision of schools among the people of the Karas Region (Appendix A).

1.2.1 Geographical location

The Karas Education Region is bordered by the Orange River and South Africa in the south, the Atlantic Ocean in the west, Botswana in the east and the Hardap Region in the north. The region is further sandwiched between the Namib Desert along the west coast and the Kalahari Desert

along the south-eastern border, making it the most arid part of Namibia, characterized by bitterly cold winters, hot summers and frequent droughts. Sporadic mountainous outcrops further serve to impede crop production. This is the biggest region in Namibia, with a landmass of 161,215 square kilometers, covering almost one third of the country and spreading over much of the southern part of Namibia.

1.2.2 Population and social discrepancies

The area is sparsely populated, with concentrations of people in towns such as Karasburg, Keetmanshoop, Orangemund and Lüderitz. It is home to a population of about 69,329 people. Less than 10 percent of the total population of Namibia lives in the southern parts, making for a density of a mere 0,4 persons per square kilometer. Only 50% of the population has access to electricity, although 91% has access to radios. The region is endowed with good deposits of zinc, copper and diamonds, and has both a fairly well-developed grape- and date-growing industry, and considerable marine resources. Nevertheless, as is the case throughout Namibia, there are wide disparities in the distribution of income. This general claim is supported by the *Namibia Human Resource Development Report*:

> [The] richest 10% of society still receives 65% of income, leaving only 35% for the remaining 90%. In other words, half of Namibia's population survives on approximately 10% of the average income, while 5% enjoys incomes that are five times the average. (1998:7)

1.2.3 School provision and literacy

With a population growth rate of approximately 1.3 percent per annum, the demand for school places is ever increasing and exerts further pressure on the available resources. Approximately 34.5% of 3-6 year olds attend Early Childhood Development Programs. About 9 out of every 10 persons aged 15+ years are literate in the context of "*can read and write in one or more languages with understanding*", and 24% of persons 15 years and beyond who are employed have secondary and tertiary education. It is necessary that the geographical and demographical

context of my research site be read in conjunction with the context of my research I described in the next section, as they have a collective impact on the data collected in chapter four.

1.3 THE CONTEXT OF MY STUDY

Prior to the independence of Namibia, there was a particular theoretical positioning of knowledge, knowing, learning and teaching. This view of knowledge, the ensuing teaching practices, and thus, assessment are contested in *Toward Education for All: A Development Brief for Education, Culture, and Training* when it is stated that:

> Students spend a lot of their time memorizing what things are called and how their textbooks and teachers organize those names. [The curriculum] must not treat students as empty buckets into which teachers pour knowledge (Namibia. Ministry of Education and Culture [MEC], 1993:21).

The post independence Namibian education system adopted a constructivist approach to teaching and learning. This worldview suggests that a learner centred philosophy be introduced. This aspiration holds multiple implications for classroom practice not least in relation to assessment. Constructivist approaches suggest that formative assessment that will support and enhance teaching and learning should be used. This point was emphasized by Nangombe (1999:76) when he stated that:

> As part of the reform process and in line with the learner centred approach to education, the dominant role of examinations was de-emphasised and coupled with...continuous assessment strategies, which are more criterion-based.

This inevitably requires a shift in the way learner tasks are designed, developed and assessed. A central dimension of the constructivist approach adopted by Namibia is continuous assessment. This statement is consistent with *Towards Improving Continuous Assessment In Schools: A Policy and Information Guide* when it asserts that:

> Continuous assessment is meant to be integrated with teaching. Formative assessment is any assessment made during the school year that is meant to improve learning and to help shape and direct the teaching and learning process. In this sense

all continuous assessment are formative (Namibia. Ministry of Basic Education and Culture [MBEC], 1998:8).

Some of the concerns that have been raised with regard to the implementation of the formative assessment policy in schools are:

- The lack of understanding and commitment by some implementers of the assessment policy guidelines (Nangombe, 1999).
- Teachers who are expected to implement the policy with little understanding and experience of the approach in a constructivist context. This concern was expressed by Mqingwana, a Secondary School Teacher when he noted that: "I have some fears about the introduction of this continuous assessment... at the moment. We have been told in a vague way about it" (Namibia. MBEC, 1998:1).

The Directorate of Examinations in Namibia has been very critical of the validity of the continuous assessment marks. The implication of this is that despite the strong focus on continuous assessment in education policy, the status of continuous assessment in relation to the overall assessment of learners is steadily eroding. Currently thirty-five percent of the promotion mark in Life Science (a subject in the Namibian Secondary School curriculum) derives from continuous assessment, in comparison to the fifty percent stipulated at the inception of Life Science some fourteen years ago. It is in the light of these issues relating to the assessment policy that this study will attempt to investigate how continuous assessment is understood and implemented by Life Science teachers at selected schools in the Keetmanshoop district.

In this study I investigate the implementation of formative assessment policies in Life Science classrooms at two schools in the Keetmanshoop district. This study was triggered by my experience as an Advisory Teacher. My duties include the monitoring of formative assessment in schools and from my experience it appears that teachers interpret assessment policies in different ways. This observation is consistent with Nangombe (1999:79) when he noted that: "shortcomings in this area [implementation of formative assessment] include a lack of understanding of policy guidelines by some implementers". Therefore, the only way to support this claim was to determine teachers' practices and perceptions to test my assumption. This area of research was further prompted by the mismatch that exists between the CA (Continuous

Assessment) marks of learners and their external examination marks. Formative assessment policies, as a corollary of the reform, were not thoroughly introduced to the teachers via workshops and for that reason the practice deserves closer investigation. Although I am quite cognizant of the fact that the findings of this case study cannot be generalized, I can, at least, confidently say how formative assessment policies are implemented at the two schools I researched as a result of this study.

During 1996 I was appointed as an Advisory Teacher in the Karas Education Region, responsible for Life Science Grades 8 – 10 and Biology grades 11 – 12. My duties, among others, include:

- The monitoring of quality assurance in education through criteria of the National Standards and Performance indicators for schools in Namibia,
- Building the capacity of teachers and creating enabling environments where they are empowered to:
  - (a) create an effective learning environment in classrooms
  - (b) teach classes/phases effectively
  - (c) implement syllabus requirements
- Promoting and supporting the development of teachers, and
- Establishing and maintaining relations of mutual trust with teachers, schools managers and other education officers.

I envisage that the results of this study will inform my work and assist me to support the teachers, particularly in the development of assessment tasks and written work. It is hoped that this in turn will reflect the ideals of the new assessment approaches and learners' development in accordance with the learner centred education policy of Namibia. Furthermore, I hope that the insights gained from this small-scale study will assist other Advisory Teachers and curriculum implementers. I represent my region on the Natural Sciences Curriculum Panel and the results may also therefore be shared at a broader, national level.

1.4 RESEARCH QUESTION

My research question is:

What are the strategies used by Grade 10 Life Science teachers to implement formative assessment policies in their classrooms?

The more specific objectives of my research are to:

- determine how regularly teachers give written tasks to their learners,
- determine the type and quality of feedback and how regularly tasks are being assessed,
- determine what the most common tasks are, and
- examine teachers' understanding of formative assessment.

1.5 THE STRUCTURE OF THE DISSERTATION

Chapter one introduces the study by outlining the context of the research, the research question and the more specific objectives. It further sheds some light on to my role in the education and training sector, and briefly provides insight into the reason for my interest in this research area. This chapter further provides a brief overview of each chapter.

Chapter two provides a contextual background of education reform in Namibia. It offers a glimpse at issues relevant to education reform and the resultant introduction of formative assessment. It further positions formative assessment within a constructivism framework that is at the core of the Namibian education reform process.

Chapter three describes the design of the study and the methodology employed. The chapter shows how I work within an interpretive paradigm, and how I employed different research instruments such as lesson observations, document analysis and interviews to investigate the implementation of formative assessment policies in two Life Science classrooms.

Chapter four contains the presentation of the data collected from semi-structured interviews, observations and document analysis.

Chapter five encompasses a discussion on the findings reported in chapter 4. This chapter therefore covers an in-depth analysis of the data. In this chapter the data is viewed in the light of formative assessment policies as detailed by the Namibian education reform policies and related literature. The chapter discusses the extent to which the implementation of formative assessment policies by the research respondents is in line with the reform ideals. The chapter ends with ideas to provide support for the teachers to achieve these ideals.

Chapter six concludes the study. It presents a reflective overview of the research and focuses on the lessons learned, the limitations as well as further possibilities for future studies in the area.

1.6 CONCLUSION

In this chapter, I have provided a description of the context and objectives of the research. In addition, I positioned myself in relation to my study and explained my particular interest within the assessment domain. I have also briefly situated formative assessment policies within the framework of the Namibian education reform. This chapter also provided an overview of different chapters of this research. The next chapter contextualizes educational formative assessment. It discusses general and formative assessment policies in particular in relation to local and international literature and governmental policies.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The aim of my research is to explore the extent to which formative assessment policies are implemented in Namibian Life Science classrooms. In order to better understand my research goal, my research, firstly, examines the Namibian reform policies in relation to classroom assessment practices and, secondly, probes the perceptions teachers have about formative assessment in Life Science that might ultimately inform their practice in classrooms.

My quest to understand policies, practices and perceptions is necessary since the actual teaching of the curriculum seems substantially different from the ideals expressed in the Pilot Broad Curriculum for Basic Education. Nangombe (1999:80) emphasized this observation when he stated that: "the use of...assessment practices does not... emphasise the classroom practice....It seems to emphasise...examinations at the expense of quality classroom pedagogy."

In addressing this contention, the first section of this chapter provides an overview of the developments in the theoretical and methodological approaches to educational assessment in Namibia from pre-independence to post-independence. As issues of formative assessment are frequently isolated and even totally divorced from the underlying theoretical positions, these developments are presented in a way that attempts to give further clarification on the rationale behind the reform. This section, therefore, encompasses a conceptual framework of assessment practices as described by the Namibian education reform policies.

The second section deals with an operational definition of assessment in education, looks into pedagogies and strategies in formative assessment in Namibia, and later on the chapter fleshes out the links between the Life Science Curriculum and Reform policies in terms of formative assessment.

2.2 THE THEORETICAL FRAMEWORK UNDERPINNING ASSESSMENT IN THE NAMIBIAN REFORM

As ideologies evolve, the relevance of a particular assessment strategy is under constant scrutiny at any given time. For this reason Broadfoot (1979) has suggested that changing issues in assessment should be seen in the epistemological and ideological contexts in which they are located. This statement is supported by the claim that:

> The major changes which have taken place in education systems in the Eastern and Southern African region have been mandatory – mandatory because most of the changes have been linked to political changes and trends in the country which were initiated by the ruling power
> (Njabili, 1997:135).

It is in the light of these observations that this section aims to map out the metamorphosis assessment practices in Namibia has undergone. In doing so, I provide a closer look at the theories underpinning assessment practices in pre - and post-independent Namibia.

2.2.1 Views of instruction and assessment prior to independent Namibia

With the independence of Namibia, an education system was inherited that was riddled with relics of apartheid, was totally divorced from the lives and experiences of the Namibian people and had as its mainstay the perpetuation and reproduction of inequalities and legitimatized discrimination and domination (Angula, 1999). The period of colonial rule was characterized by a particular theoretical position of knowledge, knowing, learning and teaching. According to *Toward Education for All: A Development Brief for Education, Culture and Training* these theories treated learners as empty buckets into which teachers poured knowledge (Namibia. MEC, 1993:121). Prawat (1992) referred to traditional teaching practices like these as the "absorptionist" approach to learning and the "transmission" approach to teaching. This kind of curriculum implementation was not uncommon, as Paulo Freire had as far back as the 1970's termed it the 'banking' approach to teaching (Donald, Lazarus & Lolwana, 2002). *Toward Education for All* suggests that, for Namibia's problems to be addressed, Namibians had to create learning opportunities where learners went beyond relying on what they have read or been told

(Namibia. MEC,1993). Classroom pedagogy of this kind has been further contested when it was claimed that:

> Students talk little because they are the ones who don't know the subject yet; what can they contribute to the classroom talk? When they do talk, then, it is usually so that the teacher can check to see whether information is being retained... Students listen, and they take notes – often in exactly the same words as the teacher and the text used (Hinchey, 1998: 49).

Instruction and learning of this nature are the result of a behaviourist epistemology that was entrenched in traditional classrooms for many years *(ibid)*. Behaviourists have a particular set of beliefs about knowledge and what it means to "know", and subsequently give rise to assumptions about teaching, learning and assessment. Knowledge, according to the proponents of this school of thought is something out there which needs to be uncovered, is only valid and valued if it can be scientifically proved and verified (*ibid*).

Thus, the only way for learners to acquire that knowledge is to rote learn it. If they succeed in this, it was claimed that they "know" (Hinchey, 1998). Traditional teaching had a definite bearing on the kind of assessment that was prevalent. Summative assessment, as the predominant means of assessment, was done after prolonged instruction, and the more a learner was able to produce the better the achievement. For such a mode of learning, tests and examinations were seen to be the most appropriate ways of assessment *(ibid)*. The concern for this approach to assessment is echoed in *Toward Education for All* when it states that:

> [We] are required to re-think the role of examinations. Where previously examinations were generally regarded as the sole measure of success for individuals and programs, they will now become one of several tools for assessing and evaluating progress (Namibia. MEC, 1993:123)

Donald et al. (2000) were equally concerned about the status of examinations in schools when they asserted that the examination tail would end up wagging the curriculum dog.
Snyder (1999) on the other hand claimed that examination programs and instructional programs have insignificant, if any, relationships. His concern is that examinations are preoccupied with

efficacy and tend to assess lower level skills and knowledge and to encourage teacher centred strategies. Nangombe (1999:76) noted that: "prior to the independence of Namibia assessment was predominantly formal examinations oriented." Testing, according to Hinchey (1998) is a process of withdrawing the same information deposited. She further purported that in positivist classrooms, assessment has the form of factual, multiple-choice worksheets and has features such as: memorization, rehearsal, recitation, one right answer, accurate repetition and uncritical thinking. Frederiksen (1990:43) argued that: "current widely used tests of school achievement have often been criticized on the grounds that they fail to measure the more complex cognitive skills." They further exemplified cognitive skills with the ability to generalize knowledge and to apply it to a variety of unfamiliar problems. Their main problem with tests that are currently used is in that they stress knowledge of facts and ignore evaluation, innovation and the application of knowledge (*ibid*).

Wilmot maintained that traditional assessment practices have been criticized as having led to a situation in which:

- tests and examinations are the most common tools for assessment;
- the focus is on measuring how much a learner is able to memorise and recall at the expense of developing conceptual understanding of knowledge with understanding, skills and values;
- the myth of the "right" answer is perpetuated; finding out how much a learner knows rather than how well s/he understands and can apply knowledge in a different context;
- key strategies include structure of the "what", "name", "how many", "where" type, as well as multiple choice, missing answers and matching questions; and
- assessment is seen as measuring the product of learning, and thus, separating assessment from teaching and learning (2003:4).

Angula (1999:3) described this curriculum model as being "irrelevant, unsuitable and largely outmoded [in] content [and] pedagogy... of the colonial enterprise." This view of curriculum delivery, criticized by Wilmot, (2003) and Angula, (1999) coupled with a political change in governance with the independence of Namibia in 1990 resulted in many reform processes in education. One of the areas in which education policies were changed, was curriculum delivery.

A drastic and dramatic change in curriculum delivery was initiated to redress the wrongs of the previous education system.

2.2.2 The need for policy renewal

What follows is an attempt to flesh out some of the curriculum changes that were brought about after the political and theoretical changes came into being.

Driven by *The World Conference on Education for All* in Jomtien, Thailand and *The World Summit for Children* in New York in 1990, the Government of Namibia realized that for the sentiments in Toward Education for All to materialize, the existing philosophy of education that mainly served the elite would have to be replaced by a philosophy that would serve *all* children. A policy shift would have to be made that replaced the positivist, technicist and teacher centred philosophy with teaching and learning with a constructivist, humanist and learner centred approach to education (Namibia. MEC, 1993). The *Pilot Curriculum Guide for Formal Basic Education,* (henceforth referred to as Broad Curriculum) therefore, as one of the kernel policy documents of the reform, clarifies the aims of the newly adopted Basic Education for All program. These aims are to:

- enable learners to communicate effectively in speech and in writing in English and in another language of Namibia;

- develop a lively, questioning, appreciative and creative intellect, enabling learners to discuss issues rationally, to make careful observation and analysis, to experiment, to think scientifically, solve problems, and apply themselves to tasks;

- help learners to develop self-confidence, self-knowledge, self-reliance and understanding of the world in which they live, through meaningful activities; and

- enable learners to obtain the knowledge and understanding, skills and competencies, and attitudes and values needed for their personal development, related to the changes in Namibian society.

(Namibia. MBEC, 1996:5-6)

All of these aspirations are echoed in the writings of authors in this field of assessment, including Frederiksen, (1990); Namibia. MBEC, (1996); Njabili, (1997); Hinchey, (1998); Nangombe,

(1999); Donald et al., (2000); and Wilmot, (2003). It is clear that currently accepted educational theories require a re-assessment and a rethinking of the philosophical and theoretical orientation of teaching, learning, knowledge and knowing. Change in policy with regard to classroom instruction and classroom assessment is a requirement. Moreover, the new policy document petitioned for a reformed curriculum based on progressive epistemologies that promise the realization of these aspirations.

It is in the search of a reformed curriculum, that constructivism - rooted in cognitive psychology - was adopted by the Namibian government as a theoretical position underpinning classroom pedagogy. This psychological perspective as informed by Piaget (1953), Bruner (1966), Vygotsky (1978), Bakhtin (1981) and others from the same school of thought holds that knowledge is constructed in the mind of the child (Donald et al., 2002). According to Johannesen (1999), a learner centred approach to teaching is based on the premise that children "construct" their own knowledge.

2.2.3 Constructivism in the context of policy reform

The next section, therefore, attempts to conceptualize what constructivism means in the context of teaching in Namibia. This will provide a framework in which I can locate the assessment practices that are described later in the chapter.

According to Hinchey (1998) knowledge and what it means to "know" is a matter of 'meaning making' and 'personal interpretation'. The process of meaning making takes place in the mind of individual children where knowledge is constructed. This observation is consistent with Johannesen's (1999) conceptualization of learner centredness as being a corollary of constructivism. Hinchey (1998) further theorized knowledge as a matter of human interpretation, something that does not exist independently in the world and that comes into being only when people examine data and assigns meaning to it. She further claimed that one comes to "know" only when you can make meaning out of facts, when you have personal understanding of information, and when you can link separate bits of information into a coherent whole. This view of knowledge and knowing, she maintained, constitutes constructivism *(ibid)*.

For the purpose of this research, I explain how information becomes knowledge only after the learner has a true conceptual understanding of it, and is able to apply that knowledge in different contexts and situations. The learner should internalize this information and make sense of it. This sense making process requires, among others, cooperative learning and all other attributes that constitute positive attitudes. Here, learning and meaning making are stretched beyond the mastery of subject content. These entail, besides subject mastery, also appropriate life skills learning. The *CA booklet for Grade 10* supports this view when it suggests that "responsibility, initiative, creativity... sharing of knowledge and skills... encouraging, support and inspiring fellow learners." should be part of the process of learning (Namibia. Ministry of Basic Education and Culture. Department of National Examinations and Assessment [DNEA], 1997).

The Namibian reform policy in *Toward Education for All* operates from the assumption that a learner centred approach suggests: "a methodology that promotes learning through understanding and practice directed towards a autonomous mastery of living conditions" (Namibia. MEC, 1993:23). According to Pomuti (1999:15), to move away from this outmoded curriculum to a learner centred curriculum, one has to consider that:

> learning is not a passive exercise of absorbing knowledge developed and transmitted by "experts",... but an active process whereby learners are encouraged to construct meaning for themselves and create knowledge, by sharing experiences with others and through collaborative interaction.

She further proposed that the schools should allow expression of thought and work towards critically enquiring minds and encourage group work (*ibid*).

These changes in assumptions about knowledge, teaching and learning have many implications for assessment practices in schools. Teaching instruction should be adapted to accommodate the new assessment practices and vice versa. According to *Toward Education for All*, pedagogy, curriculum and assessment must all be designed to permit, encourage, and support successful learning (Namibia. MEC, 1993).

In the next section, I explore the extent to which the Namibian reform policies on education re-aligned and reshaped – in form and function - assessment practices to make them congruent with learner centred philosophies. As I mentioned earlier in this chapter, a change in teaching philosophy has a direct bearing on the kind of assessment methodology being used. More so if one supports the argument that assessment is inseparably part of teaching and learning. This argument is consistent with the claim that "constructivist teachers don't view assessment as separate... from classroom... activities, but rather embed assessment directly into these current activities" (Brooks & Brooks, 1993:3). Kyriacou supported this claim further when he maintained that: "presentation, monitoring [and assessment] are closely linked. The ... activities carried out... during a lesson are part of both presentation, monitoring [and assessment]" (1997:3). This is best explained by referring to a Venn diagram from Brown and Knight (1994:46).

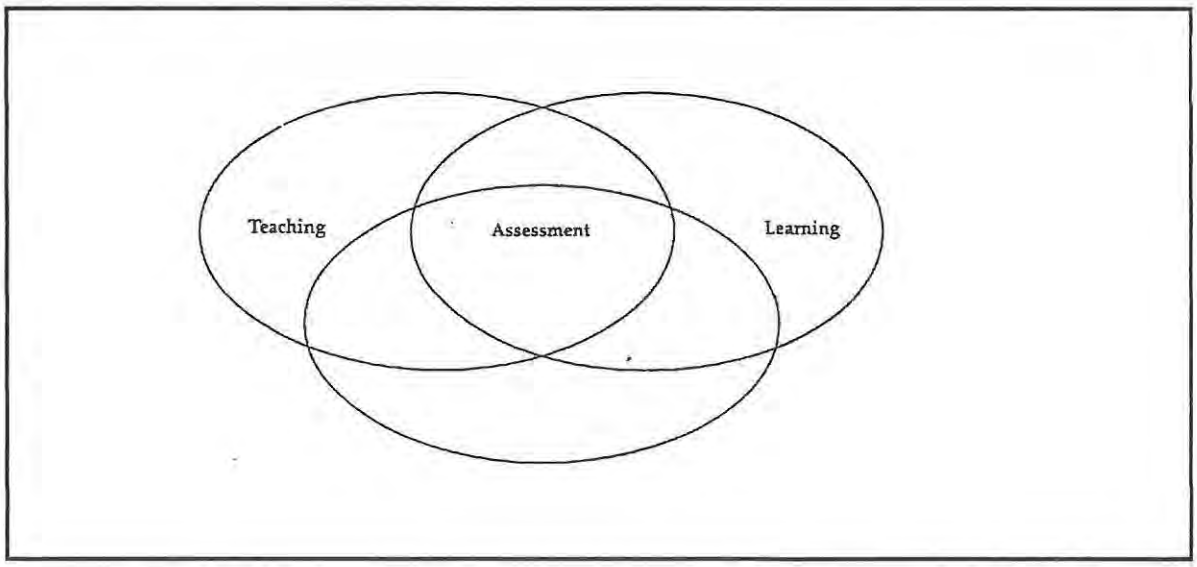


Figure 1 The integrated nature of assessment in teaching and learning

Source: *Assessing learners in Higher Education: Brown, S., & Knight, P. (1994).*

2.2.4 Views of assessment in post independent Namibia

Central to this section is the location of methodologies of assessment within the framework of a learner centred pedagogy.

In the light of a philosophical reorientation in education in Namibia, it became evident that assessment practices should be altered in form and function. An alternative view of assessment should be embraced within the context of Namibia. Assessment should be brought in line with the new theories of what constitute knowledge, knowing, effective teaching and learning. This is consistent with Njabili (1997:131) who asserted that:

> the origin of reforms in examination systems in the Southern African Development Community (SADC) is a response to dissatisfaction expressed towards a lack of relevance in both the content of the school curriculum and the examinations.

It should be made clear – right from the onset - that my purpose here is not to down play examinations as a tool for assessment, but rather to criticize its predominant role, its political, educational and socio-economic agendas in the historical past of Namibia and its forms and functions. Examinations as they were (and still are), are not seen to be the most appropriate assessment tool in a renewed curriculum in Namibian schools (Namibia. MEC, 1993). If the curriculum is to play a dominant role in driving education, then, examinations should diminish in status. This concern was further expressed by Njabili (1997:131) when she claimed that: "examinations and assessment procedures ought to be servants of the curriculum."

Toward Education for All is equally skeptical about a particular view of memorization when it noted that: "far too often we set examinations that are designed to measure the recall of disconnected bits of information....In fact, it may not even do that well" (Namibia. MEC, 1993:125). On the contrary, it advocates a deep understanding and engagement through critical thinking, analysis, synthesis, prediction and innovation (*ibid*). This key document encourages and envisages examinations that aim at concept formation, development of analytical skills, the ability to cater for cross-fertilisation of diverse understandings and the generation of new ideas. For that reason, assessment in Basic Education is seen as a tool that will be used:

- to inform learners and their parents of progress and achievements;
- to inform teachers of problems and guide ensuing compensatory teaching; and
- for promotion purposes.

Further, for assessment tools to accomplish these ideals, assessment should play a formative role in education in the sense that it:

- motivates learners to extend their knowledge and skills and to establish sound values;
- promotes good study habits;
- helps learners to use intelligently what they have learned to solve problems;
- helps build a positive and realistic self image; and
- is used to improve teaching methods and learning materials (*ibid*).

This policy document, therefore, advocates the development of learner centred instructional materials and the promotion of criterion-referenced assessment procedures. It petitions for a series of learner centred assessment strategies and the need to reduce the emphasis on examinations. Assessment strategies that encourage critical thinking, problem-solving, creative thinking, analysis and synthesis should take precedence over rote learning. In short, it promotes formative assessment, which is compatible with learner centred education (*ibid*).

Toward Improving Continuous Assessment In Schools: A Policy And Information Guide (henceforth referred to as Continuous Assessment policy guide), therefore operates from the premise that good continuous assessment:

- informs teaching and improves learning while there is still time to do so;
- calls for graded assessment that are based on several methods of assessment; and
- is valid, reliable and fair.

(Namibia. MBEC, 1998:17)

Nangombe (1999:76-77) is of the opinion that learners and teachers can greatly benefit from the classroom situation and formative assessment when:

- basic competencies put teachers and learners in a better position to monitor education;
- in this system external examinations can still be used at the end of the junior and senior secondary phases for the purpose of selection or promotion;
- the concept of positive achievement is seen as crucial in the emphasis on the success rate rather on the failure rate;
- assessment has a formative role in education as it can be used to:
  - -promote good study habits;
  - -motivate learners to expand their knowledge base and skills and establish

all continuous assessment are formative (Namibia. Ministry of Basic Education and Culture [MBEC], 1998:8).

Some of the concerns that have been raised with regard to the implementation of the formative assessment policy in schools are:

- The lack of understanding and commitment by some implementers of the assessment policy guidelines (Nangombe, 1999).
- Teachers who are expected to implement the policy with little understanding and experience of the approach in a constructivist context. This concern was expressed by Mqingwana, a Secondary School Teacher when he noted that: "I have some fears about the introduction of this continuous assessment...at the moment. We have been told in a vague way about it" (Namibia. MBEC, 1998:1).

The Directorate of Examinations in Namibia has been very critical of the validity of the continuous assessment marks. The implication of this is that despite the strong focus on continuous assessment in education policy, the status of continuous assessment in relation to the overall assessment of learners is steadily eroding. Currently thirty-five percent of the promotion mark in Life Science (a subject in the Namibian Secondary School curriculum) derives from continuous assessment, in comparison to the fifty percent stipulated at the inception of Life Science some fourteen years ago. It is in the light of these issues relating to the assessment policy that this study will attempt to investigate how continuous assessment is understood and implemented by Life Science teachers at selected schools in the Keetmanshoop district.

In this study I investigate the implementation of formative assessment policies in Life Science classrooms at two schools in the Keetmanshoop district. This study was triggered by my experience as an Advisory Teacher. My duties include the monitoring of formative assessment in schools and from my experience it appears that teachers interpret assessment policies in different ways. This observation is consistent with Nangombe (1999:79) when he noted that: "shortcomings in this area [implementation of formative assessment] include a lack of understanding of policy guidelines by some implementers". Therefore, the only way to support this claim was to determine teachers' practices and perceptions to test my assumption. This area of research was further prompted by the mismatch that exists between the CA (Continuous

2.3 AN OPERATIONAL DEFINITION OF CLASSROOM ASSESSMENT

In order to clarify instruction in the context of a Life Science classroom I select an operational definition of formative assessment by looking at a variety of definitions from other researchers' work. Researchers in the field of assessment define assessment in classrooms in different ways, yet some commonalities can be identified:

Gagne and Briggs (1979:291) regard classroom assessment as:

> [When] the instructional entity... is being tried out, and many kinds of observations are being made at the same time. Lessons and topics are carried through to their conclusions, and the collection of data is not permitted to interfere to any great extent with the progress of instruction. This is the means of [systematically] gathering, analyzing, and interpreting evidence.

Erwin (as cited in Brown & Knight, 1994:12) defined assessment as a:

> systematic basis for making inferences about the learning and development of students... the process of defining, selecting, designing, collecting, analyzing, interpreting and using information to increase students' learning and development.

Angelo and Cross (1993:3) defined classroom assessment as:

> [The] close observation of students in the process of learning, the collection of frequent feedback on students' learning, and the design of modest classroom experiments [from] which teachers can learn much about how students learn and, more specifically, how students respond to particular teaching approaches.

Johnston (1990:132) used phrases like: "extensive observations of all children" and "recording efforts on the students who are making less progress."

"Assessment is the process of gathering, interpreting, recording and using information about pupils' responses to an educational task" (Wilmot, 2003).

Nitko described assessment as the process that "... provides information for decisions about students, curricula, and programs, and educational policy" (1996: 9).

When analyzing these definitions, certain parallels can be drawn. These are: collecting/gathering, analyzing, interpreting, selecting, using information, observations and recording. For the purpose of my research and borrowing from the definitions of previous researchers, I, therefore, define formative assessment as:

The process of measuring and observing students' performances and behaviours during which information about the learners is gathered, analysed, interpreted and recorded to be used for self-assessing, re-designing and realigning of teaching instruction approaches and material.

Wilmot (2003:9) clearly describes what formative assessment ought to be when she asserted that:

> Formative assessment is assessment for learning. This means that assessment is done to provide information about the progress the individual learner is making in relation to the curriculum's targets for the section of work or for the year/phase. Formative assessment can be done before the teaching/learning process begins to find out learners' prior knowledge. This information then enables the educator to design and implement appropriate learning programs, which build on and extend their learners' understanding.

The Continuous Assessment Policy Guide defines continuous assessment as follows:

> When both formal and informal assessments are done on a regular basis they are referred to as CA. CA is meant to be integrated with teaching in order to improve learning and to help shape and direct the teaching-learning process. The assessment is continuous because: (1) it occurs at various times as a part of instruction, (2) may occur following a lesson, (3) usually occurs following a topic and (4) frequently occurs following a theme. *Formative assessment* is any assessment made during the school year that is meant to improve learning and helps to shape and direct the teaching-learning process. In this sense all CA's are formative (Namibia. MBEC, 1998:7-9)

Before mapping out the continuous assessment strategies suggested by the literature reviewed and document analysis, the next section provides an historical overview of Life Science as a subject in the Namibian curriculum.

2.4 A HISTORICAL OVERVIEW OF LIFE SCIENCE AS A SUBJECT

In order to provide a broader picture of why I focus on Life Science as a subject in the Namibian Curriculum, it is fitting in the context of my research to touch on its socio-historical background. This picture attempts to clarify its prominent role in the reform process.

In the *Life Science Project Evaluation Report* van Harmelen (2001:37) noted that:

> Life Science started in one of SWAPO's education projects in exile, the Namibia Secondary Technical School in Loudima, People's Republic of Congo. The pedagogy was imbued with Scandinavian social-democratic values and a learner-centred approach. Continuous assessment was an essential part of the teaching and learning process.

When looking at the Life Science curriculum, it is evident that democratic principles, such as respect for the opinions of others, responsibility for own learning and the learning of others, interaction, participation, negotiation, teamwork and honesty receive a significant status. These are complemented with recognition for everyday social problems, such as HIV/AIDS, poverty, soil degradation, malaria, pollution and lack of health and wellness. The purpose of these social-democratic skills serves to drive the process of teaching and learning, including assessment. Continuous assessment was introduced as it provides a more holistic picture of a learner's performance and progress. It was further important as it carries learner centred and humanistic principles. van Harmelen went further in this report by stating that:

> On independence of Namibia in 1990, Ibis was requested to make Life Science a national project **spearheading the curriculum reform** [emphasis mine]. The subject was regarded with suspicion as "a SWAPO subject" by the old guard. There was no agreed understanding of learner-centred education. Continuous assessment was a controversial issue, and although Life Science has the most valid and reliable CA in the system, it has not been used as a model for other subjects *(ibid)*.

Drawing from this report, it is evident that the schools were supposed to spread the message of CA and to implement it accordingly. Life Science, Agriculture and Biology, according to this report, were the only subjects that had already gained momentum in exile. Life Science, thus,

already had a CA component when it was introduced in Namibia, and as such, supposedly acted as a model on which the other curriculum subjects could have build.

2.5 STRATEGIES FOR ASSESSING LEARNER PERFORMANCES IN LIFE SCIENCE

Nitko (1996:241) is of the opinion that "there is a relationship between learning targets, tasks, specific scoring rubrics and general scoring rubrics." To fulfill this logical sequence in planning and designing assessment, this section explains the domains, which address the learning targets in Life Science. Secondly, and to complement my explanation of performance-based assessment, I provide examples of performance-based assessment tasks. Lastly, I provide rubrics for assessing learner performance to make it congruent with performance-based assessment advocated by the *Continuous Assessment Policy Guide*.

2.5.1 Domains to be assessed in Life Science

One of the key documents that the teachers use to conduct CA in Life Science maps out certain domains and sub-domains that should be assessed. According to the *CA booklet for Life Science Grade 10* assessment domains refer to the manner in which learners are expected to deal with the learning objectives. To adequately assess the learning objectives [and competencies] reflected in the Life Science curricula, assessment tasks selected by the teacher should allow learners to demonstrate the following assessment domains,:(Namibia. MBEC. DNEA, 1997).

Table 2.1 Domains to be assessed in Life Science

A Knowledge with understanding:
Learners should be able to demonstrate knowledge and understanding by:
A.1 using language, terms, symbols, quantities and units:
A.2 using facts, concepts, patterns and principles.

B Handling information and solving problems:
Learners should be able to use oral and written information, simple graphical and numerical materials as well as living organisms and non-living things from their environment by:
B.1 locating, organizing and presenting information from a variety of sources
B.2 using information to identify patterns, report trends and draw conclusions.
B.3 making predictions and proposing hypotheses, suggesting solutions to problems.

C Practical and investigative skills
Learners should be able to demonstrate practical and investigative skills by:
C.1 using and organizing simple tools, techniques and procedures, apparatus and materials;
C.2 observing, measuring and recording
C.3 following instructions and planning simple work tasks.

D Attitudes related to the process of learning
Learners should be able to show positive attitudes towards the process of learning through:
D.1 demonstrating responsibility towards plans or decisions taken by the class or a group of learners;
D.2 taking actions, initiatives or showing creativity during the learning process as a result of curiosity and critical thinking.
D.3 sharing knowledge and skills as well as encouraging, supporting and inspiring fellow learners.

2.5.2 Performance-based assessment in Life Science

The *Continuous Assessment Policy Guide* (Namibia. MBEC, 1998) holds that *performance based assessment* gives learners an opportunity to 'construct a response', 'create a product' or 'perform a demonstration' to show how well they understand and can do. Nitko (1996) supported this view when stating that performance based assessment requires students to construct, 'produce' or demonstrate a skill to obtain information on how well the task is performed. This implies that assessment should go beyond the mere recording of information to enter the more professional domain of assessment; that is to support and enhance learning. In doing so, information gained through assessment should inform further teaching and learning. Wilmot (2003:2) argued that formative assessment includes monitoring the progress of learners; identifying and remediating

problems..., and planning further teaching and learning opportunities". Johnston (1990:121) criticized many researchers that evaluated assessment procedures "only in terms of collecting information, not in terms of the complete cycle of collection and use of information". To fulfill these goals of performance-based assessment, the *Continuous Assessment Policy Guide* suggests that the Life Science teacher should plan the learning activities the learners will do, decide what objectives or competencies the learners should achieve and how they will be assessed (Namibia. MBEC, 1998). Therefore, the teacher should select the assessment method that can best measure the objectives and competencies from which information is needed. Gipps was of the same opinion when she argued that

> ...authentic assessment is always performance based....Authentic assessment implies that the assessment is authentic to the learning activity we wish to promote... (1996:259).

Nitko (1996:239) identified two components of performance-based assessment, which are "... the performance tasks itself and a clearly defined scoring scheme or rubric".

The *Continuous Assessment Policy Guide* provides a source of performance-based assessment methods that could be used in Life Science classrooms indicated in the table below:

Table 2.2 Performance-based assessment tasks

PERFORMANCE-BASED ASSESSMENTS			
Constructed Responses	Products	Performances	Process Focus
Fill in blank Word(s) Phrase(s) Short answer Label a diagram Show your work Web Concept map Flow chart Graph/table Matrix illustration	essay Research paper Log/journal Lab rep Story/play Poem Portfolio Art exhibition Science project Model Video/audiotape Spreadsheet	Oral presentation Dance/movement Science lab demo Athletic competition Enactment Debate Musical recital	Oral questioning Observation Interview Conference Process description "Think aloud" Learning log

Source: McTighe and Ferrara (as cited in Namibia. MBEC, 1998:4)

2.5.3 General criteria when assessing skills and attitudes in Life Science

For the Life Science teacher to do the grading during assessment, the *Grade 10 Life Science syllabus* articulates the use of criterion-referenced assessment and the principle of positive achievement when it states that.

> Assessment in Life Science is based on the principle of **positive achievement,** which means that the focus is on what the learners understand and can do and not on what they have not achieved (Namibia. [MEC], 1997:11).

This policy document further requires general criteria and guidelines on how grading in Life Science should be done. In Wilmot's view the purpose of criterion-reference assessment is to collect information on "how well a learner is performing in relation to curriculum goals" (2003:14). In this sense assessment in Life Science is also criterion-based. Kelly (1989:191) pointed out that "the clearer the teachers are about the objectives, the easier it is for them to identify criteria for assessment". Brown and Knight (1994) argued that assessment is "fairer" and

"more reasonable" if criteria are communicated to the learners. These criteria are explicated in the Grade 10 *CA booklet* for Life Science. This booklet suggests that each skill or attitude can be awarded up to a maximum of 5 marks according to the following criteria presented in the table below:

Table 2.3 Criteria used to assess Life Science tasks

SCALE	GENERAL CRITERIA
5	The assessed skill or attitude is performed well above average, neatly and independently with little or no support or guidance from the teacher.
4	The assessed skill or attitude is performed or shown above average with little or no support or guidance from the teacher.
3	The assessed skill or attitude is performed or shown at average level. It is performed with some support or guidance from the teacher.
2	The assessed skill or attitude is performed or shown below average. It is performed with some support or guidance from the teacher.
1	The assessed skill or attitude is performed or shown at a level well below average, requiring pronounced support or guidance from the teacher.
0	This mark is only given when the learner is not assessed due to non participation without valid reason.

(Namibia. MBEC. DNEA, 1997)

2.5.4 Specific criteria for performance-based assessment

For learners to assess their own learning and to guide them through the assessment tasks, performance based assessment implies that a rubric or a scoring scheme be provided to learners. This rubric is comprised of indicators indicating how well a task has been done or performed by the learners, which further informs future planning of instruction. Nitko (1996) argued that if you teach your learners what is expected when performing a task and they know on what criteria they will be assessed the teacher will improve both his teaching and the assessment results. The *Continuous Assessment Policy Guide* requires formative assessment to be performance-based and

As every single performance-based assessment task or activity should have its own rubric specific to the activity, I borrowed, as an example, an assessment rubric from Nitko presented below.

Table 2.4 Specific rubric for declarative knowledge

4	Demonstrate a thorough understanding of the generalization that war forces sensitive issues to surface and causes people to confront inherent conflicts of values. Provided new insights into people behavior during war time.
3	Displays a complete and accurate understanding of the generalization that war forces sensitive issues to the surface and causes people to confront inherent conflicts of values.
2	Displays an incomplete understanding of the generalization that war forces sensitive issues to surface and causes people to confront inherent conflicts of values and have some notable misconceptions about this generalization.
1	Demonstrate severe misconceptions about the generalizations that war forces sensitive issues to surface and causes people to confront inherent conflicts of values (1996:241).

Source: Educational assessment of students by Nitko, A.(1996).

2.6 THE FIT BETWEEN THE BROAD CURRICULUM AND THE LIFE SCIENCE SYLLABUS

In order to identify the crux of the Namibian Broad Curriculum in relation to classroom assessment, I opt, in this instance, to clarify the relationship between this curriculum and that of Life Science. Thereafter, I focus on the fit between the approaches to CA as explicated by the Broad Curriculum and that of Life Science syllabus, as this particular curriculum piloted the ideas about CA.

2.6.1 The life skills and basic competencies of the Broad Curriculum

2.6.1 The life skills and basic competencies of the Broad Curriculum

This section explains how the basic competencies in the Reform policy inform competencies to be assessed in the Life Science Curriculum. The *Broad Curriculum* therefore, relates the life skills and basic competencies expected to be developed in classroom instruction and assessment strategies as follows.

Table 2.4 Life skills and basic competencies of the Broad Curriculum

Life skills competencies	Basic competencies
Investigating	ask for, observe, **investigate**, enquiries, etc translate data, **explain**, compare, classify, etc.
Interpreting	comprehend, **recognize,** distinguish, interpret, convert, translate date, **explain**, compare, classify, etc.
Applying knowledge and skills	measure, use dictionary, locate, produce, identify, build, make, demonstrate, etc.
Communicating	talk fluently, tell, act out, draw, write, **explain,** show, display, report, sing, dramatise, etc
Valuing	show appreciation, evaluates, decides, interprets, etc.
Participating	take part, participate, present, etc.

(emphasis mine) (Namibia. MBEC, 1996:10)

2.6.2 Basic competencies outlined in Life Science syllabus

Since the Life Science syllabus should serve the Broad Curriculum, I move from the premise that these competencies, as advocated in the Broad Curriculum, are equally encapsulated in the Life

Science syllabus. I, now turn my attention to the Life Science syllabus to see to what extent there is coherence between the competencies as outlined in the Broad Curriculum and those in the Life Science syllabus. For this purpose I will focus on one of the topics that should be covered in the Life Science syllabus as my example.

The *Continuous Assessment Policy document* explains that subjects (of which Life Science is one) where continuous assessment is to be conducted should clearly stipulate the knowledge, skills and understandings to be assessed in the syllabi (Namibia. MBEC, 1998). Below is an example of the objectives and competencies of a sub-topic in the Grade 10 Life Science syllabus.

Table 2.5 Objectives and basic competencies of the Life Science Syllabus

Themes and Topics	Learning Objectives	Basic Competencies
	Learners will:	Learners should be able to:
2.3 Nutrition	**Recognize** the characteristics of the main categories of nutrients and discuss their functions in the body. **Investigate** the nutritional value of the most common food items to determine food items rich in carbohydrates, proteins and fats. Understand how to divide food in three different groups and plan a balanced diet for people of different age and sex, performing same or different activities. Become aware of the relationship between nutrition and health.	Describe and **explain** the main functions of different nutrients…as well as the role of water and fibres. List foods that are rich in specific nutrients. Analyse food composition tables and food labels Identify and **explain** which foods are the main sources of the different nutrients. Identify and work out a diet required by people of different age and sex performing the same or different activities. **Explain** why people of different age and sex have different energy requirements. Identify and discuss problems related to not eating the right amount of food including underweight and overweight

Source: Life Science syllabus for Grade 10 (Namibia. MEC, 1997) [Emphasis mine]

2.7 THE LINKS BETWEEN ASSESSMENT IN LIFE SCIENCE AND THE BROAD CURRICULUM

In addition to criterion-referenced assessment this section examines how the *Continuous Assessment Policy Guide* suggests CA should be conducted to uphold the ideals of the *Broad Curriculum.*

The competencies outlined in the Grade 10 Life Science syllabus should be mastered through a learner centred approach. The *Broad Curriculum* suggests that a learner centred approach to teaching is located in democratic societies (Namibia. MBEC, 1996). For this reason is it important that the process of teaching is all-inclusive; looking at both the mastery of subject knowledge, skills, values and positive attitudes. To achieve the desired outcomes in teaching and assessment both the *Broad Curriculum* (Namibia. MBEC, 1996) and the *Continuous Assessment Policy Guide* (Namibia. MBEC, 1998) suggest that:

- learners' achievements in Life Science CA should be communicated to them as part of regular feedback. Moreover, the Broad Curriculum requires that the grades the learners obtained be systematically recorded throughout the year and used to inform them of their progress. This is consistent with Angelo and Cross (1993:6) when they claimed "teachers should complete the classroom feedback loop by providing students with feedback on the results of the assessment and suggestions on improving learning."

- formal tests can only assess a limited range of competencies, thereby allowing the Life Science CA booklet and teachers to assess and record attitudes and values in domain D.

- not less than five and not more than nine assessment activities should be recorded for CA in Life Science.

- CA should not count for less than 33% and not more than 50% towards the final promotion mark. CA in Life Science counts for 35% out of the total promotion mark of 200, which falls within the range requires from the Broad Curriculum.

- criteria for assessing learners' work should be used (see assessment criteria in Life Science).

Although there seems to be significant coherence between the *Broad Curriculum* and the *Continuous Assessment Policy Guide*, the next section attempts to look at how the CA policies vary in practice.

2.8 DISCREPANCIES BETWEEN THE CA POLICIES, RELATED LITERATURE AND PRACTICE

There are certain hiccups in translating newly adopted learning theories into assessment practices, because of the "competing pressure on teachers, or the difficulty of breaking away from the tyranny of academic selection" (Wolf, 1996:285).

Wilmot (2003) expressed concern about the disjuncture that exists between curriculum policy and practice associated with educational transformation. She observed that more traditionally-oriented assessment practices work against the more progressive socially constructed Namibian Broad Curriculum. This section addresses how classroom practices and the Life Science curriculum in Namibia are at variance with the ideals of the Namibian Broad Curriculum.

2.8.1 Cognitive assessment versus Standardised tests

I mentioned previously in this chapter that cognitive theories – on which the Namibian education reform is built - emphasise the application of knowledge, affective outcomes, knowledge with understanding, analysis, synthesis, exploration, etc. However, Leat and Nichols (2000:19) observed that instead of

> ...using a range of [assessment] strategies including tests, discussions with pupils, practical tasks and observation...teachers have been changing their on-going assessment into a series of tests, which are essentially summative...

An analysis of recent Grade 10 external examination question papers in Namibia reveals that not less than 23% of any of these papers accounts for multiple-choice questions, which ask for the recall or recognition of facts. Umar (1996:241) made the same observation when he expressed concern about the "tendency among teachers to over-use multiple choice items that is readily

available in books" Little (1996) noted that multiple-choice questions do not allow the students to express themselves. She further held that research data revealed that, despite teachers' skepticism in multiple-choice questions, they largely make use of this method during their classroom assessment. Gipps (1996:258) maintained that "new conceptions of learning requires a new assessment methodology... [that] facilitate learning and encourage problem solving". Gipps (1996:259) suggested that performance assessment that is embedded in constructivism implies that "The focus is more likely to be on thinking to produce an answer than on eliminating wrong answers as in multiple-choice tests". She maintained that multiple-choice testing is rooted in traditional learning models *(ibid)*. My thesis therefore, argues that multiple choice assessment methods described above militate against constructivist learning models, proposed by the Namibian Broad Curriculum for classroom instruction and student learning.

2.8.2 Classroom assessment versus External assessment

Life Science was regarded as being progressive in terms of assessment policies. The subject advocated classroom assessment that supports and enhances learning. This mode of assessment was regarded appropriate for a particular mode of learning, which gives recognition for the assessment of skills, values, and attitudes that could not be assessed in external examinations. Broadfoot and Gipps (1996:149) support this view when they claimed that it is only the class teacher that can assess important skills such as "communication and problem-solving. They maintained that classroom assessment is more "interactive and dynamic" *(ibid)*. In this sense classroom assessment is more compatible with constructivist modes of learning. However, there has been a drop in the weighting of CA in Life Science over the past twelve years. It dropped from 50% to 35% towards the promotion mark. Nangombe (1999) explained this drop in weighting of CA by noting that there are misconceptions of policy guidelines, deficient monitoring and control mechanisms, indifference by teachers with regard to assessment, which resulted in unrealistic or 'fabricated' continuous assessment marks. Gipps (1996:261) on the other hand, argued that "we must trust school-based assessment, we must train teachers in observation, diagnostic questioning and formative assessment...." She argued that this should be seen as an important part of teaching and not as "an add on". This decrease in the weighting of CA and increase in the weighting of external examinations counteracts the progressive ideals of

the Broad Curriculum in that the Broad Curriculum advocates an assessment mode that is educational, and that supports and enhances learning (Namibia. MBEC, 1996). Gipps (1996) supported this claim when she noted that assessment that supports and enhances learning can mostly be done in classrooms.

2.8.3 Knowledge integration versus Compartmentalisation

Resnick (as cited in Gipps, 1996:255) noted that

> Traditional instructional theory...assumes that knowledge and skills can be analysed into component parts... [and] that learning of complex competencies could be broken down into discrete skills learnt separately...

Resnick and Resnick (as cited in Gipps, 1996) argued that standardized testing couldn't coexist with the development of thinking skills and cognition.

The Life Science syllabus claims to present topics in an integrated and holistic way when it states that "it combines themes....". The topics in the syllabus, however, are broken down in fragmented pieces and are presented in an 'atomistic' and 'molecular' fashion.(see table 2.6). Brophy and Alleman accented this point further when they argued that 'goal oriented' teaching requires learners to "conduct inquiry, solve problems, construct models or displays" (1991:9). Constructivist theories advocate the presentation of knowledge, skills and values in holism. Murray and Wilmot (2000:2) shared this claim when they expressed concern that "If teachers follow the textbooks [and the syllabus] too closely, this may discourage the broad, thematic and dynamic view of knowledge, which Life Science aims to develop". Thus, seen from a constructivist perspective, the Life Science syllabus is in conflict with the constructivist theories on which the Broad Curriculum rests.

2.9 IMPLICATIONS OF FORMATIVE ASSESSMENT POLICIES ON LEARNING

This section examines the relationship between formative assessment and a key tenet of the reform curriculum, namely that of learning with understanding.

Earlier I explained learning, knowledge and knowing as seen through constructivist lenses and I argued the case that assessment practices must be congruent with the epistemological stance any education system embraces. Willis (as cited in Gipps, 1996: 252) noted that

> [a] question to be asked... is what kind of learning do we wish to achieve?... If we wish to foster higher order skills including application of knowledge, investigation, analyzing, reasoning and interpretation... then we need our assessment system to reflect that.

Cognitive theories hold that the constructivist teacher should encourage critical thinking, problem-solving, creative thinking, analysis and synthesis and that they should take precedence over rote learning. As such, proponents of this school of thought should design assessment to permit, encourage and support successful learning (Namibia. MEC, 1993).

This study stems from the assumption that good learning is learning with understanding and that it occurs when "networks with connections [are made] in many directions... and as a organic process of reorganizing and restructuring as the student learns" (Gipps, 1996:257). She further claimed that in the constructivist theory appropriate learning occurs when 'learners actively make sense of new knowledge' and they are 'active constructors of subject matter'. For this reason Hinchey (1998) preferred small group discussions, journal writing, learning logs, portfolio assessment, essay exams and individual writing as good tools for assessment. She further maintained that learners should get some tasks involving library work, that project work be considered and that writing and speaking be regarded as crucial constituents of learning.

Wilmot (2003:10) on the other hand argued that "the challenge for educators, working within a constructivist framework... is to develop and ask questions which assess understanding and thinking". She further maintained that, if learning with understanding is to be assessed, learners

should get opportunities to develop their own questions during instruction and the assessment tools should be designed for assessing that learning domain *(ibid)*. van Harmelen and Wilmot (as cited in Wilmot, 2003:10) shared this view when they argued "...that developing a learners' ability to think...requires...questioning skills that promote thinking...and critical thinking...". They were in favour of questions that seek to develop knowledge with understanding; questions, such as: "why", "reflect", "imagine", "compare", "predict", "consider", "substantiate", "explain", etc.

In the above sections I have looked intensively at theoretical issues underpinning the focal point of my study, namely that of the implementation of formative assessment. In the next section, I present some concluding remarks.

2.10 CONCLUSION

With the independence of Namibia, a philosophical re-orientation of what constitutes knowledge, knowing, teaching and learning was adopted. A learner centred approach was embraced to deliver curriculum content. This inevitably changed the way in which assessment of learners' learning was conducted. Specific education reform policies were implemented to drive this alternate philosophical stance. These policies need to be successfully implemented in Namibian Life Science classrooms, thereby ensuring that the desired pedagogies in classrooms are well and alive. These include the de-emphasizing of examinations as the sole assessment instrument and the promotion of formative assessment modes as equally important for quality assurance in education. Life Science as a subject in the *Broad Curriculum* was designed to marshal all the other assessment practices of the other promotional subjects in the curriculum.

This research was triggered by the fact that previous research about classroom assessment revealed that there seem to be differences in the understanding of formative assessment among practitioners (Nangombe, 1999).

Through my engagement with the literature, I gained an extensive body of information on issues of formative assessment. The screening of the assessment of basic competencies and positive

achievement, as the foci for assessment tasks, will be of particular importance in my data gathering chapter. I also came to terms with underlying principles of classroom assessment and its pedagogies in classrooms.

In the next chapter I discuss the research methodology and methods used to investigate formative assessment practices in schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of and justification for the research methodology I used in my study. The approach and methods selected were determined by my research question, which is to investigate strategies teachers use to implement formative assessment policies in their classrooms. The chapter is structured as follows: First I begin by looking at my research design, and then I explain how I did my sampling and selection of participants. Secondly, I identify and explain the data gathering tools, and towards the end of the chapter, I discuss my approach to data analysis and how I encompassed ethical and validity issues regarding the data collection process. Finally, the chapter presents some limitations to the study.

3.2 RESEARCH DESIGN

My research orientation is interpretive and my approach has been to adopt a qualitative case study. The reasons for locating the study in this philosophical framework are explained by Locke and Schaffer (as cited in Connole, 1998:16-17) when they argued that

> The interpretive approach to research regards the subjective understanding of the subjects as significant [and the researcher aims at] discovering the meaning and beliefs underlying the actions of others.

While Cohen and Manion (1994:36-37) maintained that

> The interpretive paradigm... is characterized by a concern for the individual [and aims] to understand the subjective world of human experiences... to understand their interpretations of the world around them.

My study gave recognition to the personal beliefs and understandings of the research participants and, as a result, captured the participants' perspectives and practices of formative assessment as advocated by the Namibian education reform. I opted for an interpretive orientation, which links

with a qualitative approach in that the entire process does not aim to scientifically prove statements, findings and claims made by me, but rather to give recognition to experiences and perceptions of the research participants in the context of the study. The theoretical orientation of an interpretive approach further allowed me to make meaning of the participants' views and experiences in the context of my research question.

Fraenkel and Wallen (1996:442) maintained that "Qualitative researchers go directly to the particular setting in which they are interested to observe and collect their data". They described qualitative data as "Detailed, thick description; inquiry in depth; direct quotations capturing people's personal perspectives and experiences"*(ibid)*. As I used the schools and classrooms as sites for my data collection, my approach was qualitative in nature. I approached my data by viewing events and actions in classrooms and I employed interviews and analysed documents to determine teachers' perceptions. It is consistent with Prior (1997:64) when he claimed that a study is qualitative for "...its expressed commitment to viewing events, action, norms, values etc. from the perspective of the people who are being studied". To support my qualitative approach, I used 'thick' descriptions to capture the perceptions and practices of the teachers in my study. Snyder (1999:150) maintained that "...linguistic symbols are relied upon to provide the meaning of the data" in qualitative research.

Nunan (1992) suggested that some of the elements of qualitative research are that subjective knowledge can be justified and that knowledge generated through this research cannot be applied to situations other than the one being studied, which is a typical characteristic of case studies. A case study concerns itself with one particular case and in this sense the approach to case studies is qualitative.

Patton (1990:54) argued for interpretive case studies as:

> useful where one needs to understand some special people, particular problem, or unique situation in great depth...a qualitative case study seeks to describe the [phenomenon] in depth and detail, in context and holistically.

Drawing on Patton's view of case studies, my research focused on a specific case and the data I collected was specific to the case under study. I have opted to observe a small group of teachers

in their educational and professional settings. I collected detailed information by employing multiple data collection instruments.

Wallace (1998) argued that a case study is a planned investigation of a particular case. Bell (1993:8) reasoned in a similar way when she noted that: "The case study... is...appropriate...because it gives an opportunity for one aspect of a problem to be studied in some depth within a limited time scale". The case study approach was opted for as an appropriate methodology as the study focused on the implementation of assessment policies in classrooms as a particular case and I was able to collect information that is specific to that one particular case under examination within the timeframe allowed by the half thesis.

3.3 RESEARCH PARTICIPANTS

The research was conducted in the Karas Education Region (Appendix A) (where the town of Keetmanshoop is situated). There are eleven schools offering Life Science in this region, and for this study I involved the Life Science teachers and Life Science learners. Choosing these two groups of people enabled me to gather data from two different groups of people within the school population.

3.3.1 Sampling

Due to the limited time as well as the method used for my research, I worked with a small selected sample of the population. I initially focus on three schools that were selected on the basis of their accessibility to my workstation. The resultant sample included three schools offering Life Science Grade 10, and included one Grade 10 Life Science teacher from each of these schools and the written work of five learners from each of the Grade 10 classes selected. However, one of the three Grade 10 Life Science teachers resigned during the research period that left me with only two Grade 10 Life Science teachers at two different schools and the written work of their learners.

3.3.2 Purposeful sampling

Creswell (2001:185) suggested that: "The idea behind qualitative research is to purposefully select participants or sites... that will best help the researcher understand the... research question". I used Creswell's theory when selecting these schools. I also know these teachers quite well as I have been working with them for many years as an Advisory Teacher. Secondly; these teachers have been teaching Grade 10 Life Science for many years. These conditions were conducive to my research question as the long association with the teachers as well as their experiences in the subject provided an environment in which I was not seen as a threat. Secondly, by working with experienced teachers, I was able to look at the situation more critically than with less experienced teachers. The selection of my research participants therefore, was influenced by Miller and Glassner (1997:100) when they argued that "Particularly as a result of social distances, interviewees may not trust us, they may not understand our questions, or they may purposely mislead us in their responses." The table below provides a summary of the research respondents.

Table 3.1 Profile of the teachers

School	Teacher	Grades teaching Life Science& lesson observed	Tertiary Institution and years of experience
School 1 (Senior secondary School, previously disadvantaged school, teaching Grades 8-12)	Mathilda (HDE)	Grade 10 Contraceptives and STD's	The former Academy of Namibia (for National Education), 11 years
School 2 (Senior Secondary School, previously advantaged school, teaching grades 8-12)	Leonard (HDE)	Grade 10 Contraceptives and STD's	The former Windhoek College of Education (for Whites), 12 years

3.4 DATA COLLECTION

In this section I discuss the instruments used to collect data for the study, which include lesson observations, document analysis and interviews.

3.4.1 Interviews

I conducted semi-structured interviews with the two teachers (Leonard and Mathilda; these are pseudonyms). The interviews were conducted during June and July in the Keetmanshoop Education Region.

Cannell and Kahn (as cited in Cohen & Manion, 1994:271) defined research interviews as "a two-person conversation initiated by the interviewer for the... purpose of obtaining research-relevant information...".

I opted for interviews as "A major advantage of the interview is [that] the interviewer can follow up ideas, probe responses and investigate motives and feelings" (Bell, 1993:91). Semi structured interviews were employed to provide the participants with the latitude to express themselves freely about formative assessment, but within the boundaries of already established questions as the foci. The topics covered by these focus questions were linked to the research goals. Bell further suggested that "Certain questions are asked, but respondents are given freedom to talk about the topic and give their views in their own time" *(ibid)*. These interview questions were interspersed with probing questions to follow up ideas and to clarify issues of importance to me. The interview observation schedules (Appendix B) were then piloted with Grade 8 and 9 Life Science teachers in order to establish whether the questions were clear and relevant to the case being studied. The respondents asked for certain clarifications, which put me in the position to review the questions and to amend them.

I asked the teachers' permission to record the interviews on a tape recorder (Appendix C). The tape recorder was useful in the transcription of the interviews, for direct quotations could be captured. Using notes also helped me to put down feelings the interviewees expressed through body language; things the tape recorder could not capture.

After transcribing the responses of the research respondents, I gave them the opportunity to read them and to clarify any misrepresentations I might have made in transcribing the material. This is

consistent with Holstein and Gubrium's view that "If interviews are interpretively active, meaning-making occasions, interview data are unavoidably collaborative" (1997:114).

3.4.2 Observations

The aim of this section is to explore the purposes of classroom observations and to relate them to the types of observations that were conducted as part of data collection in my research. It will also identify the main characteristics and advantages of classroom observations.

I used classroom observations as one of the methods for collecting data. Both teachers' lessons were observed for data collection. This provided me the opportunity to follow five consecutive lessons per teacher, and thereby observe several aspects of formative assessment. I observed the lessons in the respondents' classrooms to look at the printed text displayed on the walls and artifacts that might also be valid for the data collection process.

According to Foster (1996) the purpose of classroom observations is to explore the social processes within classrooms that might influence educational outcomes. I provided the teachers with an observation schedule (Appendix D) that served as a tool for directing their lessons. This schedule, however, did not dictate my observations, since I adopted a narrative approach to my field notes. Field notes according to Hopkins (1993:116) could be useful in that they "reflect general impressions of the classroom, its climate or incidental events". These particular observations also gave me first-hand experience of the strategies the teacher used to implement formative assessment policies.

The observations were followed by stimulated recall interviews. In observing the lessons, I managed to clarify issues that I grappled with during the interviews, thereby obtaining a better understanding of the teacher's practices. During the stimulated recall interviews, the teachers got the opportunity to talk me through their lessons and to provide reasons for particular events, behaviours and actions, thereby participating in the formulation of observational data. According to Murray and Nhlapo (2001) these discussions are important as the teacher takes the researcher

through the field notes that provide a rationale for the questions the researcher asks them. Nunan (1992:96) supported this way of employing field notes when he claimed that

> The technique of inviting the teacher to reflect on the lesson and comment on it... provides insights into aspects of teaching which could be difficult to obtain in any other way. It also enables the voice of the teacher to be heard.

3.4.3 Document analysis

Classroom practices are usually informed by ministerial policies and guidelines. These are supposed to be reflected in the work done by teachers. For this reason the study also analysed documents as a method of data collection.

These documents involved the collection of the selected learners' assessment tasks, lesson plans of the two teachers and formative assessment related documentation. According to Hopkins (1993:14) "The use of [documents] can provide background information and understanding of issues that would not otherwise be available". The documents obtained from the two teachers and the selected learners provided evidence of what happened in the classrooms and provided further insight into the strategies the teachers were using. In this study, documentation was used in conjunction with other sources of data. When referring to the document analysis process in the data analysis and reporting, I used the code (DA).

When drawing on the two teachers' lesson plan data in reporting this research, I have used Mathilda and Leonard as pseudonyms, to indicate that I am referring to their lesson plans.

3.5 DATA ANALYSIS

This section provides an overview of how I used the data that I collected. It provides a framework for how I processed the data, so enabling me to obtain a better understanding of the phenomenon that I studied.

Bell provides insights into the processing of raw data when she noted that "A hundred separate pieces of ... information will mean nothing to a researcher... unless they have been placed into

categories" (1993:127). This observation is consistent with Creswell (2003:18) when he argued that "The researcher collects open-ended, emerging data with the primary intent of developing themes from the data".

After transcribing the data collected, I coded the information from the interviews, observations and documents. I used a system of colour coding. Neuman (1997) suggested that colour coding should be used to identify patterns in the data. I put the patterns into themes. Creswell (2003) argued that themes that derive from information gathered from participants are inductive. These themes were used as a basis for identifying sub-themes, which then helped me to structure the discussions in Chapter 4 (see table 3.2 below). The themes and sub-themes all relate to the main research question that focus on the different strategies used by teachers to implement formative assessment policies.

Table 3.2 Themes and sub-themes used for my data analysis.

Themes	Sub-themes
Teachers' perceptions of formative assessment and its role in teaching and learning	
The type of learning being developed	
Integration of formative assessment in classroom instruction	
Strategies the teachers used to implement formative assessment	Planning Assessment techniques Feedback Recording marks
Types and purpose of activities	

A critical analysis of the themes of my data analysis gave me an indication of the impact of learner centred education in relation to formative assessment practices of these teachers.

3.6 VALIDITY IN CASE STUDY RESEARCH

In order to ensure validity of the data collected, I have used multiple sources of information. I used classroom observations, interviews and document analysis to support and complement each other, thereby ensuring that only the appropriate data is used for my analyses. This was necessary as, according to Bell (1993:65), "Validity...tells us whether an item measures or describes what it

is supposed to measure or describe". This observation is consistent with Peräkylä (1998:207) when he claimed that "...there is an underlying background assumption about a separation between the raw observations and the issues that these observations stand for...". In this study I have used three strategies to enhance the internal validity. These are:

- **Triangulation**: by comparing observational data with interview and document analysis data (Patton, 1990);
- I have also used **member-checking** to determine the accuracy of interview and lesson observation transcripts (Creswell, 2003); and
- I have collected **"rich data"** and have provided a **thick description** (Creswell, 2003).

3.7 ETHICS IN INTERPRETIVE RESEARCH

"Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics strict" (Denzin & Lincoln, 2000: 447). To conform to the ethical codes of research, I did the following:

- I wrote a letter to seek permission from the principals to use their schools as sites for my research (Appendix E).
- I informed the research participants about the purpose and intent of the research.
- Working with my respondents we drew up a "memorandum of understanding that set out our mutual expectations and agreements regarding the research.
- I gave the interview responses to the research participants to read and to provide further comments.

Bell (1993) suggested that one should politely ask for permission to use an institution as a site for research, clearly spell out the ethical issues of the research and why you want to do the research.

The interview schedule was designed in such a way that the personal views and opinions of the respondents could be heard. At the same time I also informed the participants that they would stay anonymous throughout the research process and thereafter. "Those whose lives and expressions are portrayed risk exposure and embarrassment, as well as loss of standing,

employment, and self-esteem" (Denzin & Lincoln, 2000: 447). Before the interviews and the classroom observations I asked their permission to use the tape recorder. To share the power that the researcher has over the researched, and in the spirit of democracy and transparency, I gave the respondents an opportunity to read through my field notes and to make further comments on issues of importance.

3.8 LIMITATIONS OF MY STUDY

I used multiple data collection instruments in my study to enhance validity of my data. However, each of these instruments has their own limitations. This section describes the limitations of the data collection instruments and the research method on my study.

Since I used a case study approach that focused on a relatively small sample of respondents I am aware of limitations these findings might have with regard to a larger population in terms of generalizations. Fraenkel and Wallen (1996:107) claimed that "If the results of a study only apply to the group being studied, and if the group is fairly small..., the usefulness of any findings is seriously limited". However, what matters in my study is the relevance of the findings in the particular case I studied to my understanding and thus to my ability to serve these teachers better in the context of my work.

I am mindful that I approached the interviews with a particular set of preconceived ideas that originate from my everyday interactions with teachers. These might have had an influence on the data collected. Bell (1993:95) warned that "there is always the danger of bias creeping in to interviews, largely because 'interviewers are human beings and not machines'...".

My position as Advisory Teacher, coupled with my role as a researcher, might have put me in an unfairly advantaged position in terms of power, which might have resulted in distorted and false data from respondents. Bell (1993:98) claimed that " ...[your] role as a researcher gave [you] the kind of advantage which...is inherent in the interviewer-interviewee relationship". I believe that my long association with my respondents did serve to mitigate against this to a degree.

Finally, I recognize that the intrusiveness of the interviews might have had a disquieting effect on the respondents. Wallace (1998) is of the opinion that one should be sensitive when you use other peoples' time and to the kind of questions you ask.

3.9 CONCLUSION

In this chapter I have described and justified the research design decisions I made, the various tools I used to collect the data measuring the research questions. I employed interviews, observations and document analysis in my study. Secondly, I provided an outline of the data analysis process to report on the recurrent issues pertaining to formative assessment, and towards the end, I gave an overview on how I took care of ethical and validity issues.

In the following chapter I will report on my findings from the semi-structured interviews, classroom observations and document analysis.

CHAPTER FOUR

PRESENTATION OF DATA

4.1 INTRODUCTION

In this chapter, I present the data collected through interviews, documents and classroom observations. I obtained this data by investigating the implementation of formative assessment policies in two Life Science classrooms at two schools in the Keetmanshoop District. As indicated in chapter 3, Neuman (1997) suggested using open coding when a researcher wants to determine themes from data collected. I highlighted these recurring themes by means of colour-coding and organised them under broader categories for the purpose of making further sense of the data and to help me understand the teachers' practices of formative assessment. Patton (1990) described this way of data analysis as being 'inductive' as:

> the analyst ... become[s] aware of categories or patterns for which the people studied did not have labels or terms, and the analyst develops terms to describe these inductively generated categories (390).

The following categories emerged naturally and were used as a framework for reporting my findings:

- Teachers' perceptions of formative assessment and its role in teaching and learning
- The type of learning being developed
- Integration of formative assessment in classroom instruction
- Strategies the teachers used to implement formative assessment
- Types and purpose of activities

A closer look at these categories brings to the fore how the teachers implement formative assessment policies and could be evaluated against literature reviewed on formative assessment in chapter 2. These categories are discussed in greater depth later in chapter 5.

4.2 THE SCHOOL CONTEXTS AND THE LESSONS OBSERVED

In this section I provide a contextual background of the two research respondents and their respective professional sites as well as a general overview of the lessons observed, focusing on instances of assessment. This is necessary as it provides the contextual background for the data that are presented under the respective categories. As indicated in chapter 3, pseudonyms are used to protect the anonymity of my research participants and the research sites.

4.2.1 Contexts of the two schools

4.2.1.1 De Terras Secondary School where Leonard teaches

Leonard is teaching at a previously advantaged Senior Secondary School that fell under the former Administration for Whites. Because of the legacies of the previous dispensation, the learners and teachers at this school have access to a fairly well equipped library, two laboratories and a large school hall. In addition, the relatively high school development fees that the parents pay, enables the school to purchase extra textbooks, a heavy-duty photocopier, overhead projectors and computers. Learners attending this school come from a more affluent socio-economic background. De Terras Secondary School is situated in the town centre of one of the major towns and is home to approximately 600 learners. It has a staff-learner ratio of 1:30 learners and offers a broad range of subjects from the curriculum. Leonard has been teaching at this school for more than eight years and is adequately qualified to teach Life Science at Grade 10 level. He is in possession of a Higher Diploma in Education with a major in Biology. He has been teaching Life Science since his appointment at this school. He is responsible, among other subjects, for the teaching of Life Science to all three Grade 10 Life Science groups consisting of an average of 40 learners per class.

4.2.1.2 Plato Secondary School where Mathilda teaches

Mathilda is teaching at a previously disadvantaged Senior Secondary School that fell under the former Administration for the Namas. Plato Secondary School is situated in one of the townships

in the same town where De Terras is located and is home to approximately 750 learners. It has a staff-learner ratio of 1:30 learners and also offers a broad range of subjects from the curriculum. This school was, during the time of the political struggle, the site of clashes between the learners and the South African army troops. It accommodates learners from different parts of the country, even from as far a field as the Oshana region in the North. Many learners are either frequently absent or drop out of school as a result of poverty. Its school development fees are N$ 120 per year per learner as the school board is aware of the impoverished socio-economic background of the learners. This results in a shortage of textbooks and science equipment, as the budget allocation per learner is not sufficient to pay for all these amenities. Because of the shortage of science chemicals and equipment, the laboratory that is there is ineffectively used. It has a library, which is used as a classroom since there is a shortage of classrooms. Mathilda has been teaching at this school for more than ten years and is adequately qualified to teach Life Science at Grade 10 level. She is in possession of a Higher Diploma in Education with a major in Religious Studies and Biology. She has been teaching Life Science since her appointment at this school. She is further responsible, among other subjects, for the teaching of Life Science to the four Grade 10 classes consisting of an average of 40 learners per class.

4.2.2 Lessons observed

In focusing on instances of formative assessment during the observations, the narrative reports highlighted especially, but not exclusively, the following:

- teachers' ability to apply assessment strategies that are appropriate to the activities;
- teachers' ability to integrate the assessment of knowledge, skills, values and attitudes in their instruction;
- type of questions asked, who is asking the questions and how questions are responded to; and
- teachers' use of assessment information

I now briefly provide an overview of the lessons observed to contextualise the discussions in sections 4.3-4.8.

4.2.2.1 Leonard's lessons

I observed five of Leonard's lessons, following one class group. He always announced the objectives to be achieved at the beginning of the lessons. His lessons dealt with the topics: "Contraceptives and STD's" and were drawn from the syllabus. Although he mainly developed his lessons through the questioning and answer technique, he also catered for small group discussions and debating. On two instances the learners were asked to answer written questions through consulting their textbooks and photocopied notes dealing with the two topics. These questions were compiled in consultation with the objectives in the syllabus. A substantial amount of time during his lessons was devoted to questions set by the teacher that had to be answered by the learners. These questions were a mixture of short-, essay- and open-ended questions. The teacher read the question and called on the learners to read their answers. Other learners then corrected wrong answers given by individual learners. At times when the teacher engaged the learners in small group discussions, he gave the groups different sub-topics to discuss for feedback later. The teacher rotated amongst the groups with a class list to assess and record marks for the group work activities. During these feedback sessions and even when learners gave responses on individual work, the teacher brought in values and beliefs of different cultures on issues related to contraceptives and STD's. During the last lesson observed the teacher requested that the learners study their questions and answers, as a test was to be written in the next period.

4.2.2.2 Mathilda's lessons

I observed five of Mathilda's lessons, following one class group. All five of her lessons dealt with the same topics as Leonard: "Contraceptives and STD's". Unlike Leonard's lessons, all her lessons were built around the questioning and answer technique and the objectives were not announced. Learners were given a range of written questions, the same as Leonard's questions, and were requested to provide answers using different sources. The questions were compiled in consultation with the syllabus objectives. They were a mixture of short-, essay- and open-ended questions. All the lessons followed the same pattern; the teacher read the question and individual learners were asked to attend to these questions. Where the learners grappled with the answers,

the teacher used the chalkboard to help explain the answers. No marks were recorded during these lessons.

The following section explores the first of the emerging themes; that of the teachers' views about the nature and point of formative assessment

4.3 PARTICIPANTS' PERCEPTIONS OF FORMATIVE ASSESSMENT AND ITS ROLE IN TEACHING AND LEARNING

This section chiefly consists of three different voices – those of Mathilda, Leonard and myself – that emerged from the interviews.

This category was developed through data collected from the first two questions of the semi-structured interviews that I employed following the suggestion that one should opt for 'qualitative interviews' if you are interested in the perceptions of your research participants.

Driven by my research question, parts of the teachers' statements are highlighted to provide a picture of the respondents' perceptions of formative assessment. In presenting the data from these questions and other questions, I quote the teachers directly where it is appropriate as a means to both highlight the data and to provide authenticity.
Mathilda viewed formative assessment as a way

> *... to see whether the child has mastered the different skills... or you can also say if he/she understands the work-because if they won't be able to perform or do the task given to them.*

On the question about the use of information gained through assessing a task, she responded that:

> *Obviously the learner that gets five is quite capable-has mastered all the work that was asked. The learner that gets the one I always try to motivate them so that they can do better... [they] are actually the group that I really focus on so that they can improve-discuss with them where we went wrong and what can I still do to help them.*

Leonard, on the other hand, saw formative assessment thus, and again I quote:

a good thing-the purpose of continuous assessment is to help learners-to encourage learners to give them the opportunity to have the work covered on a deeper knowledge meaning and give them a reward for it by giving them marks.

He believes that information gained from assessment can be used, because:

Usually when I finish my CA if the learner is not good I go and talk to him and ask what is the problem and how can I help you-if there's really a problem then I can see if the learner really has a problem, maybe something happened.

Looking at these responses it is evident that Leonard sees the role and value of CA as that which focuses on content and understanding of that content, while Mathilda made reference to skills as well as to the content. Interestingly Leonard provided an umbrella term, work covered. When considering the role of CA both focused on the dimension of checking recall, but also indicated that there was awareness of the diagnostic role.

In the next section I focus on the assessment evidence from the learners books and how this was recorded by the teachers to provide greater insights into these initial perceptions that were voiced.

4.4 THE FOCUS OF CA IN THE CONTEXT OF THE LEARNERS' WRITTEN WORK

Given their views of formative assessment the analysis of the written work given to learners by these two teachers was particularly interesting in that the written work did not exactly reflect what the teachers said about formative assessment. I have analysed the written work of five learners per teacher (chapter 3). In addition to these, I also looked at the type of questions they posed during their lesson presentations and the type of activities in the teachers' CA booklets. In this section I report on these findings.

Before reporting on the findings, let me explain what the CA booklet is and what its purpose is. The CA booklet in Life Science is the recording document for scores the learners obtained from formal formative assessment tasks. It makes provision for six to nine activities and tasks to be recorded. Each activity or task can develop different skills, knowledge and attitudes and the activities are assessed according to one or more of these competencies.

Leonard's written work given to the learners consisted mainly of teacher-developed questions and photocopied summaries. These were pasted in their written workbooks and the learners were supposed to answer the questions.

As indicated, formative assessment in Life Science can be done formally and informally. Formal continuous assessments are those tasks and activities that are recorded and that contribute towards the promotion marks at the end of the Grade 10 examination. Informal continuous assessments, on the other hand, serve to enhance teaching and learning and to assist in developing the skills, knowledge and attitudes that are to be assessed during formal continuous assessment, which includes performance-based assessment. Informal continuous assessment could be done as self- or peer assessment, but could also be assessed as part of teaching by the teacher. Informal assessment, then is expected to be a reflection of the learners' development in terms of the various competencies that are identified by the Life Science curriculum.
It appeared that the questions in the learners' workbooks were meant to be part of the informal assessment process. These tasks were marked, but no scores were given, no set criteria were indicated in the learners' books as a means of feedback or to reflect the desired Life Science competencies and nothing was recorded in the CA booklets in terms of these tasks. An analysis of the questions given for the year reflects the following: define, mention/name/state/list, how, what, which, why, compare and describe. The prevalence of these questions is presented in the graph below.

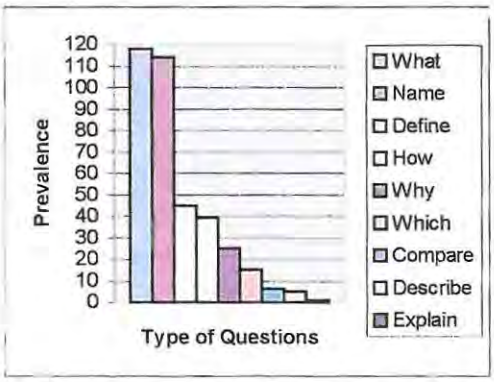


Figure 2 Leonard's prevalence of questions

Mathilda's written work is given in summary form and was interspersed with questions. As these summaries in the five learners' written workbooks were the same, I assume that they were developed by the teacher and written on the chalkboard or were developed by the learners as a group. The questions, like Leonard's, include: what, define, why, how, explain, list, name and describe types of questions. As in the case of Leonard, these questions are meant to assess the learners informally. Below is a graph indicating the prevalence of these questions.

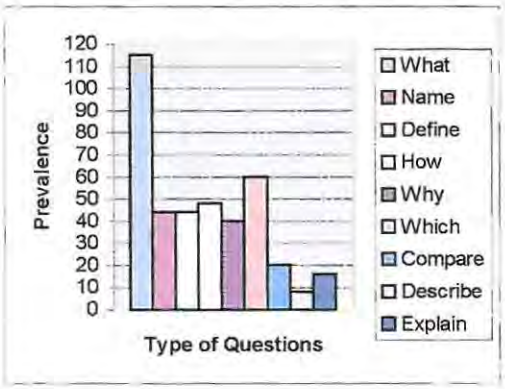


Figure 3 Mathilda's prevalence of questions

As mentioned above, the sets of questions given by Leonard and Mathilda were not meant to be formal tests for recording purposes. They were questions for homework. Both Leonard and Mathilda also posed questions that required learners to make a diagram, a graph, a map and to fill in quizzes. These, however, were infrequently used for informal assessment. Mathilda also made no attempts at recording informal assessment either in the CA booklet or in the context of feedback in the learners' books.

When looking at the formal assessment tasks, the results indicated that Leonard preferred projects and worksheets to questions. Mathilda's formal assessment indicates that she gave, among others, sets of questions to the learners to answer. These were given in addition to the questions that were in the written workbooks, but are of a similar type. She referred to these sets of questions as worksheets. The types of questions preferred by both teachers, when looking at their prevalence rate, mostly required short answers. There is little evidence of questions that asked for open-ended answers, predictions, synthesis, evaluation, analysis, exploration, etc.

During the lesson presentations, however, Leonard's questions tended towards open-ended questions. Learners were given opportunities to explain their answers, and during the debating, offered their opinions. He constantly probed the learners' understanding by asking: *"Why are you saying that"*. At times I could hear that some learners - after a learner gave an answer - imitated Leonard by saying in an audible way: "Why?". One case in point was when a learner argued that abortion was not necessary, because she would be able to support her child. Leonard asked her: *"You are a school girl and you are raped-are you still in the position to support your child. Will you then consider abortion? If yes-why?, if no-why not?"*. Mathilda - although some of the questions that she compiled for formal assessment as a 'worksheet' and for homework required learners to explain and elaborate - rarely probed for reasons for learners' answers during her lesson presentation. It was interesting to note that in the lessons observed, her teaching seemed to lack scaffolding and higher order thinking, as no eliciting and probing to higher cognitive levels was observed. Again, some of her homework questions and these for the 'worksheets' contained questions that required explanation and elaboration. The answers that the learners provided did not really address the questions. The answers merely pointed to the direction of recall of facts and it seemed to be sufficient for the teacher. At no point did she ask the learners to further explain or elaborate on their answers.

An analysis of the CA booklet reveals that Leonard used - as formal formative assessment - tests, worksheets, posters, projects and practicals to assess the learners' knowledge, skills and attitudes. He assessed and recorded the following topics from the syllabus: littering, pollution, global warming (twice), menstrual cycle and the heart beat as a practical. The CA booklet reveals that he assessed learners in the following sub-domains (these are the skills, knowledge and attitudes that are assessed): making calculations (twice), making predictions (twice), locating information, demonstrating responsibility, show creativity, critical thinking (I need to mention here that critical thinking is not a sub-domain in the CA booklet), observation (twice), recording (twice). According to the CA booklet, observe, measure and record are skills that fall under the same sub-domain. Leonard's CA record sheet revealed that he assessed recording and observing separately under the same activity.

Mathilda's CA booklet reflects that she did not indicate the assessment instruments that she used for formal formative assessment. However, she assessed the following topics from the syllabus: blood circulation, human reproduction, alcohol and drug abuse, STD's and AIDS and soil pollution. She assessed the following skills, knowledge and attitudes: use of equipment (twice), observe and record, present information (three times), predictions, solution of problems, location of information, identify patterns, share knowledge, use concepts and collection of rubbish (this is not a sub-domain in the CA booklet). As an illustration of the preferred kind of knowledge being assessed by the two teachers, I present a comparison below.

Table 4.1 Kind of knowledge assessed

Type of knowledge	**Domain**	**Leonard**	**Mathilda**
Use concepts	Knowledge with understanding		/
Solving problems	Handling information and solving problems	/	/
Locate information		/	/
Prediction		//	/
Present information			///
Identify patterns			/
Share knowledge	Attitudes related to the learning process		/
Demonstrate responsibility		/	
Show creativity		/	
Use equipment	Practical skills and investigations		/
Observe and record		//	/

The assessment tasks recorded for formal formative assessment seemed to be fairly representative in terms of the different domains. What was not possible to see was the extent to which assessment in these domains played a developmental role so reflecting learners' performance over time in similar domains.

The marks obtained from formal formative assessment tasks were recorded in the CA booklet to be used as part of the promotion mark of the learners. On the other hand, no grade or mark was given for the learners' responses to the homework tasks and the feedback on the homework tasks extended only as so far as the wrong answers of the learners were corrected. As indicated, learners were not given any explanation of why their answers were wrong, they were not shown where they went wrong and they were not guided on how to avoid similar mistakes and how to improve on these mistakes.

During the lessons observed it was evident the questions came mostly from the teachers. This is particularly true when looking at Mathilda's lessons. Her learners were also more hesitant to respond to the questions. Mathilda further preferred questions that required short answers. From the five lessons observed, I noticed that the learners posed no questions. Leonard, on the other hand, as indicated earlier, was more in favour of open-ended questions and the learners displayed more eagerness to attend to his questions. In addition, his learners also posed questions and occasionally questioned the answers of their teacher.

In chapter 2, literature holds that assessment and teaching instruction should be integrated. In the following section I look at how the teachers in the study integrate formative assessment strategies to form part of their classroom instruction.

4.5 INTEGRATION OF FORMATIVE ASSESSMENT IN CLASSROOM INSTRUCTION

A look at the preparation of the teachers reflected that they taught from the syllabus. It was further interesting to notice that they focused on the syllabus objectives. The importance of syllabus objectives in their teaching was expressed in the interviews and the lesson observations.

Mathilda noted that: *"When doing your planning one should plan it around the objectives in the syllabus-the assessment activities should also reflect the same objectives"*. Leonard, like Mathilda, linked planning and the syllabus objectives to assessment when he noted that: *"If I want to teach my learners to identify the different parts of the male reproductive system and their roles, I should also assess them on that"*. The table below is a summary of the two teachers' preparation for the five lessons I observed.

Table 4.2: Summary of teachers' planning

Respondent	Objectives	Stages of the lesson	Learners' activity	Teacher's activity	Assignment
Leonard	Identify methods of contraception and discuss their advantages and disadvantages. Discuss abortion and its implications. Describe the transmission, symptoms, effects and treatment of STD's in Namibia. Describe the ways of transmission of HIV and the development of AIDS.	Recap previous work. Follow-up on questions given. Debate. Research on transmission, symptoms, effects and treatment.	Answer questions. Learners read and provide answers to questions. Debate in two groups. Consult different sources for information.	Ask questions. Facilitate questions and explain. Facilitate debate. Assess learners.	Learners complete next set of questions. Learners should study questions for a test.
Mathilda	Identify methods of contraception and discuss their advantages and disadvantages. Describe the ways of transmission of HIV.	Follow-up on written questions.	Learners provide answers to written questions	Read questions and explain.	Learners should complete next set of questions

Both Mathilda and Leonard – to varying degrees - developed their lessons through the questioning and answering technique. These questions were meant to assess the learners' level of achievement of the syllabus objectives. Besides the oral- and photocopied questions asked by the teachers, Leonard also used a worksheet, an activity where learners were asked to work in groups on diverse activities, and a debate. He used a class list to give the learners marks for the group work activity. These marks were given with no rubric (as criteria) at hand, but rather on the basis of subjective judgement. When asked how he managed to assess a class of 40 learners, he replied: *"I usually only assess a part of the whole class for activities done in the classroom. The rest of them I assess on another occasion, but on the same skills"*. It is also worth mentioning that besides asking questions to determine the learners' knowledge on previous work, Leonard also used assessment methods that reinforced the existing work. Mathilda, on the other hand, was only interested in assessing how well learners understood previous work. Neither teacher used assessment tools for feedback to the learners during the lessons observed. Occasionally they re-taught subject matter that was not well understood. However, Mathilda mentioned during the interview that:

> *... sometimes I take them through the project again and discuss with them where they went wrong for example and discuss what can we do to improve – and sometimes if I give them the opportunity they want to rewrite the test – I also give them that opportunity.*

Leonard commented: *"I finish my CA if the learner is not so good, I go and talk to him and ask what is the problem and how I can help... "*.

Although I could not determine how realistically learners were graded on posters, I did manage to look at the worksheets, practicals and projects. As mentioned earlier, Leonard explicitly indicated the sub-domains that were assessed on the instruments and in the CA booklet, whereas Mathilda only indicated in the CA booklets the sub-domains that were assessed.

I mentioned earlier, and at different points in this chapter, that the teachers employed different assessment tools, had different perceptions of formative assessment, had different ways of planning for assessment and had different ways of recording the marks. The next section,

therefore, gives an account of the strategies the teachers used to implement formative assessment in their classrooms.

4.6 STRATEGIES USED TO IMPLEMENT FORMATIVE ASSESSMENT

Under this category the following strategies evolved naturally: planning for assessment, assessment instruments, marking/assessing assessment tasks, feedback and recording of assessment marks. Although the strategies the teachers considered during their lessons included both informal-and formal formative assessment, this section mainly focuses on the formal CA processes.

4.6.1 Planning

When looking at table 4.2, planning appears to be an important facet in the implementation of formative assessment for both of the teachers in this case study. Although I only highlighted themes, objectives, stages of the lessons, learner- and teacher activity, and assignments, the teachers also used teaching aids and reflections on the lessons in their planning. During the interview session, it transpired that planning was important when assessing learners. Leonard mentioned that:

> *What I usually did is when I plan is I go to my syllabus and check for the objectives for the next lesson. From there on I plan to do assessment afterwards using that objective.*

Mathilda, interestingly, shared a similar opinion regarding the importance of planning when she was asked during the stimulated recall session. She mentioned that:

> *...planning requires how long the activity will last, if it is groupwork or individual work, the objectives and to what extent the activity is on the domains in the CA booklet.*

The poster displays, worksheets, tests and projects that were kept in the teachers' classrooms revealed that formal formative assessment tasks were done in earlier lessons. Leonard also

assessed a groupwork activity on STD's. However, it was not possible to see whether these activities were planned for or whether they given on the spur of the moment.

4.6.2 Assessment techniques

Besides the questioning technique, the teachers also indicated that they used other assessment techniques. This was reflected in their responses relating to assessment strategies during the semi-structured interviews. Mathilda noted that: *"...I also give my learners practical work, like the dissection of the heart – and I also do worksheets and posters"*. Leonard showed me some posters and flip files with learners work after one lesson I observed. During the personal interview he mentioned that: *"I do a lot of practicals, but unfortunately I have not the animal parts – I also let the learners collect rubbish to make calculations"*. As part of the formal formative assessment tasks mentioned in 4.6.1, Leonard developed the following practical activity after he instructed the learners to collect cold drink tins. It is used as an example.

1. Weigh the cold drink tins that you collected and calculate what you will earn if you sell it to a recycling plant for 10 cent/kg.

Domain B2: Making calculations (5)

Namibia produces the following waste each year:
3 000 tones of waste plastic
100 million **tins** (each can has a mass of about 20g)
12 000 tones of glass

2. Work out roughly how many tones of plastic, tins and glass will be disposed of within the next **five years.**
Plastic:
Tins:
Glass:
Total (in kg or tonnes)

Domain B2: Making calculations (5)

3. Do you think this figure will increase or decrease, bearing in mind that the population is expected to double within the next 20 to 25 years? Explain your answer.

Domain B3: Making predictions from information (5)

(classroom document, Leonard)

In order to determine the learners' performance in assessment tasks, to enhance and improve teaching and learning and to obtain information pertaining to the learners' progress, it is essential that assessment tasks be assessed. The next sub-section therefore examines how the teachers assessed formal assessment tasks.

4.6.3 Marking/assessing assessment tasks

Leonard's activities contained a clear instruction component, clarified the domains that were assessed, for example sub-domain A1 or B3 or C4, etc. When looking at the learners' formal assessment tasks it was clear which sub-domains were assessed. Test items were marked according to a fixed marking scheme; the test items required only one 'right' answer.

Formal CA tasks given by Mathilda did not reflect instructions and the sub-domains to be assessed. This is not to say that she did not give instructions and that she did not assess according to specific domains. Her CA booklet, however, reflected that she assessed different skills, knowledge and attitudes (these are the sub-domains) from each task or activity. As in the case of Leonard, Mathilda marked the learners' tests according to a fixed marking scheme. In addition, they both used the five point scale to give a mark for each sub-domain they assessed from any other formal assessment task.

Feedback is seen as an important step in the whole cycle of assessment and instruction by many researchers in these fields (chapter 2). In the following section I explore the extent to which the research respondents applied the element of feedback during assessment in their classes.

4.6.4 Feedback

During an interview question on how they used the information gained through assessing learners, the teachers responded in the following ways (section 4.3):

- Mathilda responded that she focused on the group that did not perform well and she determined where the mistakes slipped in. She also determined what could be done to further help the learners.
- Leonard said that he talked to them, and thereby established the problem. Like Mathilda, he also determined what could be done to help the learners.

Besides the scores that had been given for formal assessment tasks, there was no evidence of scoring rubrics that were used to indicate the extent to which the learners achieved the desired learning objectives. Moreover, no comments or remarks were attached to formal assessment tasks that informed the learners and parents on what explicitly the learners achieved and what they did not.

The recording of marks in the CA booklet is supposed to be a reflection of the learners' development and achievements in the various Life Science domains. If they are not recorded accurately in the context of these domains, with the use of scoring rubrics and on solid criteria the assessment records provide a skewed picture of the learners' achievements. In the next section I drew on the information recorded in the CA booklets and the interview responses.

4.6.5 Recording marks

Both the teachers responded during the interviews that they used a five-point scale when they recorded CA marks. They were, however, not very articulate with regard to the domains and the sub-domains. An analysis of the CA booklets, however, revealed that they used the appropriate skills, knowledge and attitudes in accordance with the relevant sub-domain. The teachers' way of recording was further supported by the interview responses with regard to the reliability of marks for the learners. Mathilda, when asked what she used as criteria for assessing learner performance noted that:

> *At the back of the syllabus is usually guidelines on how to assess the learners and I try to stick with it. Maybe a five is for work excellently done or they've mastered it but is not excellent.*

Leonard, on the same question, commented:

> *What I usually did is when I see that the learner has put in more effort... I can really see that the child can really do something or the child is shy – don't talk too much... I think I can give them a point maybe less or more.*

Although Mathilda used criteria in the syllabus, it was not possible to determine how reliable the marks were as no scoring rubric was used by either teacher. From Leonard's response, it appeared that he did not have explicit criteria on which his assessment was based. Their recording of marks in the CA booklet also indicated that they understood the CA booklet well enough in relation to topic tests and other formative assessment tasks that also form part of formative assessment. Both of the teachers recorded six assessment tasks and their topic tests on the CA booklet. They were also cognizant of the fact that the assessment tasks counted for 60 marks and the topic tests for 10 marks and that both should contribute towards the final promotion mark.

In this section I analysed the data that was revealed about an emerging category: strategies teachers' used to implement formative assessment. The sub-categories that emerged out of this category were: planning, assessment techniques, marking/assessing assessment tasks, feedback and recording marks. These sub-categories were deliberately presented in this particular sequence, as teachers first need to plan for an assessment technique, then employ the technique, thereafter assess the task, give feedback on the performance of the learners, and lastly record the marks.

The next section explains the types and purpose of activities the teachers used in the implementation of assessment policy in their classrooms.

4.7 TYPES AND PURPOSE OF ACTIVITIES

I collected my data on the types and purposes of activities the teachers preferred through an analysis of documents, lesson observations and interviews. The descriptions of the

lessons earlier in this chapter will come into play again and will have a major impact on the content of this section of the chapter.

I have mentioned earlier that the teachers' lessons were, to various degrees, driven by the questioning and answering technique. These questions were given as homework and were meant to be informal assessment as no grading was done on how the learners performed on these questions. It was notable that both teachers expected the learners to work through different reference books when attending to the questions.

Besides questioning during the lesson observations, Leonard also employed diverse worksheets on STD's and he did assessment during this activity. An analysis of the CA booklet revealed that Leonard devoted significant space on the CA booklet for recording marks of worksheets. In addition to this evidence, he also showed worksheets that correlated with those indicated on the CA booklet. Mathilda, on the other hand, did not indicate on her CA booklets the type of activity she used for recording the marks and she referred to sets of questions as 'worksheets'. However, during the interview on the question of what documents she consulted when compiling tests, she mentioned that: *"Also the notes that they are given the learners or the worksheets that we have completed"*. It is therefore, evidence of an additional purpose of worksheets; that is to compile tests.

Both Leonard and Mathilda used projects as formal formative assessment instruments, though Mathilda did not indicate it on her CA booklet. Again, these projects are reflected in Leonard's CA booklet. This indicates that he used projects for recording formal formative assessment. To complete these posters it was evident that the learners had to do library work and to interview community members.

The walls of both teachers' classes were covered with colourful learner-developed posters. The posters in Leonard's class reflected the domains that were assessed and the marks were given according to a five-point scale. These marks were transferred to his CA booklets according to the domains on the posters. This indicates that he considered posters as an assessment instrument for formal formative assessment. Again, Mathilda did not indicate the type of activity on her CA

booklet. As mentioned earlier, this does not imply that she did not consider posters for formal formative assessment. In fact, some of the topics that she recorded on the CA booklet linked with the topics of the posters.

During a lesson observed in Leonard's class, he engaged the learners in a debate on the motion: "Should abortion be legalized or not". Although he facilitated the debate and appointed adjudicators, there was no evidence that he recorded marks for formal assessment. I infer here, that he used it as an informal assessment activity. An analysis of the planning of both teachers only indicated one more debate for assessment for the year; that was the debate on: "should a dam be built on the Epupa falls or not". That appeared in Leonard's planning.

Tests, also referred to as topic tests, featured significantly in the learners written work books or test books. Since the CA booklet makes provision for the recording of tests marks, these marks were scaled down to a mark out of 10 and documented on the CA form. During the interviews with both Leonard and Mathilda, it transpired that the writing of tests is prominent in their teaching and assessment. An analysis of the interview responses revealed that Mathilda used the word "tests' six times during the interview, whereas Leonard used the same word four times. This partly explains the prominence of tests in their teaching and assessment.

In the above sections I have presented the raw data obtained through interviews, document analysis and classroom observations. In the next section, I present some concluding remarks.

4.8 CONCLUSION

In this chapter I contextualized the two teachers by describing their schools and the five lessons that I observed from each. Both teachers used one strategy or another to implement formative assessment policies in Life Science at their schools. Leonard used questioning, worksheets and a debate during his lessons observed, whereas Mathilda only considered questioning as a strategy. Data collected through the data collection instruments revealed that besides the strategies they considered, they also used posters, projects, practicals and worksheets to assess their learners' performance.

In my quest to understand the implementation of formative assessment in these two schools in Keetmanshoop, six categories naturally emerged. These include:

- Teachers' perceptions of formative assessment and its role in teaching and learning
  Teachers seem to have a superficial understanding of the theoretical framework of formative assessment.
- The type of learning being developed
  Teachers seem to focus on 'what', 'why', 'define' and 'which' questions with little emphasis, if any, on explain, describe, analysis, exploration, synthesis, prediction, etc. As formal assessment tasks they prefer projects, posters, worksheets and tests. These kinds of questions seem to develop different types of learning.
- Marking/assessing assessment tasks
  There seems to be different ways in which teachers in the study assess and mark the learners' assessment tasks.
- Integration of formative assessment in classroom instruction
  When planning for assessment during teaching instruction, the teachers seem to focus their planning on the syllabus objectives. This seemingly has implications for learning.
- Strategies the teachers used to implement formative assessment
  Planning, assessment techniques, feedback, marking and assessing assessment tasks and recording of marks surfaced to be predominantly used to implement formative assessment policies.
- Types and purpose of activities
  Activities that the learners were engaged in include: questioning and answering, worksheets, tests, projects, posters and debates.

In the next chapter I discuss these categories in greater depth within the framework of the Namibian education reform policies and the reformed assessment practices (as outlined in chapter 2).

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

In chapter 4, I presented the findings that emerged as a result of data collected through interviews, lesson observations and document analysis. The different practices and strategies that the teachers use to implement formative assessment policies in Life Science classrooms in the Keetmanshoop district were highlighted. In chapter 2, I located formative assessment in the Namibian education reform context, which is built on constructivist theories. In addition, I reviewed local and international literature relevant to formative assessment policies and practices.

This section draws on the findings presented in chapter 4 and discusses these in greater depth. I critically analyse the findings in the light of the government policy documents regarding assessment. I provide insights into the teachers' practices and strategies in implementing formative assessment policies which in turn enhances the support my colleagues and I are able to give to teachers.

Through reporting on my findings in chapter 4, the following categories for discussion emerged. These are:

- Teachers' interpretation of formative assessment;
- The fit between formative assessment strategies and learning with understanding;
- Tensions emerging in implementing formative assessment policies; and
- The need for support for teachers.

5.2 TEACHERS' INTERPRETATION OF FORMATIVE ASSESSMENT

In this section I consider the data in chapter four to interpret how these teachers' perceptions of CA is revealed in their practice and analyse this in the context of the policy and current

assessment theory outlined in chapter two. I also focus on key issues that emerged in this context. I argue that the perceptions of CA and formative assessment articulated in the interviews are only partially implemented in their practices and that this disjuncture between the theory and practice of CA is based on a lack of true understanding and the internalization of the theory, as well as on issues such as the continuing problems related to the current examination process and the focus of in the syllabus.

In chapter 2 the *CA Policy Guide* (1998) outlines three main premises on which good CA (formative assessment) is based. These are to inform teaching and to improve learning; the use of several methods of assessment activities; and assessment activities that are graded according to specific criteria.

I attempted to reveal how the participating teachers:

- see formative assessment in terms of assessment that should inform teaching and improve learning?
- perceive formative assessment as a process that requires a variety of assessment strategies?
- perceive informal formative assessment in the context of providing evidence for promotion?
- implement the recording of formative assessment?

5.2.1 Assessment that informs teaching and improves learning

First, Mathilda and Leonard's views in the context of the rationale for formative assessment were fundamentally similar. In the interviews (chapter 4.3) Mathilda acknowledged that the purpose of formative assessment is to determine the learners' mastering of skills and both respondents mentioned that the information gained through assessment should be used to improve learning. Both respondents articulated formative assessment as a recursive process (chapter 4). However, when looking at the way in which they conducted assessment as "once off" events, there is a discrepancy between their theory of formative assessment and their practice thereof. What emerged from observing their implementation of formative assessment, was that they perceived formative assessment as assessment that is conducted sporadically which aims at an accumulation of marks. There was therefore a disjuncture between the theory and the practice of CA.

In the context of my working definition (chapter 2.3) and the definitions of researchers in the field of assessment, formative assessment should have the following features: systematic observation of learners, collection and recording of information on the process of teaching and learning as well as on the product and should include a record of feedback on learners' progress. Using this definition, I infer that, although they might have some understanding of the purpose of formative assessment (as revealed by the interview responses), Mathilda and Leonard failed to translate their understanding into practice. Secondly, although they did assessment and did assess a range of the desired skills and knowledge, their assessment activities were conducted intermittently and they failed to give feedback to the learners on their progress (chapter 4.5). Their view of assessment as revealed by the interview responses and their practice of CA (chapter 4) points to formative assessment that is cumulative and technicist rather than a strategy to inform teaching and learning as an ongoing process. Angelo and Cross (1993) contested this kind of assessment when they suggested that learners should be provided with feedback and suggestions on how to improve their learning (chapter 2). What can be inferred from these observations is that they viewed formative assessment from the traditional perspective of marking learners' work (chapter 4.6.4) and the recording of marks. Despite their claim during the interviews that assessment should improve learning, there was no evidence of assessment tasks that aimed at the development of assessment domains. In addition, there was no indication in the interview responses that they regarded formative assessment as a systematic and continuous process of information collection and that the information gained through assessment should influence task design and alter teaching styles (Angelo & Cross, 1993) and (Wilmot, 2003). Similarly, neither in their assessment tasks nor in their responses, did they mention or indicate changes in teaching styles as being integral to the rationale of formative assessment. Johnston (1990) criticized researchers that portray assessment only as data that are collected, rather than seeing it as an integral dimension of all learning and teaching.

My observations led me to believe that the teachers' interpretations of the role of formative assessment were superficial. In fairness to these teachers, however, the disjunction between their apparent understanding of the narrative of the theory and their practice might be more than just a superficial understanding of the theory or resistance to change. What was observed in this study may also be the result of a fundamental lack of deep understanding of the epistemology and

pedagogy on which the policy of learner centered education is based. It may also be the result of systemic factors, such as the syllabus, or the textbook, or the influences of Principals and Inspectors, or the persistence of an examination driven system. This study has revealed that the issues around the perceptions teachers have of CA and formative assessment are more complex than studies such as Nangombe (1999) (chapter 2).

These issues are explored further in the next sections by focusing on the need to employ multiple approaches to assess learners' in order to facilitate learning and to reflect on the teaching/ learning situation

5.2.2 The use of several methods of assessment

Learner centred principles, which include learning with understanding, assume that an appropriate range of classroom activities be considered to cater for all learners with respect to skill-, knowledge-, understanding- and attitude development (chapter 2). Leat and Nichols (2000) were of the same opinion when they criticized the teachers' reversion to tests as the sole assessment strategy instead of using a range of strategies (chapter 2). A similar observation was made by Kyriacou (1997) when he asserted that the development of skills; that is the ability to do, rather than knowing or understanding, for example, could hardly be assessed by an assessment method that is designed for the development of cognitive skills (chapter 2). Mathilda, however, only focused on questions assessing subject knowledge during her lessons. Having said this, the assessment during her lessons only aimed at preparing the learners for questions that are usually set for examinations. Mathilda, by not using a variety of assessment methods, did not reflect the ideals of the formative assessment policy (chapter 2). Her approach to formative assessment as an integral dimension of her lessons did not focus sufficiently on different areas of learning and therefore learners were not assessed in relation to the desired range of knowledge, skills and values. It also seemed that she only perceived formative assessment as focusing on the product of learning with no attention to the process of learning. She did not regard formative assessment as assessment for learning as proposed by Wilmot (2003). This might be attributed to a culture of assessment practices that derives from an examination driven education system, which, in its current form, does not regard the assessment of skills and values as important. She,

therefore, did not perceive formative assessment as an activity that should enhance learning. It points to a tendency of seeing assessment as being a gatekeeper for selection rather than being a mechanism for educational quality assurance.

Leonard on the other hand employed questioning, debates, worksheets and groupwork sessions during his observed lessons (chapter 4.8), which helped the learners to communicate effectively by talking and writing. He also allowed the learners to pose questions and to question his answers. He attempted to develop a lively and questioning environment through these approaches, which is congruent with the ideals of the Broad Curriculum (Namibia. MBEC, 1996). In the context of informal continuous assessment therefore, Leonard's approach had the potential to enhance conceptual understanding, however, this was limited by not having any recorded evidence of these interactions.

Although their learners' written work did include diagrams, graphs, comparisons and quizzes (chapter 4.2), and they showcased projects, posters, worksheets and topic tests (chapter 4.8), these forms of assessment tended to be "once off" and it was therefore difficult to see any developmental dimensions being achieved through these activities. In contrast to the suggestion that formative assessment is continuous and recursive, Leonard and Matilda's practices of formative assessment represents assessment that was linear and as indicated earlier somewhat sporadic. Further to this, their formative assessment practices in the context of worksheets and tests, was narrowly perceived as assessing information and the recall of information.

Wilmot (2003) warned against traditional assessment practices like these that only aim at measuring the product of learning, or in this case a product (chapter 2). Contributory factors to practices such as those observed may be the way textbooks in current use are structured. A further factor is the lack of clear guidelines provided by the syllabus documents for formative assessment.

5.2.3 Formative assessment as graded assessment

The only continuous assessment marks that were recorded by Mathilda and Leonard were obtained from formal continuous assessment (those tasks that are written, concrete and graded). These were documented in the CA booklets (chapter 4.4). Further to this, the fact that these were the only marks or grading traced indicated that informal continuous assessment was not recorded for promotional purposes by either of these teachers (chapter 4.4). This has implications for learning, learner centred education and learner performances. The *CA Policy Guide* (Namibia. MBEC, 1998) suggests that a grading system based on criterion referencing for informal continuous assessment tasks be given. From the lessons observed it appeared that the two teachers probably did acknowledge learning that occurs in an unstructured and informal way. By not recording these performances however, it showed that the teachers hold a fairly narrow view with regard to the promotional value of certain assessment activities and how these might contribute to performances in structured and formal assessment activities.

Drawing on the learners' skills, attitudes and knowledge and encouraging participation, cooperation and interactions with peers are essential elements of a learner centred tradition (chapter 2). Broadfoot and Gipps (1996) share this view when they claimed that certain skills could best be assessed during classroom assessment (chapter 2). As well as not recording informal assessment for promotional purposes during unstructured assessment activities, values and attitudes were only rarely considered in the structured assessment activities. This observation is confirmed by the presentation of data in table 4.3, which indicates that both Leonard and Mathilda regarded formative assessment primarily as the testing of content information, whereas skills, attitudes and values were seen as peripheral to the acquisition of knowledge.

Gipps (1996) criticized this view where formative assessment is only seen as " an add on" activity (chapter 2.8.2). Again, this is a pointer to an examination system that only tests for content information with little, if any, recognition for the assessment of skills, attitudes and values. Instruction in their classrooms was seemingly dictated by previous experiences of examination papers. In this sense, Mathilda and Leonard treated formative assessment as subscribing to the existing demands of the current examinations.

5.2.4 The use of criteria during assessment

Nitko (1996) proposed scoring rubrics for assessing performance-based activities (chapter 2.5.4). The Grade 10 Life Science syllabus articulates the use of criterion-referenced assessment. Formative assessment policies assume that when specific criteria or a scoring rubric are used, the fairness and reliability of the assessment activity will increase. Brown and Knight (1994) also expressed this view when they argued that assessment is "fairer" if criteria are used (chapter 2.5.3).

The interview responses (chapter 4.7.3) revealed that Mathilda and Leonard have different opinions regarding grading assessment tasks. Mathilda regarded criteria provided in the syllabus as important for assessing tasks, whereas Leonard indicated that he relied on his own opinion (chapter 4.6.5). However, the way in which criteria were observed to have been used and implemented revealed a somewhat patchy understanding of the suggested syllabus domains and their embedded criteria. Thus, while tests were set and even in some instances recorded according to the syllabus domains, there appeared to be little, if any, understanding of how to translate these domains into the competencies identified in chapter 2 or of how to relate these competencies to particular skills and values

To summarise the above sections, when looking at the premises on which good CA practices rest, it was evident that, although Mathilda and Leonard had some theoretical knowledge of the policies regarding formative assessment, they lacked deep understanding of the practice of formative assessment and they failed to translate their theory into practice. Their views on the rationale of formative assessment expressed in their interview responses, manifested themselves in their practice as being not only limited, but also based on a generally poor understanding of how these ought to be translated into practice. In their responses they mentioned formative assessment as a recursive process, but learning and teaching as developmental activities did not feature either in their responses or in their practices of assessment. Also although they used some variation in assessment activities, these were viewed and treated as "once off" events with also no developmental dimension. Informal formative assessment was seen as trivial and was relegated to "an add on" and with insignificant promotional value.

As formative assessment in the Namibian context is based on constructivist theories, there should be a good fit between the assessment strategies and learning with understanding, including conceptual understanding. In the next section I explore the kind of learning being developed through the assessment strategies the teachers considered.

5.3 THE KIND OF LEARNING BEING DEVELOPED

In chapter 2, I mentioned that learner centred education was adopted by the Namibian education system as part of the education reform process (Namibia. MEC, 1993). This philosophy also has implications for the kind of learning being developed. In chapter 2.9 I noted that this study operates from the assumption that good learning is learning with understanding and that it occurs when concepts are interrelated and interdependent in the context of various subjects' organizing structures. Gipps (1996) shared the same opinion when she claimed that appropriate learning occurs through an active meaning making process of new knowledge. It is in this context that the next couple of sections examine the kind of knowledge, skills, values and attitudes the teachers assessed during their teaching instruction.

5.3.1 During the lessons observed

Willis (as cited in Gipps, 1996) suggested that the kind of learning a teacher wishes to assess should be reflected in his assessment (chapter 2). This section therefore examines the kind of learning the teachers wished to assess as reflected in their lesson taught.

In chapter 2, I noted that van Harmelen and Wilmot (as cited in Wilmot, 2003) suggested that teachers should consider questioning skills that promote thinking and critical thinking. They suggested questions with the following action words: why, reflect, imagine, compare, predict, explain, etc. I use their suggested questions as examples to examine the kind of knowledge the teachers in my study wished to assess during their lessons taught.

The analysis of the data in figures 2 and 3 (chapter 4.4) indicates that "why", "explain" and "predict" written questions were rarely considered by Mathilda and Leonard. They mostly

considered "what", "name", "which" and "define" questions (chapter 4.4). Questions like these indicate that the learners have some information about the topic and perhaps know the facts about the topic. However, Leonard did on occasion probe the learners level of understanding with questions by making use of scaffolding techniques to take the learners to higher order levels of thinking. It was evident that he tried to encourage thinking, which might have brought about understanding. In that instance, Leonard to a certain extent, whether intentionally or unintentionally, did develop and assess learning with understanding during his lessons. Whether all his learners attained conceptual understanding during these lessons is a moot point.

Wilmot (2003) believes that constructivist teachers should teach and assess learning with understanding, and to accomplish this, learners should be encouraged to develop their own questions (chapter 2.9). In this regard, Leonard's teaching was in line with Wilmot's claim. He allowed the learners to pose questions, and even, to challenge his answers (chapter 4.4). As he asked the learners to explain their answers (chapter 4.4), he focused on cause and impact, consequences and results. To that extent, Leonard sought justification for and explanation of the facts provided, thereby integrating skills, values and attitudes in his lessons (chapter 4.2.2.1). Leonard's instruction to this end, thus, is consistent with constructivist theories with its emphasis on application of knowledge, affective outcomes and knowledge with understanding (chapter 2). Mathilda, on the other hand, did not further probe the learners to justify or explain their answers in relation to other relevant subject knowledge, skills, values and attitudes (chapter 4.4). She therefore was unable to ascertain that the learners really understood the topic, as she failed to connect the relevant syllabus objectives, but rather treated them as separate units. Conceptual understanding, which is beyond simply knowing, is an important dimension of learning with understanding. Hinchey (1998) would question Mathilda's instruction in her emphasis that one comes to "know" only when you can link separate bits of information into a coherent whole (chapter 2.2.3).

From the lessons observed, it was evident that Mathilda worked through the questions in a compartmentalized manner, which might be the result of how the subject content is presented in the syllabus and in the textbooks. Content in the syllabus and textbook is presented in a topic-by-topic way rather than in a conceptual manner. For this reason Murray and Wilmot (2000) are

concerned about teachers following the textbook too closely as this may work against the thematic and dynamic view of knowledge which Life Science aims at (chapter 2.8.3). In addition, this might be a pointer to the fact that Mathilda still taught in the way she was taught. The teaching of skills and Life Skills did not feature prominently in teacher centred classrooms. There might well be other impediments, such as time factors, fear for examinations, overloaded curricula, a mentality that the syllabus content should be completed for examination purposes, etc. inhibiting teachers in successfully implementing teaching strategies that bring about learning with understanding.

In the next sub-section, I explore the extent to which the assessment tasks given to learners or done by learners reflect or do not reflect learning with understanding.

5.3.2 The assessment tasks and the written work of learners

In dealing with the next section I was guided by the following question:

- Were these tasks given to the learners only 'busy work' or did they have 'application potential' for the development of learning by understanding?

In chapter 2.6.2, I mentioned that the *CA Policy Guide* (Namibia. MBEC, 1998) expects that subject syllabi should clearly stipulate the knowledge, skills and understanding that are to be assessed. The Life Science syllabus is therefore divided into three parts. These are: themes and topics, learning objectives and basic competencies.

In chapter 4.6.1, I noted that teachers' questions were meant to assess the level of achievement of the syllabus objectives, which is the subject content. When looking at the Life Science syllabus it is evident that the competencies are broken down into objectives. Brophy and Alleman (1991) suggested that goal oriented tasks or activities should encourage learners to conduct inquiry, solve problems, construct models or displays (chapter 2.8.3). In this sense, the competencies are closer to goals than the objectives of the syllabus, as they refer to skills, knowledge and understanding rather than the explicit and discrete subject content, specific to Life Science. Resnick (cited in Gibbs, 1996) in chapter 2.8.3, on the other hand criticized

traditional models of instruction as it assumes that complex competencies can be broken down and presented into separate skills. Given the structure of the Life Science syllabus and that of the Life Science textbook, the teachers designed their assessment activities around specific objectives rather than following a thematic approach. Constructivist theories of teaching and learning assume that conceptual understanding and learning for understanding can best be accomplished through a holistic approach to teaching and learning (chapter 2.8.3).

An analysis of Mathilda's worksheets revealed that she set the questions in such a way that there was little developmental sequence or relationship between the questions. The questions were organized in a fragmented way, thereby militating against a thematic approach to teaching and learning and learning for conceptual understanding. Although Leonard also planned his lessons according to the syllabus objectives (rather than the competencies), the questions of his worksheets (see example 4.6.2) were sequenced more appropriately in terms of their interconnectedness with each other. Constructivist theories assume that learners learn best for understanding if they can make connections, links, patterns and generalisations between these 'bits and 'pieces' (2.9). This enables them to get a holistic picture of the concept being studied. Seen from the constructivist perspective, Leonard's worksheet structure and design, despite the shortcomings, were more in line with learner centred principles. Again, the way in which Mathilda sequenced her questions, however, is understandable when looking at the way in which the syllabus is structured and designed. The syllabus breaks down complex competencies into 'manageable' and discrete objectives.

Besides the teachers' worksheets, they also exposed learners to the development of posters, project work and practical work (chapter 4.6). Both Leonard and Mathilda's assessment instruments, in this instance, are supported by Hinchey (1998) when she proposed project work and small group discussions as considerations in constructivist classrooms (2.2.4). When looking at the learners' posters, they reflected the interconnectedness of knowledge and skills. A poster on air pollution, for example, not only reflected issues of fuel combustion, open fires, etc, but also reflected how it would affect community health and how it influences the economy. From this perspective the learners explored the topic in a holistic way, which from a constructivist viewpoint promotes learning with understanding. There was sufficient evidence that the learners

wrote their projects using creative thinking after conducting inquiry, and thereby solving problems. Here, these learners touched on cause and effect, impact, consequences and results

As revealed by the learners' posters and projects, the learners followed a holistic and multi-dimensional approach in these tasks. This kind of teaching instruction and learning, according to proponents of the constructivist school of thought, enhances learning with understanding. The problem as indicated earlier is that the potential and value of these activities was neither anchored within a developmental framework nor did the assessment capitalize on this potential.

In chapter 2 I noted that assessment should be brought in line with current theories of what constitute knowledge, knowing, effective teaching and learning. This part of this section, therefore examines the extent to which the assessment practices the teachers in the study considered are congruent with constructivist underpinnings, which were embraced by the Namibia education reform process. For example, by not interpreting the current CA policies, the teachers' practices of CA will not only restrict the ideals of the reform policies regarding assessment, but it will have an effect on the implementation of constructivist principles in classrooms.

First, Mathilda and Leonard's fairly superficial understanding of the rationale behind formative assessment had definite bearing on how learners were assessed. Learners never got the opportunity to learn through trial and error, as their first attempts were documented in the CA booklet. It would be difficult to determine the developmental dimension of teaching and learning. This lack of understanding of learning and teaching as developmental activities made it difficult to see the learners' progression.

In addition, as Mathilda and Leonard gave no feedback, other than a specific 'mark' it was difficult for the learners to take charge of their own learning, as they did not know how well they were progressing during any given learning process. The teachers therefore held a fairly narrow view of what constitutes feedback so could not assist learners in learning and growing. From a Vygotskian point of view learning occurs when a more knowledgeable person is involved or when further instruction is given.

Secondly, the type of knowledge being developed by the teachers had a definite bearing on the teaching strategies the teachers adopted. Mathilda and Leonard lack a deep understanding of how to bring about learning with understanding, as skills, attitudes and value teaching were regarded as trivial and insignificant for promotional purposes. They failed to understand how these might contribute to developing concepts. If the teachers wished to develop learning with understanding, they had to have some knowledge of how concepts are developed and attained. Learning for and with understanding assumes that learners should link 'bits' of information into a coherent whole, that they should be able to apply knowledge in a variety of situations. Teachers should therefore create opportunities where learners can apply classroom knowledge to solve social problems.

In the earlier sections of this chapter, I discussed how these teachers interpreted formative assessment policies and how their formative assessment strategies reflected learning with understanding. Through this discussion, but mainly through my analysis of data in chapter 4, it became evident that certain tensions exist that precluded teachers from effectively implementing formative assessment policies in their classrooms. In the next section I explore these tensions.

5.4 TENSIONS EMERGING IN IMPLEMENTING FORMATIVE ASSESSMENT POLICIES

In chapter 2, I mentioned that Life Science is a subject that spearheaded education reform in the Namibian school curriculum. I indicated that the subject has faced many changes and challenges such as the reduction of the formative assessment marks towards the promotion mark. I explained that Life Science is a subject that encourages interactive learning and promotes formative assessment as integral to teaching instruction.

As formative assessment policies and learner centred education fall within the constructivist paradigm, and as teaching and assessment are integrated, the tensions for implementing formative assessment policies in Life Science classrooms are associated with implementing learner centred education in schools. These tensions are therefore presented as learner centred tensions with specific reference to the implementation of formative assessment policies.

Drawing on the presentation of data in chapter 4, the following tensions emerged as a result of factors beyond the control of teachers. I present these in a schematic form below.

Table 5.1: Tensions associated with the implementation of formative assessment policies.

Teacher practice	Tensions
• Planning ⟷	The Namibian classrooms accommodate more than 40 learners simultaneously. As many of the formative assessment practices are done outside the class, it sometimes causes disruption of other classes and wastes time. The Life Science syllabus is divided into fragmented objectives. Teachers used these as they are more explicit and easier to interpret. Learner centred principles suggests a holistic approach which can only be accomplished through the teaching of competencies. Teachers never received any training in teaching for conceptual understanding. This state of affairs is further worsened by the design and structure of the content of the textbooks, which also present the content in a fragmented fashion.
• Questioning and answering technique → ←	Learner centred principles hold that a questioning technique is more powerful when learners challenge the answers of the teacher. Given the cultural influences at home that children are not allowed to doubt what adults are saying, teachers and learners find it tough to deal with this learner centred principle.
• Practical work ⟷	Explorative learning through practical work is one of the principles on which a learner centred philosophy rests. Practical experiments require sufficient equipment and chemicals to do practical work. Animal parts are also not readily available as these are commodities for human consumption (seen in the light of persistent poverty). Given the

large classes teachers have to resort to demonstrations.

- Groupwork ⟶⟵ Groupwork is seen as a powerful tool for language development and taking charge of one's own learning and of that of your peers. With big classes it appears to be problematic, as the teacher cannot thoroughly monitor whether the learners are on task.

- Assessing values⟶⟵ Formative assessment and learner centred education promote the development of values and attitudes. If teachers devote time to developing and assessing these, they will be short of time to attend to skills that are assessed in examinations. Examinations do not assess attitudes and values.

These tensions tabled above shed some light onto some of the issues associated with the implementation of formative assessment policies in classrooms.

The review of literature in chapter 2 and the analysis of data in chapter 4 revealed some of the problems the teachers experience in implementing formative assessment policies in Life Science classrooms. In the light of these problems the teachers' experience, I explore in the following section what kind of support the teachers need in Life Science classrooms for the successful transformation of education.

5.5 SUPPORT FOR TEACHERS

As I mentioned before, it is evident that the teachers need more empowerment and development in the areas of learner centred education and the implementation of formative assessment policies in Life Science classrooms. This claim is supported by Nangombe (1999) when he highlighted misconceptions of policy guidelines and indifferences by teachers with regard to assessment as being attributes of the current status of formative assessment in schools. In Nangombe's view a holistic staff development initiative is necessary to change the teachers' views about learner centredness, thereby establishing a total conceptual reorientation of the teachers' thinking about teaching and learning, and thus, assessment.

Unofficial reports reveal that the Karas region has reached more than 100 teachers teaching Life Science at Grade 10 level for in-service training workshops. A cluster system has been adopted to bring Life Science teachers together more frequently to share ideas and to develop assessment material. Yet, the data in chapter 4 reveals that there are still 'grey' areas in their teaching that need improvement within the context of a learner centred philosophy. Besides the training of teachers, the Life Science Advisory teachers also have undergone numerous in-service training workshops on a national level. The Advisory Teacher is the official that has to ensure and monitor quality education delivery in the schools.

During the interviews it was also evident that the professional development initiatives in the area did not reach all teachers. The two teachers in this study had no in-service training in Life Science. Mathilda replied to the question as to whether she received workshops as a Life Science teacher with a blatant "No". Leonard responded that he could say no, but he believed that he built up experience over the years and that he learnt a lot. He was not sure as to whether he was on the right track.

Thus, from my analysis of the data in chapter 4, it seems that teachers definitely need support in the following areas of their teaching and assessment:

Table 5.2 Support required by teachers

Teaching strategies (as outlined in chapter 4)	Support
Planning	Planning constitutes: what needs to be taught, how it should be taught, why it should be taught, who should be taught and the need for assessment. Teachers should be taken through these thinking processes. This will best be done if empowerment occurs on-site and in a contextualized way; in the environment where the teachers' teaching occurs.
Assessment techniques	Teachers should be assisted to carefully design assessment techniques that bring about learning with understanding.
Feedback	Feedback on weaknesses, strengths and how to improve is a powerful way of improving learning. Learners should know at any given point where they are with regard to their performances and the learning process. In that sense teachers should be assisted in why feedback is important and how to conduct it during the learning process
Marking/assessing tasks	Criterion-referenced assessment enables teachers to increase the validity and reliability of learners' marks. Teachers should get hands-on training sessions on how to apply criterion-referenced assessment and how to do overall marking/grading.

The suggestions tabled above would hopefully enhance learning and teaching in the context of the reform ideals. From the analysis of data in chapter 4, it seems that support for teachers needs to be a priority if formative assessment practices are to be strengthened.

5.6 CONCLUSION

In this chapter I have discussed my findings in chapter 4 in greater depth. I have discussed how teachers implement formative assessment policies in classrooms within the framework of constructivist and learner centred theories. I also highlighted some impediments in the education system that limits teachers from successfully implementing formative assessment policies. The findings in this report, however, reflect that although learner oriented principles are addressed,

they are based on a superficial understanding; that is without a deep knowledge of the underlying assumptions of constructivism in which formative assessment is located.

In the next chapter, I consider some of the lessons learned from this study while providing a reflective overview of the research.

CHAPTER SIX

CONCLUSION

6.1 INTRODUCTION

In this chapter I provide a reflective overview of the study. I do this by first reviewing my research question. Secondly, I provide a brief overview of the findings and the lessons learned from the study and I offer some tentative suggestions for consideration based on my findings in the context of this case, in which I investigated the assessment practices of two teachers from two different schools.

6.2 PURPOSE OF THE STUDY

I have worked as an Advisory Teacher for Life Science for eleven years and have always believed in the value of formative assessment as a means to reflect learner's growth and development, as well as a strategy that enhances decisions about learners' promotion. However, as an examiner of the national examination system I have also been aware that there is a mismatch between the examination results and that of formative assessment. This latter fact has served to reduce the credibility and status of formative assessment which, given the importance of this approach to assessment in the context of the reform epistemology, I find problematic.

As a result I was motivated to investigate the implementation of formative assessment policies in two Grade 10 Life Science classrooms in the Keetmanshoop district. As indicated in chapter 1, I wanted to understand teachers' perceptions and practices of Ministerial policies with regard to formative assessment in schools. Through this, I wanted to identify different components of teaching and assessment that will inform my professional interactions with teachers. I also hoped that the study might have value for Principals, Advisory Teachers and Inspectors.

6.3 RESEARCH DESIGN

In order to answer my research questions, I located my case study in the interpretive paradigm (see chapter 3), as I needed to understand the teachers' teaching practices and perceptions. The selected research approach allowed me to explore the selected teachers' perspectives and their professional setting, and thereby enabled me to gain first hand knowledge of the formative assessment policies in practice. The selected research approach further provided me with opportunities to enter into the world of the teachers as an interested and concerned colleague and complemented the relationship I already had with these teachers. Furthermore, it was interesting to experience how the data evolved through the use of the selected data gathering processes. Lastly, I did not feel threatened by the narrow scope of my case study as the qualitative approach provided me with rich data.

The research process, however, was not without its challenges as one of the teachers I had hoped to include withdrew and there were difficulties in coordinating the visits and interviews. I conducted the interviews in English, which is the second language of both teachers. As a result, valuable data might have been lost in the process.

6.4 OVERVIEW OF THE KEY FINDINGS

The results presented in chapter four and the analysis of these in the light of the shaping literature have revealed that while the teachers in the study may be seen to have a 'shallow' understanding, the situation revealed was more complex than studies have hitherto shown. Understanding, as expected, was seen to be dependent on numerous factors related to the way in which teachers were taught, the way in which they were prepared to teach, and on their subject as well as their pedagogical knowledge. Their understanding of the key ideas that shape education; that of learning, knowing and knowledge, appear to be entrenched in the theories of the previous educational dispensation which was located in behaviourism. Teaching for understanding and learning with understanding are still viewed as the transmission and absorption of numerous facts by the teachers and learners respectively. Their lack of understanding of the rationale of formative assessment points to the fact that the teachers have not really internalized the pedagogy

of learner centredness and the whole paradigmatic shift to constructivism. Formative assessment was therefore primarily seen as a tool to test the product of learning alone without due acknowledgement of its supportive role in enhancing learning. Again, a linear view of assessment dominated the instruction in the teachers' classrooms.

Another problem I identified was the difficulty the teachers had in understanding how information gained through CA could be used to inform and support further teaching and learning. These problems were exacerbated by systemic issues such as overloaded classes, the design and structure of the syllabus, cultural influences with regard to challenging the answers of teachers, lack of training, shortage of chemicals and science equipment, monitoring of group work and the status of examinations. These are all tensions that emerged as obstacles to implementing formative assessment policies.

An analysis of the teachers' formative assessment practices revealed the need for support for teachers. Professional development initiatives are still needed that help teachers to make sense of learner centered education in various contexts not least in relation to the integrated nature of teaching, learning and assessment.

These findings have also provided me with the sort of data that I had hoped for when setting out on this research journey. These lessons on which I elaborate below will help me be more aware of how I can best provide support to the teachers in my District.

6.5 LESSONS LEARNED

6.5.1 The research process

At the initial stage of my research I thought that the process of doing research was not at all challenging. Every piece of work in the educational research papers that I engaged in seemed so obvious and the steps so easy, however, my true realization of the nature and magnitude of the academic work came when I engaged in the review of literature and realized the complexity of weaving the relevant literature into a critical narrative that would inform and support the

research. One of the most important lessons in this regard was learning how to use relevant meta-talk to keep the narrative intact.

While working on chapter five I realized that the research process is inexhaustible in that one never reaches the point where you can claim that you have completely scrutinized and analysed your data. What actually happens is that you open up possibilities for further research. I also became increasingly aware that one's research findings are not absolute, and could be questioned in further research.

I, however, also experienced a sense of professional growth as the research process developed. A considerable part of this was how the study made me question my own assumptions and views.

6.5.2 Teachers' interpretations of formative assessment

One of the key lessons I learned from this study is how differently teachers' interpret formative assessment in relation to the theory with which they have been presented. It seemed that these teachers interpreted formative assessment only in so far as the improvement of learners' content knowledge is concerned, without considering either how the information gained through assessment should improve the development of skills values and attitudes or how it could enhance teaching. Another point that transpired was that informal assessment was not considered for grading and as a result did not contribute towards the learners' promotion mark. One more finding is that these teachers seemed not to have a feedback system in place, which is important to enhance and support teaching and learning.

This study also highlighted the systemic issues that are beyond the control of the teachers to effectively interpret formative assessment and the key lesson here was the need, as a member of a curriculum development panel, to take these issues into greater consideration when developing guidelines for assessment.

This study provided insights into how important thorough on site training and empowerment of teachers is in the following areas:

- Providing a solid rationale for the introduction of formative assessment
- Locating formative assessment and learner centred education within the constructivist framework.
- Creating hands-on experiences on how to deal with procedural aspects of formative assessment. These aspects are: planning and designing assessment tools, integrating assessment in instruction, marking/assessing assessment tasks and feedback.

These are all lessons which as Education Officers (Advisory Teachers and Inspectors of Education) we need to take note of when providing support for teachers.

6.5.3 The fit between formative assessment strategies and learning with understanding.

Teaching for understanding assumes that values, attitudes and skills are equally important for learning with understanding. The data revealed that the learners were poorly exposed to value teaching that might enhance learning with understanding. The study therefore revealed the need to provide teachers with help in this regard and to develop an understanding of learning with understanding as requiring much more than simply the teaching of fragmented 'bits and 'pieces'. Learning with understanding requires the teaching of concepts in an interconnected manner.

These findings provide further evidence of the needs of teachers, mentioned below, in the context of teacher development.

- Training sessions on how to structure lessons around broader concepts while still covering the syllabus objectives should be conducted.
- Teachers should be empowered in designing lesson plans focusing on developing learning that requires learners to describe, explain and apply and should get opportunities to trial it in their professional settings without fear of failure.

- Teachers need to get support on how to include value teaching in their instruction and assessment.

6.5.4 Tensions emerging in implementing formative assessment policies

In chapter 5, I highlighted some tensions that emerged in implementing formative assessment policies. I indicated that some tensions are beyond the control of the teachers. These tensions were: overloaded classes, a fragmented syllabus, structure of the textbook, cultural influences that impede learner centred instruction, lack of science equipment and chemicals and the status of examinations. Although it is not the intension of the study to offer solutions to all these problems, the lessons learned in this regard relate to the need for a more lateral approach to finding solutions and the need to involve all role players in finding the solutions to systemic issues that lead to these tensions.

6.6. SUPPORT FOR TEACHERS

As an advisory teacher the most significant part of this research has been the revelation of how much support teachers still need if continuous assessment is to become a reality in the reform context. This has highlighted the role of the advisory service as a key role player in the professional development of teachers and suggests that each advisory teacher can and should primarily be concerned about providing professional support to the teachers they serve.

This study, by highlighting particular areas of support needed by the participating teachers in assessment, should provide Advisory Teachers with a platform for firstly assessing the needs of their teachers and second, for the structure of professional development workshops and cluster meetings as well as whole school development.

6.7 POSSIBLE AREAS FOR FURTHER RESEARCH

In chapter two I indicated my key theme as formative assessment. From this study I have realized how much more research in this area is needed in Namibia. Future research could focus on how

teachers manage and work with information gathered through formative assessment, how the socio-economic conditions of learners and cultural issues might impact on how formative assessment is perceived by both teachers and learners. Further research is needed to look at possible reasons for the disjuncture between the marks learners obtained in formative assessment and that of examinations.

Other interesting dimensions that could be helpful are the probing of the role of the parent community in curriculum issues such as assessment. Also to explore the extent to which they are aware of formative assessment and how they could influence implementation of these policies.

6.8 LIMITATIONS OF MY STUDY

Firstly, this was a very small-scale study that involved only two schools in the Karas Education Region. Although I initially intended to work with three teachers, I ended up working with only two from two different schools. This was the result of the one teacher resigning from the teaching profession. During the study I observed only five consecutive lessons from each of the teachers, entered into interviews with them separately and analysed the written work of five learners from each of the teachers. The scope of my study was further narrowed in that I only looked into the practices and perceptions of the Grade 10 teachers with regard to the implementation of formative assessment policies in their classrooms.

6.9 CONCLUSION

Life Science is a curriculum subject offered in all schools from grades 8-10 in Namibia. I am an Advisory Teacher for Life Sciences in the Karas region. My job description requires the provision of in-service training to teachers and to assist teachers to implement government policies with regard to learner-centred teaching and assessment strategies during their classroom instruction. In this case study I investigated the implementation of formative assessment policies by two teachers at two different schools. The case study was located in the interpretive paradigm. I employed 'stimulated recall' interviews, semi-structured interviews, lesson observations and document analysis to collect data. This study was useful in that it provided me with insight into:

the strategies the teachers used to implement formative assessment policies within the context of learner centred principles, and it brought to light issues that are at variance with the implementation of formative assessment policies in Life Science classrooms.

REFERENCES

Angelo, T., & Cross, K. (1993). *Classroom assessment techniques: A handbook for college teachers.* San Francisco, California: Jossey-Bass Inc. Publishers.

Angula, N. (1999). *Civil society, research, and policy formulation in Namibia.* In C. Snyder, N. Angula, J. Meyer, D. Makuwa & O. Hailombe. *Exploring the complexities of Education: Notes on research design and statistics.* Windhoek: Gamsberg Macmillan.

Bell, J. (1993). *Doing your research project: A guide for first-time researchers in Education and Social Science* (2nd ed.). Buckingham: Open University Press.

Broadfoot, P. (1979). *Assessment, schools and society.* London: Methuen and Co.

Broadfoot. P., & Gipps, C. (1996). *Assessment developments in England and Wales: The triumph of tradition.* In A. Little & A. Wolf (Eds.). *Assessment in transition: Learning, monitoring and selection in international perspective.* Oxford: Pergamon.

Brooks, J., & Brooks, M. (1993). *In search of understanding: The case of constructivist classrooms.* Alexandria, VSA: ASCD.

Brophy, J., & Alleman, J. (1991). Activities as instructional tools: A framework for analysis and evaluation. *Educational research,* Vol. 20 (4): 9-23.

Brown, S., & Knight, P. (1994). *Assessing learners in higher education.* London: Rogan Page Ltd.

Cohen, L., & Manion, L. (1994). *Research methods in Education* (4th ed.). London: Routledge.

Connole, H. (1998). *The research enterprise*. In Research methodologies in education. *Study guide*. Geelong: Deakin University.

Creswell, J. (2003). *Research design: Qualitative, Quantitative and Mixed Methods approaches* (2nd ed.). London: Sage Publications, Inc.

Denzin, N., & Lincoln, Y. (2000). *Handbook of qualitative research*. London: Sage Publications.

Donald, D., Lazarus, S., & Lolwana, P. (2002). *Educational Psychology in social context*. Oxford University Press.

Foster, P. (1996). *Observing schools*. London: Paul Chapman Publishing Ltd.

Fraenkel, J., & Wallen, N. (1996). *How to design and evaluate research in education* (3rd ed.). New York: McGraw-Hill, Inc.

Frederiksen, N. (1990). *Measuring skills in problem-solving*. In S. Legg & J. Algina (Eds.), *Cognitive assessment of Language and Math outcomes*. New Jersey: Ablex Publishing Corporation.

Gagné, R., & Briggs, L. (1979). *Principles of instructional design*. Florida: Holt, Rinehart and Winston.

Gipps, C. (1996). *Assessment for learning*. In A. Little & A. Wolf (Eds.). *Assessment in transition: Learning, monitoring and selection in international perspective*. Oxford: Pergamon.

Hinchey, P. (1998). *Finding freedom in the classroom: A Practical introduction to critical theory*. New York: Peter Lang.

Holstein, J., & Gubrium, J. (1997). *Active interviewing*. In D. Silverman (Eds.), *Qualitative research: Theory, method and practice*. London: Sage Publications.

Hopkins, D. (1993). *A teacher's guide to classroom research* (2nd ed.). Buckingham: Open University Press.

Johannesen, P. (1999). *The theory underpinning a learner-centred approach*. In T. Squazzin & M. van Graan (Eds.), *Proceedings from the 1998 NIED Educational Conference*. Windhoek: Longman Namibia.

Johnston, P. (1990) *Steps toward a more naturalistic approach to the assessment of the reading* process. In S. Legg & J. Algina. (Eds.), *Cognitive assessment of Language and Maths outcomes*. New Jersey: Ablex Publishing Corporation.

Kelly, A. (1989). *The curriculum: Theory and practice* (3rd ed.). London: Paul Chapman Publishing Ltd.

Kyriacou, C. (1997). *Effective teaching in schools: Theory and Practice* (2nd ed.). London: Stanley Thornes Ltd.

Leat, D., & Nichols, A. (2000). Observing pupils' mental strategies: Signposts for scaffolding. *International Research in Geographical and Environmental Education*, Vol. 9(1): 19-35.

Little, A. (1996). *Contexts and histories: The shaping of assessment practice*. In A. Little & A. Wolf (Eds.). *Assessment in transition: Learning, monitoring and selection in international perspective*. Oxford: Pergamon.

Miller, J., & Glassner, B. (1997). *The 'inside and the 'outside': Finding realities in interviews*. In D. Silverman (Eds.), *Qualitative research: Theory, method and practice*. London: Sage Publications.

Murray, S., & Nhlapo, M. (2001). Researching language teaching: Understanding practice through situated classroom research. *Southern African Linguistics and Applied Language Studies, 19*, 291-301.

Murray, S., & Wilmot, D. (2000). *Namibian Life Science Project learning support materials evaluation: Evaluation of textbooks and teacher's guide in terms of Life Science Project and curriculum goals*. Rhodes University. Grahamstown.

Namibia. Ministry of Basic Education and Culture. (1996). *Pilot curriculum guide for Formal Basic Education*. Windhoek.

Namibia. Ministry of Education and Culture. (1997). *Syllabus for Grade 10, Life Science*. Windhoek.

Namibia. Ministry of Basic Education and Culture. (1998). *Towards improving continuous assessment in schools: A policy and information guide*. Okahandja: NIED.

Namibia. Ministry of Basic Education and Culture, DNEA. (1997). *Continuous Assessment Booklet for Grade 10, Life Science*. Windhoek.

Namibia. Ministry of Education. (1993). *Toward Education for all: A development brief for Education, Culture and Training*. Windhoek: Gamsberg Macmillan.

Namibia. *Namibia human resource development report* (1998).

Nangombe, V. (1999). *Assessment and monitoring: how can this be done in a way that emphasizes change in the classroom?* In T. Squazzin & M. van Graan (Eds.), *Proceedings from the 1998 NIED Educational Conference*. Windhoek: Longman Namibia.

Neuman, W. (1997). *Social research methods: Qualitative and quantitative approaches* (3rd ed.). Boston: Allyn and Bacon.

Nitko, A. (1996). *Educational assessment of students* (2nd ed.). Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Njabili, A. (1997). *Curricula under pressure: Aspects from the eastern and southern African region.* In R. Avenstrup (Ed.), *Proceedings of the first sub-regional conference on curriculum development in southern Africa.* Windhoek: Gamsberg Macmillan.

Nunan, D. (1992). *Research methods in Language learning.* Cambridge: Cambridge University Press.

Patton, M. (1990). *Qualitative evaluation and research methods* (2nd ed.). California: Sage Publications, Inc.

Peräkylä, A. (1997). *Validity: Reliability and validity in research based on tapes and transcripts.* In D. Silverman (Eds.), *Qualitative research: Theory, method and practice.* London: Sage Publications.

Pomuti, H. (1999). *Learner-centred education and democratic teaching: Constructing common understanding of learner-centred education.* In T. Squazzin & M. van Graan (Eds.), *Proceedings from the 1998 NIED Educational Conference.* Windhoek: Longman Namibia.

Prawat, S. (1992). *Teachers' beliefs about teaching and learning: A constructivist perspective.* The University of Chicago.

Prior, L. (1997). *Following in Foucault's footsteps: Text and context in Qualitative research.* In D. Silverman (Eds.), *Qualitative research: Theory, method and practice.* London: Sage Publications.

Snyder, C. (1999). *Complexities of education.* In C. Snyder, N. Angula, J. Meyer, D. Makuwa & O. Hailombe. *Exploring the complexities of education: Notes on research design and statistics.* Windhoek: Gamsberg Macmillan.

Umar, J. (1996). *Grappling with heterogeneity: Assessment in Indonesia.* In A. Little & A. Wolf (Eds.). *Assessment in transition: Learning, monitoring and selection in international perspective.* Oxford: Pergamon.

van Harmelen, U. (2001). *Evaluating change: An impact study of the Life Science Project in Namibia, 1991 – 2000:* Rhodes University. Grahamstown.

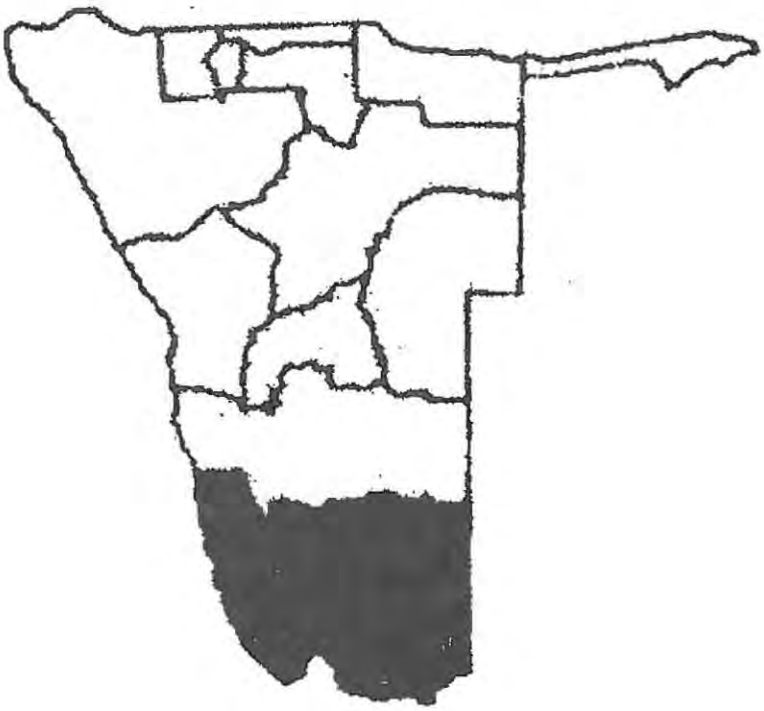
Wallace, M. (1998). *Action Research for Language teachers.* Cambridge: Cambridge University Press.

Wilmot, D. (2003). (Educational Assessment: A guide to theory and practice). B.Ed (Hons) lecture notes, Rhodes University, Education Department, Grahamstown.

Wolf, A. (1996). *Individual choices, incentives and control: understanding assessment dilemmas.* In A. Little & A. Wolf (Eds.). *Assessment in transition: Learning, monitoring and selection in international perspective.* Oxford: Pergamon.

APPENDIX A

FIGURE 1: MAP OF NAMIBIA INDICATING THE KARAS REGION



Source: *(Namibia. Ministry of Basic Education, Sport and Culture: In-Service Teacher Education Programme.* Social Sciences, Module 3, 1998: 23)

APPENDIX B

INTERVIEW GUIDE FOR TEACHERS

Date.....Time.....Interview No.....

The implementation of formative assessment policies in Grade 10 Life Science classrooms in two schools in the Karas Region.

Personal Data:

All your answers will be utilized anonymously in the research report. However, provide me with some personal data that could help me with the analysis.

Name:.....

Position in school:.....

Qualifications:.....

Subjects taught:.....

Teaching experience in Life Science:.....

Classes taught:.....

Implementation of formative assessment policies in Grade 10 Life Science classrooms in two schools in the Karas Region.

1. How frequently do you give assessment tasks to your learners?
   .....
   .....
2. What kind of assessment tasks do you give to your learners?
   .....
   .....
   .....

3. Namibia has introduced CA in schools after the independence. What is your opinion about having CA in your classes?

.....
.....
.....

4. According to your understanding, what should be the purpose of CA and why should we have it in our schools?

.....
.....
.....
.....

5. Could you talk me through how you go about assessing learners in your class?

.....
.....
.....
.....

6. After you have assessed your learners and after you have given some marks, what are usually the next steps that you follow?

.....
.....
.....
.....
.....

7. What are you doing with the information that you gained in the process of assessing your learners?

.....
.....
.....
.....
.....

8. What measures do you put in place to ensure that the marks you are giving to you learners are realistic/not too less or too many?

.....
.....
.....
.....

9. Could you talk me through the processes that you go through when planning for formative assessment in the next lesson?

.....
.....
.....
.....
.....

10. What measures do you put in place to ensure that the assessment tasks are not too easy or too difficult for the Grade level?

.....
.....
.....
.....

11. When do you usually give grades or marks to your learners for an assessment tasks?

.....
.....
.....

12. What are your opinion about external examinations at the end of the year and how does it impacting on your assessment that you do in your classroom?

.....
.....
.....
.....

13. Is there a difference between the marks that the learners obtained during CA and the marks obtained during external examinations?

.....
.....
.....

14. If yes. Why do you think that difference exists?

.....
.....
.....
.....
.....
.....

15 Have you had any previous workshops that dealt with assessment and assessing learners' performance?

.....
.....

16. If any, Could you tell me how much you gained, in terms of assessing learners' performances, in these workshops?

.....
.....
.....
.....

Thank you for your valuable time and your sacrifices are appreciated!

APPENDIX C

Dear Grade 10 Life Science Teacher

I am registered for a Master's degree with the Education Department of Rhodes University. To qualify for my Master's degree I am required to write a research report on a topic that is linked to an aspect of the work undertaken in the coursework component of the Master's program. I have chosen to focus on the assessment of Life Science in Grade 10 classrooms. More specifically, the aim of this research project is to investigate the implementation of formative assessment policies in Grade 10 classrooms. As mentioned, the focus of the investigation will be the practices of Grade 10 Life Science teachers in a selection of the Karas Secondary Schools. I will attempt to answer the following questions:

What are teachers' perceptions of formative assessment?
How do they implement formative assessment policies?
What are the tensions between formative assessment policies and practices?

Please complete the attached consent forms if you are willing to assist me with this research:

a) by participating in an interview with me at a time that is convenient to you;
b) by allowing the interview to be tape-recorded for later transcription and use in the research report;

by allowing me to observe your lessons;
by allowing me to look at your lesson plans and CA record sheets and
by allowing me to look at the written work of learners

Yours sincerely

Adrian van Neel

APPENDIX D

OBSERVATION SCHEDULE

NAME:..... GRADE:.....

DATE:..... TIME:.....

NUMBER OF BOYS:..... NUMBER OF GIRLS.....

AN INVESTIGATION INTO THE IMPLEMENTATION OF FORMATIVE ASSESSMENT POLICIES IN GRADE 10 LIFE SCIENCE CLASSROOMS AT SELECTED SCHOOLS IN THE KEETMANSHOOP DISTRICT.

Participation by the teachers (What are they doing, how are they doing and why?)	
Participation by learners (What are they doing, how are they doing and why?)	
What kind of printed text was displayed on the walls of the classroom	
How many learners participated actively in the lesson	
Does the teacher develop values and attitudes during the lesson and taught about these	
What does the teacher do to help learners to understand	
What does the teacher check to see if the learners understand	
What does the teacher do when a learner	

does not understand	
Does the teacher give feedback to the learners and how?	
Are questions varied as to type	
Do the learners ask each other or the teacher any questions	
Does the teacher give the learners opportunities to demonstrate what they have learned	
Is there a variety of tasks/activities	
Does the teacher spend more time on common problems or on individual problems	

APPENDIX E

P/Bag 2074
Keetmanshoop
Namibia
08 September 2006

The Principal

Dear Sir

I am registered as a part time student at the Rhodes University (student number: 600V0005). I have been studying for a Master's degree in Education Theory and Practice since January 2005. I would be most grateful if you would allow me to use your school as one of my research sites for the research report, which I am required to write.

The aim of my research project is to investigate the implementation of formative assessment policies in Grade 10 classrooms. Should you agree to allow me to use your school as a research site, teachers who are willing to participate in this project will be asked to be interviewed and to teach lessons for observations. Further data for analysis will then be collected from the written work of learners. These teachers will be asked for permission to tape record these interviews. I will also request permission to look at examples of their lesson plans and the learners' Continuous Assessment record sheets.

The school and teachers are assured of anonymity in the final research report and will be invited to proofread drafts of the data collected to ensure that details are accurately recorded and reported.

Should you have any concerns or questions about this request, you can contact me at (063) 222811 during business hours or 0812213559 after hours.

Yours sincerely

Adrian van Neel